

## **A Comparative Sociological Study of Japanese and Taiwanese Upper Secondary Education**

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*This paper addresses the following two research questions: What role does senior high school choice play, in terms of the choices between public and private and between academic and vocational education in Japan and Taiwan? How do senior high school students matriculate to tertiary education in Japan and Taiwan? Japan and Taiwan have both experienced a rapid expansion of upper secondary education in the process of late industrialization. In these two societies, senior high school tracking decides students' educational careers. In addition, people living in these two societies have been inclined toward the belief that national and public schools are more prestigious than private schools. Therefore, the role of private senior high schools is different in these societies than in Europe or America.*

*In both Japan and Taiwan students with higher grades tend to attend public academic senior high schools, whereas students with lower grades tend to enroll in private senior high schools. During the educational expansion in both societies, private senior high schools have provided opportunities for students of lower grades as well as lower social status. This research confirms the existence of a new trend in private school education: the rise of private academic education in the younger cohort. We need to continue to monitor this trend not only in these two societies but also in other East Asian countries.*

**Keywords:** senior high school; tracking; private schools; vocational education; enrollment in tertiary education

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## 1. Introduction

This paper addresses the following two research questions: First, what role does senior high school choice play in terms of the choice between public and private and between academic and vocational education in Japan and Taiwan? Second, how do senior high school students matriculate to tertiary education in Japan and Taiwan?

In England and the United States, advanced industrialized countries that had industrialized before the rise of universalized upper secondary education (Ringer 1979, Kariya and Burtscher 2013), comprehensive schools and public senior high schools, respectively, are less effective and less prestigious than the traditional “public schools” in England or private boarding schools in the United States. For instance, England has an influential tradition of independent schools like Westminster or Eton (Aldrich 1996, Sanderson 1999), and many children of the wealthiest households continued to attend fee-paying schools and opt out of the publicly funded sector (Coldron et al. 2009). Similarly, Coleman, Hoffer, and Kilgore (1982) and Coleman and Hoffer (1987) have claimed that in the United States private schools outperform public schools. Chubb and Moe (1988) have also claimed that private senior high schools are more organized and effective than public senior high schools and hence are superior. Consequently, analyses of public versus private schools have described the relevant issues in terms of an “exit” from the public schools (Hirschman 1970, Labaree 2007) or as the “privatization” of education (Walford 1990).

However, this situation does not necessarily apply to certain late-industrialized countries. As Kariya and Burtscher have demonstrated using Japanese and Korean cases, late industrialized or late modernized countries experienced a simultaneous expansion of secondary education and expansion of manual and non-manual employment (Kariya and Burtscher 2013). Taiwan is also categorized within this group as official statistics have indicated. Japanese scholars insist that senior high school education in Japan and Taiwan both demonstrate a remarkable example of a situation opposite to that prevailing in England and in the United States. Japan and Taiwan have a similar educational system to the US, which includes six-year primary education from 6 years old, three-year lower secondary education, three-year upper secondary education, and tertiary education. Nevertheless, the role of private senior high school is different in these societies than in the US, UK, or other Anglo Saxon countries (Whitty and Power 1998). This difference is caused by two factors. First, rapid educational expansion has occurred along with rapid economic growth in Japan and Taiwan during late industrialization. It is important to note that people living in these two societies tend to believe that national and public schools are more prestigious than private schools because central or local governments first established senior high schools in these societies.<sup>1</sup> As a result, within Japan and Taiwan, a school tracking system—wherein public or national schools are considered to be superior to private schools—was created at the very beginning.

Therefore, it is important to examine Japanese and Taiwanese educational progress, and the role of private senior high schools within these societies. These educational systems are prominent examples outside of Anglo Saxon countries, since other Asian countries that have the same educational systems as Japan and Taiwan and are now catching up with these societies in terms of their rapid economic growth (Tan and Mingat 1992).

## 2. Literature

Tracking in secondary education affects educational outcomes. Meyer (1970) verified whether students' college-going intentions were affected by the difference of senior high schools. Further, Shavit and Müller (2000) analyzed the effect of senior high school tracking between academic and vocational education on people in 13 societies including Japan and Taiwan. They found that vocational education had a positive role as a safety net (although this effect was relatively weaker in Taiwan and was not found in Japan) as well as negative effects. Recently, researchers have explained educational achievements and tracking in secondary education in many countries by using PISA (OECD Programme for International Student Assessment) not only for OECD countries but also for other regions that participated in the program (Duru-Bellat and Suchaut 2005, Hanushek and Woessmann 2006, and Taki 2010). For instance, Duru-Bellat and Suchaut (2005) indicated that the phenomenon of segregation among school students tends to increase social inequality in performance. Japan and Taiwan have both standardized and non-stratified junior senior high schools, and have strongly stratified senior high schools by means of entrance examinations. Using data from Japan and Taiwan we can investigate the effects of tracking on students in public and private senior high schools, as well as between academic and vocational education.

However, Japan and Taiwan have often been excluded from European comparative analyses because their educational systems are quite different from European countries, (Hanushek and Woessmann 2006). Therefore, we need to situate the Japanese and Taiwanese educational systems in a worldwide comparative research framework that identifies the similarities and differences between Japanese and Taiwanese education.

Taki (2010) divided educational systems in OECD countries into five categories after refining ideas from Mons (2007) and Dupriez et al. (2007). Taki regarded the systems of Japan and Korea as belonging to the "competitive examination model." This model is characterized by academic/vocational tracking in the schools (particularly, in senior high schools), from which about 25% of students take the vocational track. However, the linkage between their vocational majors and enrollment in the vocational system is not strong, and students on the vocational track occasionally enroll in tertiary education.

Taiwan may also be included in this "competitive examination model," though Taki (2010) did not analyze Taiwan. Broaded (1997) reviewed Taiwanese school systems (Broaded 1997: 37–39), finding that they correspond to the "competitive examination model," especially relating to the academic/vocational tracking in the schools. Taiwan may be perceived as being more like Japan than like Korea because Japan and Taiwan have similar senior high school entrance examinations that decide students' school tracking (Zeng 1999). Naturally, there are some differences between Taiwan and Japan. For instance, more students in Taiwan take a vocational track, as our own findings show. The greater incidence of enrollees in the vocational track contributes to differences in the function of private senior high schools. However, this difference is relatively smaller than that found in other countries.

### 3. Data, variables, methods, and hypotheses

#### 3-1 Data

For our study, we used national representative datasets in both countries. Japan is analyzed through the 2005 Social Stratification and Social Mobility Survey (SSM 2005). The data collection work by SSM project every 10 years from 1955 is highly evaluated in the context of sociology and social stratification research internationally. We utilize have literature about Japanese society (Ishida 1993, Hara and Seiyama 2006, Sato and Imai eds. 2011) as well as well-known comparative sociological works (Erikson and Goldthorpe eds. 1992, Arum and Müller eds. 2009). The sample size of this dataset is 5,742. Taiwan is analyzed through the Taiwan Social Change Survey, 2005. The sample size of this dataset is 5,379. These datasets were collected by the same research project, “SSM 2005.” The population considered in each of the datasets is comprised of men and women between ages 20 and 69. These datasets contain detailed information about their educational background, for example the types and specializations of their senior high schools.

#### 3-2 Variables

##### Outcome variables

We use two outcome variables: senior high school type and enrollment in tertiary education.

**Senior high school type:** Senior high school types are divided into four categories, consisting of two axes. One axis is public/private. National senior high schools are included in public senior high schools. The other axis is academic/vocational. Japan and Taiwan have a clear school tracking system; therefore, we recoded senior high school types based on respondents' school information.

According to Broaded (1997), in Taiwanese education three main types of schooling are available to graduates of junior high schools: academic senior high schools, five-year specialized technical-vocational programs, and vocational senior high schools. We divided these three types into two categories. The academic track includes only academic senior high schools, and the vocational track includes the other two types, even though Broaded claimed that five-year specialized schools are generally regarded as the second best option (Broaded 1997: 39). This situation is the same in Japan. However, the number of Japanese five-year technical colleges is very small. We found only 21 cases in our Japanese data, and we recoded these 21 cases into a vocational track, the same as in Taiwan.

**Enrollment in tertiary education:** We divided the highest education level into two categories: “senior high school” or “above.” Five-year technical colleges in Japan and five-year junior colleges in Taiwan are included in tertiary education.

##### Independent variables

The two basic variables used for respondents were age and sex (0: male, 1: female). Other variables used are as follows:

**Parents' occupation and education:** We use only the father's occupation at the time

students were 15 years old, as well as the mother's education level to prevent multicollinearity. The father's occupation was converted to an ISEI (International Socio-Economic Index of Occupational Status) score (Ganzeboom and Treiman 1996). ISEI is perceived as measuring the attributes of occupations derived from a person's education into income, as estimated by the International Standard Classification of Occupation 1988 (ISCO88) of the International Labor Office (Ganzeboom and Treiman 1996: 212). In contrast, a mother's education was recoded according to the years of her schooling; for example, junior high school graduates are nine years, senior high school graduates are twelve years, junior college graduates are fourteen years, and college graduates are sixteen years. There is another reason besides multicollinearity not to include the mother's job, but to use their educational background. This is due to the fact that women in Japan, especially in the 1970s and 1980s, typically quit their jobs after they had children (Brinton 1993).

**Geographic location when students were 15 years old:** Private senior high schools tend to be concentrated in urban or densely populated areas. Therefore, we had to consider regional variation, especially between urban areas and rural areas. In Japan, we divided the areas into two parts, urban and rural, according to prefectures. The former consists of Tokyo, Kanagawa, Osaka, Kyoto, Aichi, Hyogo, Hiroshima, and Fukuoka, and the latter consists of other regional prefectures. This way of dividing the territory stems from two factors: first, the rate of private senior high school students.<sup>2</sup> The second factor is the differences in the senior high school systems between prefectures. Japanese senior high school systems tend to differ slightly among prefectures, in spite of basic similarities (Kagawa et al. 2014). For example, some prefectures allow separate education for males and females in their public schools, and the difficulty of senior high school entrance examinations can differ among prefectures. Therefore, we distinguish students' geographic location not by city or town, but by prefecture.

For the parallel variable in Taiwan, we recode for "city" or "county." "City" includes Taipei City, Keelung City, Hsinchu City, Taichung City, Chiayi City, Tainan City, and Kaohsiung City, along with surrounding districts.

**Number of books when they were 15 years old:** This survey contains the number of books in their houses when they were 15 years old. We recode to the quantitative variable and one unit in the regression coefficient, which means 10 books, although the respondents answer this question as an ordinal variable in the questionnaire. This variable is an indicator of the available cultural capital.

**Grades at the third year in their junior high school:** This survey includes students' self-reported grades for their third year in junior high school by means of five choices: 1 "High," 2 "Slightly high," 3 "Medium," 4 "Slightly low," and 5 "Low." We use this variable after reversing 1 and 5.

Table 1 sums up the basic statistics for variables used in the analyses, except for senior high school type, because senior high school type is the nominal scale.

### Control Variables

**Birth Cohort:** The division of birth cohorts is important because we investigated changes at the beginning of the educational expansion in the two societies. We divided the population

Table 1 Basic statistics for variables used in the analyses

Japan	N	Mean	S.D.	Min	Max
Enrollment in tertiary education	5742	0.27	0.45	0	1
Age	5742	48.40	13.70	20	70
Sex	5742	0.54	0.50	0	1
Father's ISEI	4736	36.70	14.32	16	90
Years of Mother's education	4575	9.55	2.77	6	18
The number of books	4876	6.81	10.35	0.5	50
Grade	5612	3.15	1.01	1	5
Urban / Rural area	5742	0.27	0.44	0	1
Taiwan	N	Mean	S.D.	Min	Max
Enrollment in tertiary education	5379	0.37	0.48	0	1
Age	5379	41.70	13.57	20	70
Sex	5379	0.49	0.50	0	1
Father's ISEI	4834	34.15	13.77	16	88
Years of Mother's education	5293	4.48	3.91	1	21
The number of books	4897	4.06	8.21	0.5	50
Grade	4053	3.27	1.02	1	5
Urban / Rural area	5379	0.29	0.45	0	1

into three birth cohorts: 1935–54, 1955–1969, and 1970–1985. The method of dividing birth cohorts is the same for both Japan and Taiwan, as it is convenient to analyze each of the cohort characteristics for both Japan and Taiwan. Figure 1 shows senior high school expansion in both societies. From Figure 1 it is clear that educational expansion in Taiwan did not catch up with Japan until the end of the period for the third cohort.<sup>3</sup>

### 3-3 Methods

This paper contains three analytical parts, each of which uses different methods. The first part presents descriptive statistics. In this part, the differences between birth cohorts in Japan and Taiwan are analyzed by cross tabulation. In the second part, we use a multinomial logit model for analyzing senior high school types. A multinomial logit model is often used in analyzing school choice because of the good fit to the model's assumptions (Winkelmann and Boes 2005, Lauen 2007). After that, a binary logit model was used for analyzing enrollment in tertiary education, with and without senior high school types.

### 3-4 Hypotheses

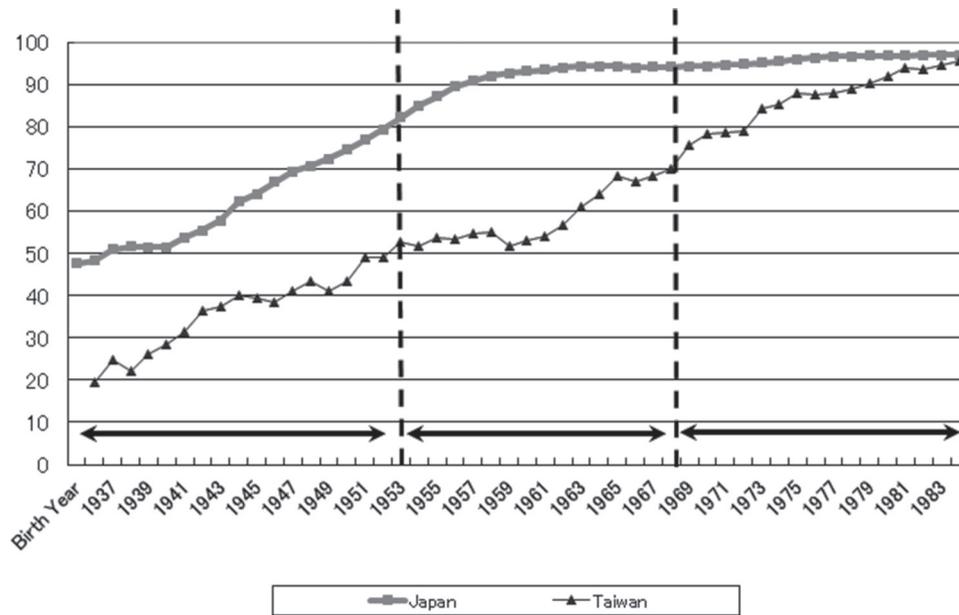
We derive four hypotheses based on the characteristics below:

H1: The lower Japanese and Taiwanese junior high school students were graded, the more frequently they matriculated to private senior high schools.

H2: Students in urban areas attend private senior high schools at a higher rate than students in rural areas.

H3: Private senior high school students attend college less frequently than public senior high school students.

H4: After educational expansion, private academic schools have become more prestigious.



Source: School Basic Survey in Japan and Taiwan

Figure 1 The expansion of upper secondary education in Japan and Taiwan

H1 is generated from these societies' beliefs and senior high school tracking systems. As we suggested in the introduction, people in these two societies tend to believe that national and public schools are more prestigious than private schools. H2 is a result of school management, as in the illustration of variables (3-2). H3 is related to H1, because we may suppose that fewer private senior high school students attend college, since students who are graded lower are concentrated in the private schools. H4 is generated from contemporary Japanese research about "Privatization." Japanese researchers in education have recently indicated that there is an apparent shift toward private academic junior high schools away from existing public junior high schools, especially, in the Tokyo metropolitan area (Kobari 2005, Kataoka 2009).

## 4. Results

### 4-1 Descriptive Results

Table 2 shows the percentages of senior high school types by birth cohorts in Japan and Taiwan. Table 2 shows that the total percentage of enrollees in private senior high schools is approximately 25% in both Japan and Taiwan. However, there is a difference between the societies with regard to students' majors. During its educational expansion, Japan enlarged the academic track in both public and private sectors. In contrast, Taiwan expanded the vocational track in both public and private sectors as Liu indicated (Liu 2009, Liu 2015). The matriculation rates of junior high school graduates are significantly different between the societies; Japan tends toward the public-academic and Taiwan toward the private-vocational.

Tables 3 and 4 show the percentages of senior high school types by junior high school grades, controlled for by birth cohorts in Japan and Taiwan.<sup>4</sup> Two obvious similarities exist. One is that the public academic track is the most common route for students receiving high grades in

Table 2 The percentages of high school types by birth cohorts in Japan and Taiwan

Japan	Birth Cohort			All Cohorts	Taiwan	Birth Cohort			All Cohorts
	35-54	55-69	70-85			35-54	55-69	70-85	
Public Academic	34.7	45.2	48.5	40.7	Public Academic	9.2	13.8	19.9	14.5
Public Vocational	21.0	24.9	21.6	22.2	Public Vocational	10.7	21.2	28.9	20.6
Private Academic	9.2	16.4	18.5	13.3	Private Academic	3.1	4.2	7.7	5.1
Private Vocational	5.8	8.9	6.8	6.9	Private Vocational	7.0	26.2	36.3	23.8
Not Going	29.3	4.7	4.6	16.9	Not Going	70.0	34.6	7.3	36.1
Total %	100.0	100.0	100.0	100.0	Total %	100.0	100.0	100.0	100.0
N	2,840	1,612	1,251	5,703	N	1,649	1,887	1,839	5,375

Table 3 The percentage of high school types by junior high school grades, controlled for by birth cohorts in Japan

Birth Cohort: 1935-54	Low	Middle	High	Cohort Total
Public Academic	12.0	29.7	56.9	34.9
Public Vocational	12.4	23.2	22.9	21.0
Private Academic	10.3	10.4	7.3	9.4
Private Vocational	5.2	8.5	2.5	5.9
Not Going	60.2	28.2	10.5	28.8
Total %	100.0	100.0	100.0	100.0
N	542	1,343	883	2,768
Birth Cohort: 1955-69	Low	Middle	High	Cohort Total
Public Academic	20.9	38.9	72.5	45.3
Public Vocational	28.0	30.9	13.4	24.9
Private Academic	21.8	17.2	11.6	16.5
Private Vocational	16.8	9.3	1.7	8.6
Not Going	12.4	3.7	0.8	4.7
Total %	100.0	100.0	100.0	100.0
N	339	761	484	1,584
Birth Cohort: 1970-85	Low	Middle	High	Cohort Total
Public Academic	27.7	46.5	70.5	48.9
Public Vocational	24.2	27.4	11.4	21.8
Private Academic	24.2	16.5	16.8	18.6
Private Vocational	11.5	7.5	1.4	6.7
Not Going	12.4	2.0	0.0	4.1
Total %	100.0	100.0	100.0	100.0
N	314	544	369	1,227

Table 4 The percentage of high school types by junior high school grades, controlled for by birth cohorts in Taiwan

Birth Cohort: 1935-54	Low	Middle	High	Cohort Total
Public Academic	10.5	14.5	35.9	22.8
Public Vocational	20.9	22.8	31.1	26.0
Private Academic	12.8	7.3	5.9	7.4
Private Vocational	16.3	21.5	12.8	17.2
Not Going	39.5	34.0	14.3	26.6
Total %	100.0	100.0	100.0	100.0
N	86	303	273	662
Birth Cohort: 1955-69	Low	Middle	High	Cohort Total
Public Academic	4.9	9.8	28.5	16.0
Public Vocational	13.4	21.0	33.9	24.5
Private Academic	2.9	5.1	5.7	4.9
Private Vocational	29.7	36.7	23.3	30.3
Not Going	49.0	27.4	8.6	24.3
Total %	100.0	100.0	100.0	100.0
N	306	686	617	1,609
Birth Cohort: 1970-85	Low	Middle	High	Cohort Total
Public Academic	6.7	9.6	39.3	20.4
Public Vocational	25.0	32.7	28.3	29.4
Private Academic	5.6	6.9	10.3	7.9
Private Vocational	47.6	45.5	20.5	36.4
Not Going	15.2	5.3	1.6	6.0
Total %	100.0	100.0	100.0	100.0
N	376	721	682	1,779

both Japan and Taiwan. The other is that lower graded students tend to attend private vocational senior high schools, especially, in Taiwan.

Nevertheless, two major differences can be found. The first is the relative situations of the public vocational and the private academic tracks. In Japan, the lower students' grades are, the more likely they are to choose the public vocational track or private academic track. These trends are not so clear in Taiwan. The second difference is that in Taiwan, students with high grades often choose the vocational track, especially the public vocational track. This situation is different in Japan, where high graded students are apt to concentrate on the academic track, especially the public academic track. The younger the birth cohort is, the clearer this situation is

Table 5 The percentage of students enrolling in tertiary education by high school type in Japan and Taiwan

Japan	Public Academic	Public Vocational	Private Academic	Private Vocational	Not Going	Each Cohort	N
1935–54	31.0	8.7	34.4	10.3	0.0	16.4	2840
1955–69	50.0	14.7	47.4	9.7	1.3	34.9	1612
1970–85	54.5	15.9	59.7	20.0	0.0	42.3	1251
Taiwan	Public Academic	Public Vocational	Private Academic	Private Vocational	Not Going	Each Cohort	N
1935–54	73.0	34.1	47.1	28.5	0.0	13.8	1649
1955–69	79.3	46.3	57.5	35.4	0.2	32.5	1887
1970–85	92.9	61.2	92.3	53.1	0.0	62.5	1839

in Japan.

Table 5 shows the percentage of students enrolling in tertiary education by senior high school type in Japan and Taiwan. This table shows some differences between the two societies, although a similarity is that the academic track is more likely than the vocational track to result in the pursuit of a tertiary education. In Japan, private academic students pursue tertiary education at about the same rate as public academic students. Taiwan shows a marked difference between the public and private academic routes in terms of enrollment in tertiary education. However, the younger the birth cohort is, the smaller the difference between the public and private academic tracks. A noteworthy Taiwanese characteristic in this table is the high ratio of enrollment in tertiary education, especially in the younger cohort.

#### 4-2 Regression analysis of senior high school types

Tables 6 and 7 show the results of the multinomial logit model of attendance at each senior high school type, by contrasting public vocational senior high schools in Japan and Taiwan. The non-parenthetical numbers are logistic regression coefficients, and the parenthetical numbers show the standard error. We ascertained that these results were related to our hypotheses as follows.

The effect of grading is very clear. The grade has a negative effect on “private vocational” and on “not going” in all birth cohorts in both societies. A certain senior high school hierarchy exists according to grades earned by the oldest Japanese cohort and in the first and second Taiwanese cohorts, as follows: “public academic,” “public vocational,” “private academic and private vocational,” and “not going.” However, the younger the birth cohort, the smaller the difference is between public vocational and private academic cohorts. Therefore, after educational expansion senior high school hierarchy in the two societies changed to the following order: “public academic,” “public vocational and private academic,” “private vocational,” and “not going.”

The students’ geographic location at age 15 has a clear effect on attendance in Japanese private schools. There is a consistent effect in particular on the private academic route. In Taiwan, also, there is an effect on private schooling. Particularly in the second and third cohorts, location seems to have a clear effect on the private vocational route.

Table 6 Multinomial logit model of attendance at each high school type, contrasting public vocational high school in Japan

Birth Cohort: 1935–54 Contrasts	Pub Acad vis-à-vis Pub Voc	Pri Acad vis-à-vis Pub Voc	Pri Voc vis-à-vis Pub Voc	Not going vis-à-vis Pub Voc	
Age	-0.002 (0.014)	-0.013 (0.020)	-0.011 (0.023)	0.131 (0.017)	***
Female (Base: Male)	0.679 *** (0.144)	1.056 *** (0.207)	1.351 *** (0.248)	0.646 (0.178)	***
Father's ISEI	0.024 *** (0.006)	0.038 *** (0.008)	0.014 (0.010)	-0.015 (0.009)	
Years of mother's Education	0.014 (0.034)	0.082 + (0.046)	-0.017 (0.056)	-0.250 (0.053)	***
The number of books	0.024 * (0.009)	0.024 * (0.012)	-0.011 (0.019)	-0.139 (0.031)	***
Grade	0.366 *** (0.082)	-0.550 *** (0.119)	-0.546 *** (0.142)	-0.940 (0.108)	***
Urban area (Base: Rural area)	0.143 (0.177)	1.281 *** (0.220)	0.896 ** (0.258)	0.083 (0.232)	
Intercept	-2.099 * (0.868)	-1.378 (1.229)	-0.026 (1.421)	-2.855 (1.100)	**
N			1530		
Birth Cohort: 1955–69 Contrasts	Pub Acad vis-à-vis Pub Voc	Pri Acad vis-à-vis Pub Voc	Pri Voc vis-à-vis Pub Voc	Not going vis-à-vis Pub Voc	
Age	-0.005 (0.021)	0.009 (0.026)	0.045 (0.034)	0.028 (0.054)	
Female (Base: Male)	0.729 *** (0.176)	0.820 *** (0.211)	1.107 *** (0.279)	0.072 (0.420)	***
Father's ISEI	0.027 ** (0.008)	0.035 *** (0.009)	0.025 * (0.012)	-0.039 (0.029)	
Years of mother's Education	0.108 * (0.044)	0.166 ** (0.053)	-0.065 (0.069)	-0.263 (0.119)	*
The number of books	0.036 ** (0.012)	0.052 *** (0.013)	0.012 (0.020)	-0.129 (0.076)	+
Grade	0.875 *** (0.110)	-0.150 (0.125)	-0.663 *** (0.165)	-0.841 (0.243)	**
Urban area (Base: Rural area)	-0.065 (0.216)	0.876 *** (0.235)	0.789 * (0.310)	0.180 (0.591)	
Intercept	-4.656 *** (1.163)	-4.272 ** (1.369)	-2.336 (1.836)	2.679 (3.018)	
N			1013		
Birth Cohort: 1970–85 Contrasts	Pub Acad vis-à-vis Pub Voc	Pri Acad vis-à-vis Pub Voc	Pri Voc vis-à-vis Pub Voc	Not going vis-à-vis Pub Voc	
Age	0.041 + (0.022)	0.012 (0.026)	0.013 (0.036)	0.041 (0.060)	
Female (Base: Male)	0.371 + (0.191)	0.467 * (0.237)	0.359 (0.319)	-0.596 (0.520)	
Father's ISEI	0.018 * (0.008)	0.036 *** (0.010)	0.025 + (0.014)	0.022 (0.022)	
Years of mother's Education	0.127 * (0.063)	0.124 (0.076)	-0.074 (0.102)	-0.468 (0.168)	**
The number of books	0.023 + (0.012)	0.039 ** (0.013)	-0.032 (0.028)	0.011 (0.038)	
Grade	0.530 *** (0.101)	0.016 (0.122)	-0.398 * (0.169)	-0.731 (0.270)	**
Urban area (Base: Rural area)	0.462 * (0.226)	1.034 *** (0.259)	0.794 * (0.345)	1.067 (0.534)	*
Intercept	-4.700 *** (1.072)	-4.364 ** (1.294)	-0.812 (1.718)	2.649 (2.761)	
N			825		

\*\*\*: p&lt;.001, \*\*: p&lt;.01, \*: p&lt;.05, +: p&lt;.10

Table 7 Multinomial logit model of attendance at each high school type, contrasting public vocational high school in Taiwan

Birth Cohort: 1935–54 Contrasts	Pub Acad vis-à-vis Pub Voc	Pri Acad vis-à-vis Pub Voc	Pri Voc vis-à-vis Pub Voc	Not going vis-à-vis Pub Voc		
Age	0.039 (0.027)	-0.003 (0.043)	-0.061 (0.033)	+	0.080 (0.026)	**
Female (Base: Male)	-0.367 (0.291)	0.139 (0.424)	0.666 (0.298)	*	0.792 (0.284)	**
Father's ISEI	0.023 (0.009)	** 0.009 (0.014)			-0.022 (0.011)	*
Years of mother's Education	0.121 (0.045)	* 0.135 (0.062)	*		-0.034 (0.054)	
The number of books	-0.005 (0.021)	0.005 (0.027)			-0.033 (0.037)	
Grade	0.363 (0.135)	* -0.347 (0.195)	+		-0.529 (0.137)	***
Urban area (Base: Rural area)	0.294 (0.282)	0.038 (0.428)			-0.403 (0.314)	
Intercept	-4.892 (1.579)	** -0.929 (2.440)			3.828 (1.856)	*
N			528			
Birth Cohort: 1955–69 Contrasts	Pub Acad vis-à-vis Pub Voc	Pri Acad vis-à-vis Pub Voc	Pri Voc vis-à-vis Pub Voc		Not going vis-à-vis Pub Voc	
Age	0.020 (0.020)	-0.015 (0.031)	-0.059 (0.018)	**	0.034 (0.021)	
Female (Base: Male)	-0.088 (0.180)	-0.010 (0.277)	0.225 (0.155)		0.492 (0.178)	**
Father's ISEI	0.021 (0.007)	** 0.019 (0.010)	+		-0.055 (0.010)	***
Years of mother's Education	0.069 (0.031)	* 0.142 (0.043)	**		-0.134 (0.038)	***
The number of books	0.022 (0.011)	* 0.027 (0.014)	+		-0.121 (0.038)	**
Grade	0.493 (0.102)	*** -0.256 (0.150)	+		-0.975 (0.101)	***
Urban area (Base: Rural area)	0.270 (0.207)	0.610 (0.297)	+		1.036 (0.177)	***
Intercept	-4.291 (0.969)	*** -1.860 (1.458)			3.492 (0.991)	***
N			1354			
Birth Cohort: 1970–85 Contrasts	Pub Acad vis-à-vis Pub Voc	Pri Acad vis-à-vis Pub Voc	Pri Voc vis-à-vis Pub Voc		Not going vis-à-vis Pub Voc	
Age	0.025 (0.020)	-0.033 (0.027)	0.016 (0.016)		0.066 (0.034)	+
Female (Base: Male)	0.312 (0.161)	+	0.479 (0.213)	*	0.400 (0.132)	**
Father's ISEI	0.024 (0.007)	*** 0.041 (0.009)	***		0.006 (0.006)	0.002 (0.013)
Years of mother's Education	0.118 (0.027)	*** 0.127 (0.036)	***		0.016 (0.022)	-0.093 (0.048)
The number of books	0.008 (0.008)	0.012 (0.010)			-0.008 (0.008)	-0.133 (0.049)
Grade	0.924 (0.094)	*** 0.214 (0.115)	+		-0.421 (0.072)	*** -1.077 (0.154)
Urban area (Base: Rural area)	0.407 (0.171)	** 0.213 (0.226)			0.373 (0.142)	** -0.604 (0.357)
Intercept	-6.543 (0.728)	*** -4.241 (0.911)	***		0.474 (0.556)	0.129 (1.183)
N			1535			

\*\*\*: p&lt;.001, \*\*: p&lt;.01, \*: p&lt;.05, +: p&lt;.10

Table 8 The logistic regression of enrollment in tertiary education in Japan

Birth Cohort	Model 1			Model 2		
	1935–1954	1955–1969	1970–1985	1935–1954	1955–1969	1970–1985
Age	–0.081 *** (0.016)	0.033 + (0.018)	–0.015 (0.019)	–0.087 *** (0.016)	0.043 * (0.019)	–0.026 (0.020)
Female (Base: Male)	–1.512 *** (0.169)	–0.769 *** (0.152)	–0.023 (0.168)	–1.738 *** (0.179)	–0.913 *** (0.161)	–0.095 (0.174)
Father's ISEI	0.040 *** (0.006)	0.033 *** (0.006)	0.041 *** (0.007)	0.036 *** (0.006)	0.030 *** (0.006)	0.039 *** (0.007)
Years of mother's Education	0.186 *** (0.036)	0.135 *** (0.036)	0.098 + (0.055)	0.182 *** (0.037)	0.107 ** (0.038)	0.071 (0.057)
The number of books	0.019 ** (0.007)	0.020 ** (0.007)	0.007 (0.008)	0.014 + (0.008)	0.013 + (0.007)	0.002 (0.009)
Grade	0.782 *** (0.092)	0.841 *** (0.089)	0.875 *** (0.095)	0.777 *** (0.099)	0.703 *** (0.096)	0.831 *** (0.099)
Urban area (Base: Rural area)	0.463 ** (0.171)	0.352 * (0.167)	0.488 ** (0.178)	0.391 * (0.181)	0.337 + (0.176)	0.368 * (0.186)
Public-Academic				1.473 *** (0.223)	1.282 *** (0.214)	1.348 *** (0.236)
Private-Academic				1.890 *** (0.292)	1.353 *** (0.250)	1.635 *** (0.287)
Private-Vocational				0.145 (0.457)	–0.458 (0.441)	0.377 (0.414)
Intercept	–1.902 * (0.957)	–7.078 *** (0.998)	–5.601 *** (0.945)	–2.307 (1.000)	–7.366 *** (1.042)	–5.683 *** (0.985)
N	1220	988	811	1220	988	811

\*\*\*:  $p < .001$ , \*\*:  $p < .01$ , \*:  $p < .05$ , +:  $p < .10$

### 4-3 Regression analysis of senior high school graduates

Tables 8 and 9 show the results of the logistic regression of enrollment in tertiary education in Japan and Taiwan, excluding junior high school graduates who do not go to senior high school. Model 1 consists of variables prior to senior high school attendance, and Model 2 consists of variables that include senior high school types. As in Tables 6 and 7, the non-parenthetical numbers are logistic regression coefficients and the parenthetical numbers show the standard error. We ascertained that these results are related to our hypotheses as follows.

Senior high school types obviously have an effect, particularly for the public academic routes. However, the private academic route is also significant in Japan. The logistic regression coefficients for private academic schools are higher than those for public academic schools in all cohorts. In Taiwan, the private academic route does not have such a significant effect on enrollment in tertiary education, except in the youngest cohort. In contrast, Taiwanese private vocational students do not attend college in very significant numbers.

Although these senior high school effects are not small, the parents' effects are both direct and indirect as demonstrated in Models 1 and 2. In particular, the father's occupation has a consistent effect in all birth cohorts in both Japan and Taiwan.

## 5. Summary of results, and conclusion

### 5-1 Summary of results

Hypothesis 1, "The lower Japanese and Taiwanese junior high school students were graded,

Table 9 The logistic regression of enrollment in tertiary education in Taiwan

Birth Cohort	Model 1			Model 2		
	1935–1954	1955–1969	1970–1985	1935–1954	1955–1969	1970–1985
Age	–0.024 *** (0.024)	–0.034 * (0.016)	–0.049 ** (0.016)	–0.044 + (0.026)	–0.050 ** (0.017)	–0.053 ** (0.017)
Female (Base: Male)	–0.959 ** (0.266)	–0.310 * (0.140)	0.068 (0.128)	–0.851 ** (0.277)	–0.287 * (0.144)	0.066 (0.133)
Father's ISEI	0.028 *** (0.008)	0.021 *** (0.006)	0.034 *** (0.006)	0.023 * (0.009)	0.018 ** (0.006)	0.031 *** (0.007)
Years of mother's Education	0.147 (0.040)	0.140 *** (0.025)	0.089 *** (0.022)	0.136 ** (0.042)	0.135 *** (0.026)	0.071 ** (0.023)
The number of books	0.022 (0.021)	0.021 * (0.010)	0.028 ** (0.009)	0.024 (0.021)	0.018 + (0.010)	0.024 ** (0.009)
Grade	0.738 *** (0.127)	0.772 *** (0.081)	0.747 *** (0.071)	0.655 *** (0.132)	0.641 *** (0.085)	0.579 *** (0.076)
Urban area (Base: Rural area)	–0.194 (0.249)	0.056 (0.152)	0.304 * (0.140)	–0.229 (0.262)	0.225 (0.161)	0.311 * (0.144)
Public-Academic				1.275 *** (0.294)	1.137 *** (0.214)	1.436 *** (0.256)
Private-Academic				0.545 (0.422)	0.138 (0.306)	1.340 *** (0.360)
Private-Vocational				–0.293 (0.328)	–0.397 * (0.171)	–0.328 * (0.142)
Intercept	–2.827 * (1.391)	–2.557 *** (0.721)	–2.435 *** (0.543)	–1.582 (1.484)	–1.434 + (0.772)	–1.647 ** (0.570)
N	401	1041	1461	401	1041	1461

\*\*\*:  $p < .001$ , \*\*:  $p < .01$ , \*:  $p < .05$ , +:  $p < .10$

the more matriculated to private senior high schools,” is accepted. However, this difference between public vocational and private academic schools weakens in the younger cohort.

Hypothesis 2, “Students in urban areas tend to attend private senior high schools at a rate higher than students living in rural areas,” is accepted. This characteristic becomes clear if one examines the private route in each society. Specifically, in Japan, students in urban areas are apt to go to private academic schools, while Taiwanese students in urban areas are more apt to enroll in private vocational schools.

Hypothesis 3, “Private senior high school students matriculate to college less frequently than public senior high school students,” is obviously rejected in Japan. Students in Japanese private academic senior high schools are more apt to pursue tertiary education than are students on the public vocational track, and the private academic schools’ logistic regression coefficients are higher than public academic ones in all cohorts. However, this hypothesis is not rejected in Taiwan, although there is a similar trend in the youngest birth cohort. Rather, we may say that for Taiwan, this hypothesis is accepted since Taiwanese private vocational students, who comprise the largest group in Taiwanese schools, do not attend college in significant numbers.

Hypothesis 4, “After educational expansion, private academic schools have become more prestigious,” is accepted in both societies. We confirmed the existence of a new trend in private school education: the rise of private academic education in the younger cohort. The differences in grades between private academic senior high school students and public vocational senior high school students diminishes as the birth cohort becomes younger in both societies.

## 5-2 Conclusion

In the introduction, we raised two research questions: What role does senior high school choice play, in terms of the choice between public and private, and between academic and vocational education in Japan and Taiwan? How do senior high school students matriculate on to tertiary education in both of these societies?

In both societies, students with higher achievements had a tendency to enroll in public academic senior high schools, and, students with lower achievements had a tendency to attend private senior high schools. Lower graded students tend to go to private vocational senior high schools in both Japan and Taiwan. In these societies, many senior high school students now enroll in tertiary education, even without having attended public academic senior high schools. This trend includes private academic students in Japan, and even vocational senior high school students in Taiwan. Additionally, we confirmed the existence of a new trend, already predicted and observed by earlier researchers, after educational expansion, privatization would occur in senior high schools of these two societies (Chubb and Moe 1988, Walford 1990).

Our findings about private senior high schools and senior high school choice will be relevant to societies that are less industrialized than Japan and Taiwan because these societies have large numbers of private senior high schools (Tan and Mingat 1992). We view as remarkable the trend toward private senior high school education in Japan and Taiwan. We need to continue to monitor this trend, not only in these two societies, but also in other East Asian countries.

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## Notes

1. This belief has been observed in educational studies in other late industrialized East Asian countries, like China (Bao 2004).
2. For example, Hokkaido and Miyagi also have large urban areas (Sapporo and Sendai). However, these two prefectures adopt relatively traditional school tracking, especially Miyagi, and they have large rural areas. Therefore, we recode these prefectures into the rural area.
3. Taiwanese compulsory education was extended from six years to nine years in 1968. Many Taiwanese primary graduates in the first cohort did not go to tertiary schools.
4. Taiwanese people who did not provide their grades in junior high school are not included in this result since almost none of them graduated from junior high school, especially in the older cohort. In each birth cohort, the numbers of such observations were 987, 278, and 60.

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