



The causal effect of graduating from a top university on promotion: Evidence from the University of Tokyo's 1969 admission freeze

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Abstract

The strong 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 a selective college assures success in the labor market in a causal sense due to better education, a better alumni network, or some factor attached to selective college graduation. The other explanation claims that the correlation is created by a “third” factor, such as selective college graduates’ greater innate ability or better family background. We attempt to test this causality 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 3000 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 outperformed the other cohorts in private companies, though this cohort did perform better in the central government. This evidence rejects the null hypothesis that the better performance of Tokyo graduates in the central government is solely due to the fact that they graduated from the University of Tokyo. However, the effect of this stronger performance of the graduates from the second-best schools was not large enough to compensate for the absence of Tokyo graduates. Thus, the success of Tokyo graduates in the public sector cannot be explained solely by their high innate abilities or better family backgrounds.

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1. Introduction

The high correlation between selective college graduation and successful labor market outcomes

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has been robustly observed in many countries. For example, Dale and Krueger (2002) showed this correlation for the US, Daniel, Black, and Smith (1995) demonstrated it for Canada, and Ono (2004) did the same for Japan. Social science researchers long have 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 because 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 the effect of prestigious college graduation on labor market outcomes from the observed correlation.

To identify the causal effect, previous studies have made significant efforts to control for self-selection using exogenous variation. Brewer, Eide, and Ehrenberg (1999) corrected for the selection bias, using high school GPA, the 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. Behrman, Rosenzweig, and Taubman (1996) used a sample of female twins to difference out the unobserved family characteristics that could be correlated with the quality of the schools that individuals attend. They found a significant return to attending private colleges, even after controlling for family-level, unobserved heterogeneity. Dale and Krueger (2002) compared the labor market outcomes of workers who were accepted and rejected by colleges of a similar level 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 findings of 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 random assignment of students to various colleges, independent of individual characteristics. The observed correlation between elite college graduation and labor market performance resulting 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 scenario.

As described in a later section, the University of Tokyo, which is Japan's most selective university, did not have its usual 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 the brightest 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 from the second-best schools with other cohorts from the same schools, we can test the null hypothesis that the labor market success of all cohorts from the University of Tokyo graduates was solely due to the fact that they graduated from the University of Tokyo. If the null hypothesis is true, then the 1973 graduating cohort from the second-best schools would not have performed better than the other graduating cohorts of the same schools, regardless of their high ability.

We counted the number of individuals appearing on a list of corporate and public executive officials by school name and graduation year and found that Tokyo graduates did not hold more executive positions in the private sector after adjusting for school size. However, Tokyo graduates were much more likely to hold executive positions in the central government. Regardless of the fact that the brightest high school graduates went to the second-best universities in 1969, the 1973 graduating cohort from these second-best universities did not perform better in private firms than other cohorts. At the same time, the 1973 graduation cohort of the second-best universities was more likely to hold executive positions in the central government compared with other cohorts of the same universities. However, the magnitude of the better performance of the 1973 graduates from the second-best schools was less than half of the predicted performance of Tokyo graduates if there had been Tokyo graduates in 1973, even though the total size of the graduation cohort from the second-best universities was as large as the 1973 Tokyo graduate cohort would have been.

These results reject the null hypothesis that Tokyo graduates performed better in the central

government solely because they had graduated from the University of Tokyo. There are unobserved components that make graduates from the University of Tokyo successful in the public sector. However, the magnitude of these components is not strong. Although the results are mixed, we cannot deny the possibility that top-school graduation has an effect on career success in the central government.

The rest of this paper is organized as follows. Section 2 provides background information on Japanese higher education and labor market outcomes and the natural experiment that was used in this study. Section 3 explains the data in the empirical study and discusses the data's descriptive statistics. Section 4 lays out the identification strategy and introduces the empirical results for private firms and the central government. Section 5 discusses possible estimation biases. The last section concludes.

2. Background

2.1. *The University of Tokyo*

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 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 a greater value on individuals' academic careers than on their real abilities. However, more recent studies on Japan tend to find a strong correlation between college selectivity and labor market performances (Abe, 2002; Higuchi, 1992, 1994; Ohashi, 1995; Ono, 2004; Rebick, 2000).¹

The University of Tokyo has occupied the top position of the single-peaked university hierarchy since its establishment in 1877. 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 in 1886, the University of Tokyo was reformed as an imperial university that was expected to train elites who could work as govern-

ment 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 during the senior year of undergraduate study. Among the 1615 people who successfully passed this examination in 2002, 436 graduated from Tokyo, and this far exceeded 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. In the political arena, 144 Diet members, out of a total of 722, graduated from the University of Tokyo. This number is followed by Waseda's 92. In terms of research, 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 to the University of Tokyo. 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, 3243 students were admitted out of 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, which cover a range of academic subjects.

2.2. *The 1969 admission freeze*

Reflecting the rapid rise of students' left-wing movement during the 1960s, several buildings of the University of Tokyo were occupied by armed, leftist students for 6 months until January 18, 1969. While universities in Japan typically administered their entrance examinations in March in order to select entering students for the coming April, the University of Tokyo decided, on December 30, 1968,

¹Among these studies, Abe (2002) emphasized the importance of college fixed effects such as reputation or alumni network.

not to administer the entrance examination in March 1969 due to the confusion on campus.²

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 during that month. Students who had expected to take the canceled examination were compelled to either take the entrance examinations of the second-best schools or not take the examinations at all. Students could choose to wait one year to take the entrance examination, but this choice was not popular because whether the entrance examination would be offered in the following year was not clear at the time, as documented by the 1969 edition of *Ohbunsha* (1968–1970). We should be careful to note, however, that the proportion of students who entered Tokyo right after high school graduation reported in *Ohbunsha* (1968–1970) was slightly lower in 1970 than in 1968. In particular, we observe drops for the Law and Economics departments that are relevant to our analysis. These drops suggest that some students entered Tokyo after taking a break for a year or more after graduating from high school. If the competition for admission in 1970 was harsher than in other years, the entrants of the University of Tokyo for this specific year should be more competent. Then we should observe that the 1970 entering cohort among Tokyo graduates performed better than cohorts from other years.

Among students who were compelled to choose schools other than Tokyo, Kyoto University, Hitotsubashi University, and Tokyo Institute of Technology (TIT) might have been more popular because they are usually regarded as the second-best schools next to Tokyo.

According to the data in *Ohbunsha* (1968–1970), the application–admission ratio increased for Hitotsubashi University in 1969, but the ratio was stable for TIT, and it even decreased for Kyoto University. From these figures, we can reasonably guess that a portion of students who would have gone to Tokyo went to Hitotsubashi in 1969. Thus, we should, in particular, focus on the performance of Hitotsubashi graduates who entered the school in 1969.

3. Data

We examine whether workers hold an administrative position in a prestigious firm or the central

government as a proxy for their success in the labor market. 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. We counted the number of administrative workers in selective firms and the central government, as well as the size of the graduating cohort 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's 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* in Japanese) 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 company's name, the position held by the worker, the year of birth, the year of graduation from the school that the worker last attended, and the name of the university from which the worker graduated, along with other information. In addition to the workers' individual information, the list includes each company's information.

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 criterion 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.³

The 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, year of birth, school of graduation, and year of graduation. We regarded all officials listed in this book as officials in administrative positions and counted the number of them for each school-graduation year cell.

The sample years of 2002 for private firms and 2003 for the central government were selected because they were the ones with the most recent data available when this project was initiated. The

²The Japanese school year starts in April and ends in March.

³The positions included are the following: *Kaicho*, *Shacho*, *Fuku-Shacho*, *Senmu*, *Jyomu*, *Torishimariyaku*, *Kansayaku*, *Sodanyaku*, miscellaneous *Yakuin*, *Bumoncho* and *Bucho*.

Table 1

The number of workers who held manager and higher positions in private firms in 2002 and administrative positions in the central government in 2003

School	Graduates	Graduates in private sector (estimates)	Graduates in public sector (estimates)	Manager and above in private sector	Public officials in administrative positions in the central government	The rate of managers (%)	The rate of public officials (%)	The rate of managers and public officials (%)
Tokyo	51,974	31,095	3542	906	483	2.91	13.64	4.01
Keio	74,060	46,708	6609	2075	14	4.44	0.21	3.92
Hitotsubashi	13,460	9147	1324	359	28	3.92	2.11	3.7
Kyoto	41,685	25,756	2788	750	80	2.91	2.87	2.91
Osaka	31,265	21,345	1707	546	5	2.56	0.29	2.39
Waseda	138,300	79,935	9489	1722	8	2.15	0.08	1.93
TIT	14,301	10,379	637	201	4	1.94	0.63	1.86

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. *Note:* Graduates in the private and public sectors were estimated with the following formula: $Est_t = \sum_{i=65}^{83} \sum_{j=1}^6 W_{jt} grad_{ijt}$, where j 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 or 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 taken from the Basic School Surveys (*Gakkou Kihon Chousa*): 1965–1983. The fields include Humanities, Social Sciences, Natural Sciences, Engineering, Agricultural Sciences, and Education.

sample years were about 30 years after the college graduation for those who graduated in 1973. These years are favorable for measuring successful promotion because the workers are old enough that heterogeneity in labor market success is already revealed. At the same time, we do not have to worry very much about retirement issues.

Although the data sets 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. Under the Japanese school system after World War II, students typically graduate from universities at age 22 or 23. Thus, we counted the number of workers who graduated from college in year t and were born in years $t - 22$ 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 four 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.

The number of workers who hold administrative positions also depends on the size of the graduation cohort of specific schools for each year. We approximated the size of the graduating cohort by 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. We assumed that the sizes of the graduating cohorts were the same as the sizes of the authorized capacities four years before. Private universities may have admitted more students than their respective, authorized capacities, but this is less likely for national universities.⁴

To reflect the fact that graduates from medical, dental, pharmaceutical, and nursing departments rarely work for private and government sectors after graduation, we did not count graduates from those departments. For other departments, we calculated the national average of the number of graduates who took jobs in the private or public sector depending on their academic department, using *The Basic School Survey: 1965–1983 (Ministry of Education (1965–1983), Gakkō Kihon Chōsa* in Japanese). The details of the construction of this variable are explained in the footnote of Table 1.

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. 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 central government, and it far exceeded the

⁴According to the information provided in *Ohbunsha (1968–1970)*, the admission–capacity ratio is less than 1.02 for all national universities included in this study.

corresponding numbers for the other schools. However, Keio and Hitotsubashi graduates outperformed Tokyo graduates in the private sector.

Overall, Tokyo graduates outperformed other graduates in the central government, but not necessarily in the private sector. This fact implies that it is important to have an independent analysis for each sector.

4. Estimation

4.1. Identification strategy

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 1973 graduates from the second-best universities to perform better than the graduates of the usual years. Calculating the usual year situation for 1973 is difficult because of the highly non linear effect of the graduation year on the probability of holding 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 model this trend term to be a school-specific flexible function. As far as school- or region-specific factors that may affect the graduates' promotion rate changes smoothly around 1969 or 1973, these factors are captured by this trend term. The estimated model is

$$p_{jt} = \gamma_j D_{j1973} + f_j(t) + u_{jt}, \quad (1)$$

where p_{jt} is the probability of holding administrative positions among workers who graduated from school j in year t and D_{j1973} is the dummy variable that takes 1 for 1973 graduates from school j and 0 otherwise. We employed a local linear regression to estimate $f_j(t)$ and implemented this estimation for the private and public sectors, separately.

As is clear from the above discussion, we employed the regression discontinuity design to identify the effect of Tokyo's admission freeze on the promotion rate among the second-best school graduates. Thus, if there are other shocks that are discontinuous at 1969 (the year of the admission freeze) or 1973 (the year of the admission freeze cohort's graduation), our identification strategy fails. One discontinuous shock around this time

that we must pay attention to is the effect of the oil shock. We address this concern in the discussion section.

4.2. Results for the private sector

The estimated promotion rate to managerial positions in selective firms is plotted in Fig. 1. All of the figures are plotted by universities. Fig. 1 is based on the sample with the birth-year restriction. 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.

The results of the local linear regression appears in Fig. 1 as smooth lines. Those who graduated from universities in the earlier years were 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.

We do not observe a large deviation from the estimated trend for 1973. The estimates of γ appear in Table 2. Although we find slight evidence that Hitotsubashi's graduates performed better in 1973 than in other years, the deviation was within the range of sampling error ($t = 0.70$). 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 evidence is not surprising because Tokyo graduates do not necessarily perform better than other graduates.

Fig. 2 draws the local linear regression line applied for each school, using the sample without the birth-year restriction. A comparison with Fig. 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 results of the semi-parametric regression that examines whether the rate of holding administrative positions was significantly different for 1973 graduates. The results show that the 1973 Hitotsubashi graduates performed 4.1 percentage points better than their trend, and this effect is

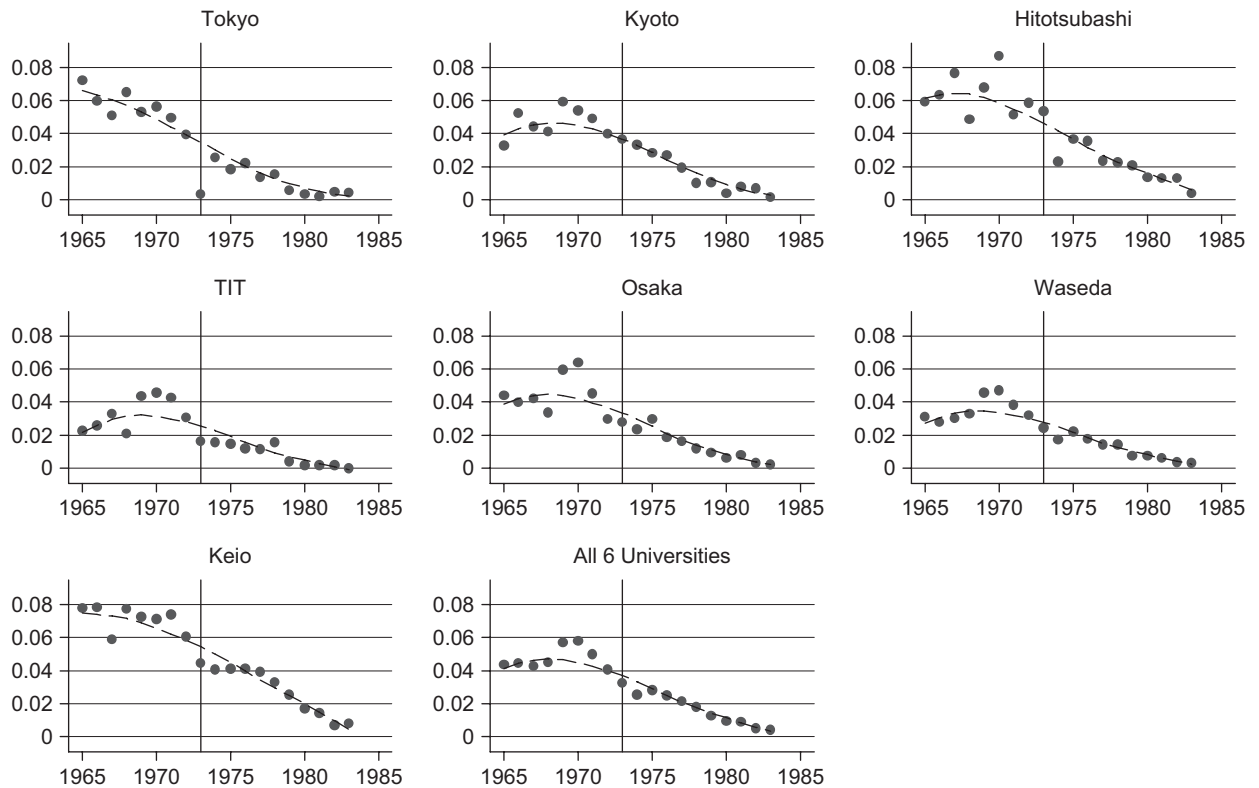


Fig. 1. Nonparametric estimates for the probability of holding manager or higher positions in selective companies in 2002. Sample: workers who graduated from universities at age 22 or 23.

Table 2

Semi-parametric regression predicting the probability of working as a manager or above position in selective companies in 2002

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
School	Kyoto	Hitotsubashi	TIT	Osaka	Waseda	Keio	6 Univ.
1973 Graduation	−0.000 (0.005)	0.007 (0.010)	−0.010 (0.007)	−0.007 (0.008)	−0.004 (0.005)	−0.011 (0.006)	−0.005 (0.005)
Constant	Included	Included	Included	Included	Included	Included	Included
$f(\text{years from graduation})$	Included	Included	Included	Included	Included	Included	Included
Observations	19	19	19	19	19	19	19

Sample: workers who graduated from universities at age 22 or 23. Note: The reported coefficients are the γ_j in the following model: $p_{jt} = \gamma_j D_{j1973} + f_j(t) + u_{jt}$, where p_{jt} is the probability of holding administrative positions among workers who graduated from school j in year t and D_{j1973} is the dummy variable that takes 1 for 1973 graduates from school j and 0 otherwise. Standard errors are in parentheses.

statistically significant ($t = 2.93$). However, a word of caution applies here. As Fig. 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 terms 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 better performance of the 1973 Hitotsubashi graduates when we used the sample with the birth-year restriction. Thus, the difference in results based on different samples suggests that the better

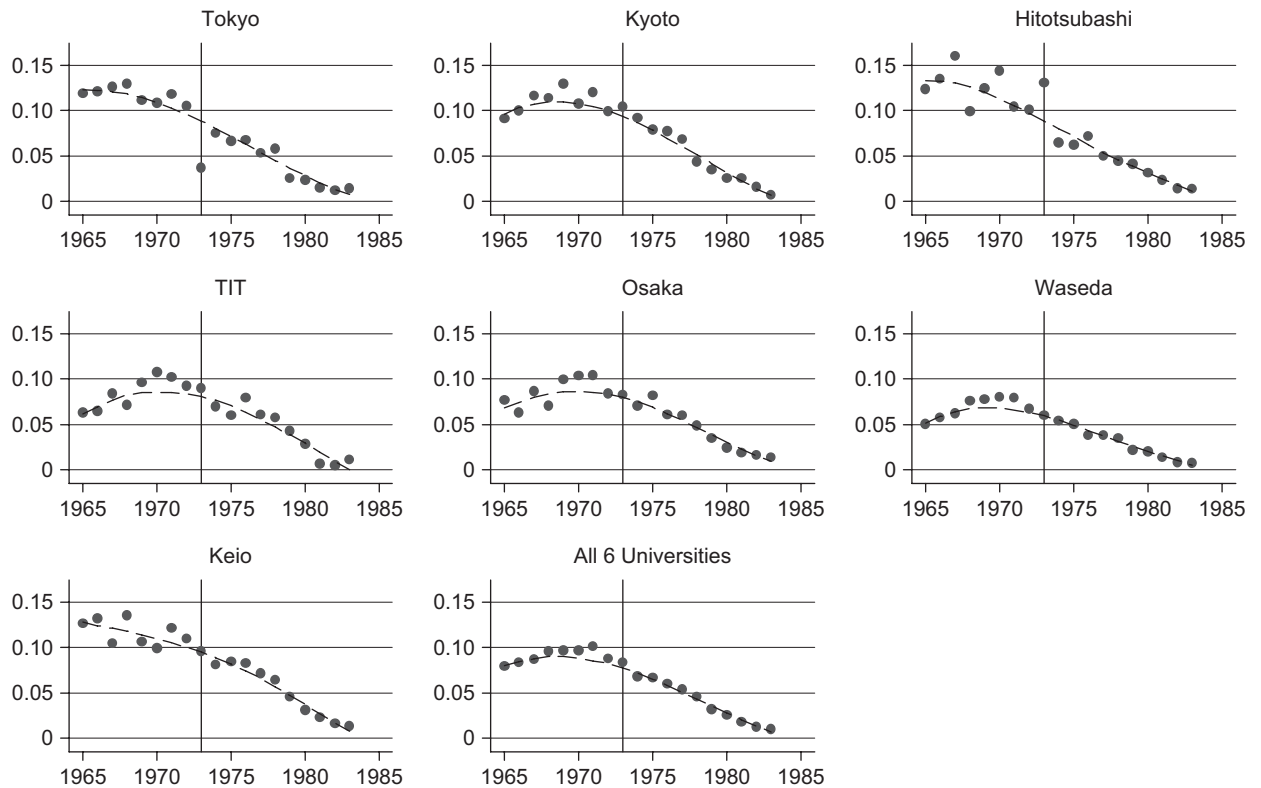


Fig. 2. Nonparametric estimates for the probability of holding manager or higher positions in selective companies in 2002. Sample: all workers who had graduated from universities at any age.

Table 3

Semi-parametric regression predicting the probability of working as a manager or above position in selective companies in 2002

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
School	Kyoto	Hitotsubashi	TIT	Osaka	Waseda	Keio	6 Univ.
1973 Graduation	0.008 (0.008)	0.041 (0.014)	0.005 (0.011)	0.000 (0.009)	-0.002 (0.005)	-0.000 (0.009)	0.003 (0.002)
Constant	Included	Included	Included	Included	Included	Included	Included
$f(\text{years from graduation})$	Included	Included	Included	Included	Included	Included	Included
Observations	19	19	19	19	19	19	19

Sample: workers who graduated from universities at any age. Note: The same note applies as in Table 2.

performance of the 1973 Hitotsubashi graduates, if there is any, is not due to their high innate ability, but due to some other factor(s).

4.3. Results for the public sector

As reported in Table 1, the Tokyo graduates significantly outperformed the other school graduates in the public sector. The results of the local linear regression of the public-sector success rate on

the year of graduation appear in Fig. 3 as smooth lines.

These pictures are different from the ones obtained from the private sector; the 1973 graduating cohort from Kyoto, Hitotsubashi, and TIT outperformed the other cohorts from the same universities. This finding is rigorously confirmed in Table 4; coefficients for the 1973 graduation dummy variables for Kyoto, Hitotsubashi, and TIT are statistically significant. The 1973 graduating cohort

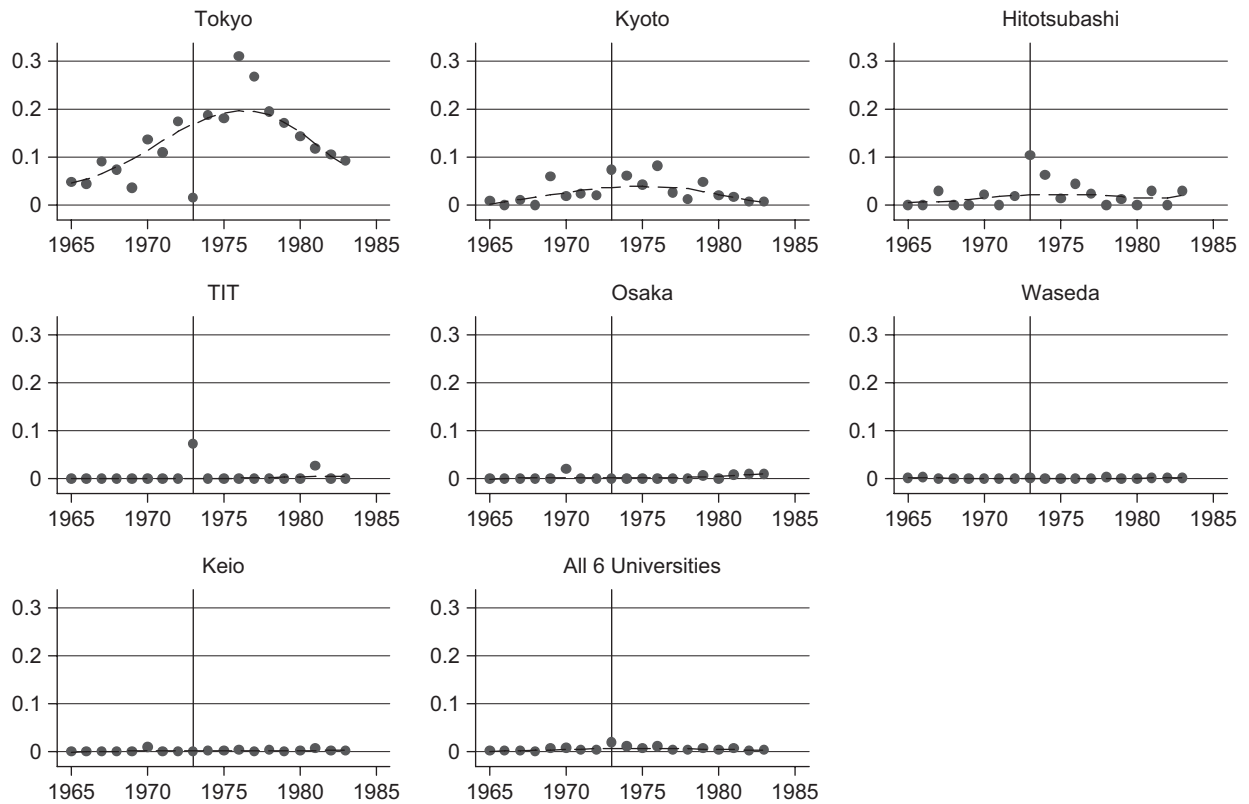


Fig. 3. Nonparametric estimates for the probability of holding administrative positions in the central government in 2003. Sample: workers who graduated from universities at age 22 or 23.

Table 4

Semi-parametric regression predicting the probability of holding administrative positions in the central government in 2003

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
School	Kyoto	Hitotsubashi	TIT	Osaka	Waseda	Keio	6 Univ.
1973 Graduation	0.035 (0.018)	0.082 (0.017)	0.073 (0.006)	−0.002 (0.005)	0.002 (0.001)	−0.002 (0.003)	0.014 (0.003)
Constant	Included	Included	Included	Included	Included	Included	Included
$f(\text{years from graduation})$	Included	Included	Included	Included	Included	Included	Included
Observations	19	19	19	19	19	19	19

Sample: workers who graduated from universities at age 22 or 23. Note: The same note applies as in Table 2.

from Hitotsubashi was 8.2 percentage points more likely to hold an administrative position in the central government than the other cohorts from the same school. This difference is very precisely estimated, with a standard error of 1.7 percentage points. The 1973 graduating cohort of TIT also outperformed other cohorts of the same university by 7.3 percentage points. The 1973 graduating cohort of Kyoto outperformed other cohorts by 3.5 percentage points. These results imply that

graduates from these second-best universities substituted for Tokyo graduates in this specific year. We obtain roughly the same results for the sample without birth-year restriction as reported in Fig. 4 and Table 5, although we lost statistical significance of the coefficient for Kyoto university.

To make sense of how much substitution took place in 1973, we implemented a back-of-envelope calculation based on the estimates reported in

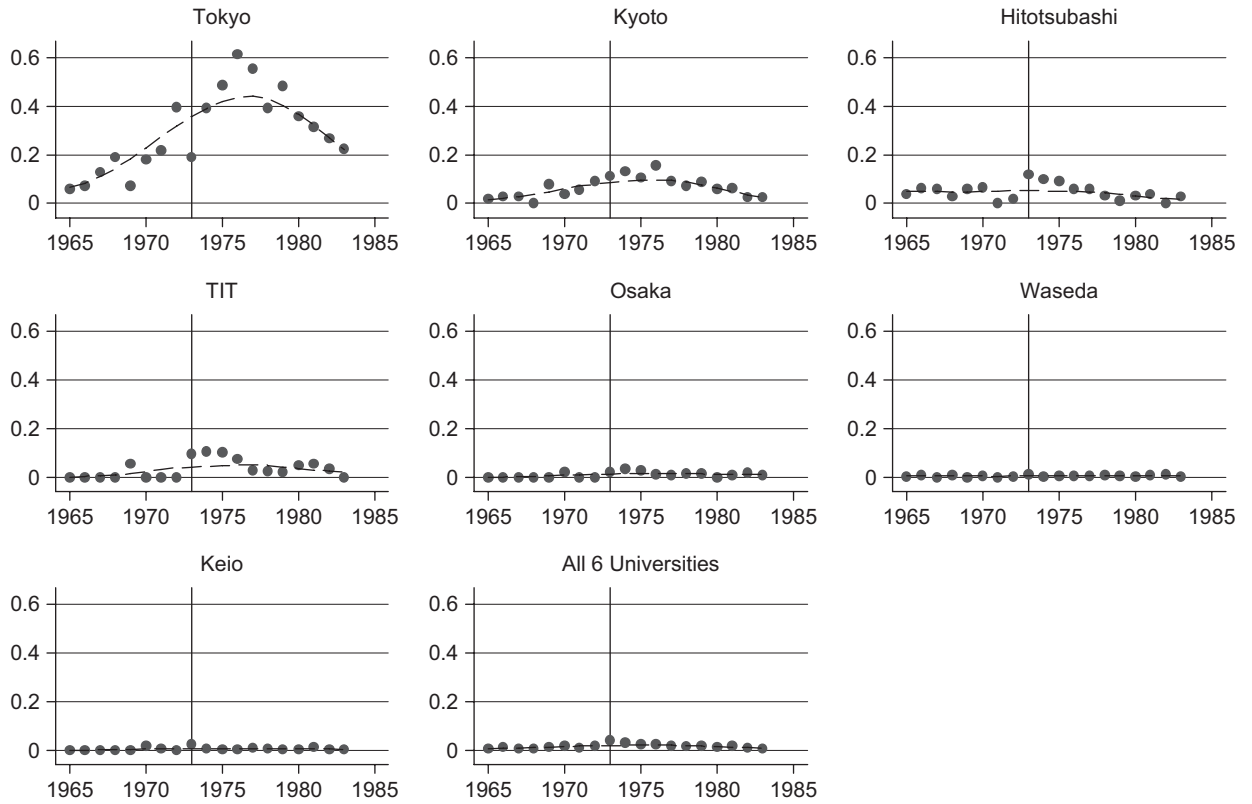


Fig. 4. Nonparametric estimates for the probability of holding administrative positions in the central government in 2003. Sample: all workers who had graduated from universities at any age.

Table 5
Semi-parametric regression predicting the probability of holding administrative positions in the central government in 2003

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
School	Kyoto	Hitotsubashi	TIT	Osaka	Waseda	Keio	6 Univ.
1973 Graduation	0.020 (0.023)	0.065 (0.026)	0.054 (0.030)	0.007 (0.009)	0.009 (0.003)	0.019 (0.005)	0.021 (0.005)
Constant	Included	Included	Included	Included	Included	Included	Included
$f(\text{years from graduation})$	Included	Included	Included	Included	Included	Included	Included
Observations	19	19	19	19	19	19	19

Sample: workers who graduated from universities at any age. Note: The same note applies as in Table 2.

Table 4. If Tokyo had admitted students in 1969, there would have been 200 people who would have become public officials. Suppose their success rate was equivalent to the success rate of the 1972 graduation cohort, which was 0.173. Under this assumption, the number of central government officers from Tokyo would have been 34.6 persons if there had been a graduation cohort in 1973. Among these 34.6 persons, how many of them were

substituted by graduates from the second-best universities?

Among Kyoto graduates, 161 were estimated to take jobs in the public sector in 1973. Among them, the probability of being an administrative public officer was 3.5 percentage points higher than in other years. Thus the predicted increase of public officials from Kyoto for the 1973 graduating cohort is $161 \times 0.035 = 5.6$ persons. Among Hitotsubashi graduates,

68 are estimated to have taken jobs in the public sector in 1973, and they would have been 8.2 percentage points more likely to be administrative public officers. Thus, the predicted increase of administrative officers is $68 \times 0.082 = 5.6$ persons. Similarly, the number of graduates from TIT in 1973 who presumably were in the central government is 41. The predicted increase of administrative public officers is $41 \times 0.073 = 3$ persons. Adding all the numbers from these three universities, we obtain about 14.2 persons.

These calculations imply that of the 34.6 fewer Tokyo graduates, 14.2 persons were substituted by Kyoto, Hitotsubashi, and TIT people. The quantitative degree of substitution was less than half.

Overall, the results for the public sector are mixed. We strongly reject the null hypothesis that the better performance of Tokyo graduates in the central government sector is solely due to the fact that they graduated from the University of Tokyo; 1973 graduate cohorts from the second-best schools performed much better than other cohorts. However, the quantitative degree of substitution is not large enough that we can still conclude that graduating from the University of Tokyo is an important determinant of becoming a public official.

This result is partly explained by the strength of law education at the University of Tokyo and the fact that new bureaucrats are mainly recruited from the students who study law.⁵ Also, the old boy's network at the time of recruitment is likely to be important, as emphasized in Kim and Okita (2004).

5. Discussion

Our identification strategy crucially depends on the assumption that the University of Tokyo's admission freeze was the only discontinuous shock

⁵The capacity of the law department (630) was 170% of the capacity of the economics department (370) in 1968. The University of Tokyo does not have an independent commerce department. However, the size of the law department was 160, while the capacity of the economics department was 230 and the commerce department was 230 at Hitotsubashi. Thus, the size of the law department relative to the economics-related departments was about 35%. Fast-track public officials are selected among the people who pass the national 1st-class officials' examination. Those who aim to be a general managerial public official take an examination in one of the following three subjects: public administration (capacity = 15), law (capacity = 170), or economics (capacity = 80). All of the capacity sizes are based on the 2006 hiring. As indicated by the capacities, to major in law is advantageous for becoming a high-class public official in the central government.

in either 1969 or 1973. The oil shock recession is another acute shock to the economy that occurred around this time, and therefore, it should receive special attention.

Having pointed out the potential importance of the oil shock recession, we should notice that the first oil crisis broke out in October 1973, and thus the 1969 entering cohort (i.e., the 1973 graduating cohort) should not have suffered from this shock because they graduated college in March 1973. It is still very sensible to doubt that the 1974 graduating cohort was negatively affected by the shock and that the comparison group was adversely affected at the labor market entrance point.

In addition, both the unemployment rate and the opening ratio indicate that the labor market situation of 1973 was slightly better than in adjacent years. Thus, the promotion rate in 2002 among 1973 graduates could have been higher than it was for 1972 or 1974 graduates because 1973 graduates might have had a higher probability of getting an initial job in the listed companies. However, we did not observe a higher promotion rate among the 1973 cohorts in the private sector, as shown in the last columns of Tables 2 and 3.

The recruitment of public officials is presumably independent from business cycles. Moreover, Inoki and Yugami (2001) tested the hypothesis that public officials who enter their jobs during a time of bad economic conditions perform better because the selection into public jobs is more competitive. They did not find supportive evidence for this hypothesis. Kim and Okita (2004) in fact found a *reduction* of new recruitment in 1973, and they interpreted this as resulting from the University of Tokyo's admission freeze 4 years before. We agree with their interpretation, and this is exactly the causality that we attempt to capture in this study.

The limitation of our study based on the average promotion rate rather than individual data is that we cannot clearly identify the treatment group: those who would have gone to the University of Tokyo had the door been opened, but actually went to the second-best schools. The total capacity of the three other national universities that presumably are close substitutes of Tokyo (Kyoto, Hitotsubashi, TIT) for 1969 was about 4100. Thus, even under the very strong (but plausible) assumption that all of the students who would have gone to the University of Tokyo, which is about 3000, entered these three national universities, they would have filled up 3/4 of the capacity of these second-best national

universities. Therefore, even if high-ability students boosted the performance of the 1973 graduates from these second-best national universities, the estimated effect is attenuated to 3/4.

Readers should be warned that the power of the test for the null hypothesis that the better performance of Tokyo graduates solely comes from the fact that they graduated from the University of Tokyo is weakened by this attenuation. However, this power argument does not apply to the private sector because Tokyo graduates did not perform better in the private sector in the first place. For the public sector, the null hypothesis was rejected, regardless of the low power of the test.

The previous results indicated that the admission freeze of the University of Tokyo resulted in 34.6 fewer Tokyo graduates among the public officials, and 14.2 persons were substituted by Kyoto, Hitotsubashi, and TIT graduates. Even if the latter number is inflated by 4/3, which is the inverse of the degree of attenuation, the number is 18.9 persons. This number is a little more than half of 34.6. We still conclude that graduating from the University of Tokyo is an important determinant for becoming a successful government official.

6. Conclusion

This paper examined whether graduating from Japan's top university positively affected workers' promotion in prestigious private firms and the central government in a causal sense. By counting the number of corporate and government officials appearing on Who's Who, we found that graduates from the University of Tokyo do not necessarily outperform graduates from second-best universities in private companies, but Tokyo graduates perform far better than graduates from other schools in the central government.

We attempted to investigate the reason why Tokyo graduates are so successful in the central government. To account for the selection effect of high-ability students into the University of Tokyo, we used a natural experimental event that occurred 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. Therefore, "smarter" students flowed into the second-best universities in that year.

The 1973 graduating cohort from these second-best universities performed better in the central government than the other graduating cohorts of the same universities. Thus, the null hypothesis that Tokyo graduates' success in the public sector is solely due to the fact that they graduated from the University of Tokyo is rejected. This implies that Tokyo graduates perform well in the central government sector partly due to their unobserved characteristics. Although it is difficult to specify what these unobserved characteristics are, they could include innate ability or family background. However, the size of the substitution of Tokyo graduates by the second-best school graduates was not very large. Only about half of the positions that would have been held by Tokyo graduates were taken by the graduates from the second-best universities among the 1973 graduation cohort. Thus, we still insist that graduating from the University of Tokyo has a causal impact on having success in the central government sector.

Our study examined the difference in the labor market performance of graduates from the best school and the second-best schools, controlling for differences in unobserved characteristics. Our results for the private sector conform with those of Dale and Krueger (2002), which indicate that attending a marginally better school does not improve labor market outcomes.

In contrast, our results for the public sector suggest that graduating from a specific university can lead to success in becoming a central government official. The difference in the results for private and public sectors is striking. This may be because the University of Tokyo offers better training opportunities for future public officials than the second-best universities. An alternative interpretation is that competition in the private sector reduces the room for favoritism based on alumni networks.

Examining the relation between the structure of product market competition and the effect of school name on promotion would be an interesting future research topic.

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