

Determinants of Information Gaps on College Tuition and the Scholarship System

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Abstract

This paper addresses junior and senior high school students' awareness levels of college tuition costs and the scholarship system; it also examines the determinants of students' awareness of such financial information, using data from the Japan Education Longitudinal Study that had been collected from an area in the Kanto region in 2009. The main findings are as follows.

The percentages of students in both the ninth and 12th grades who know the actual cost of college tuition are small; a high percentage of them overestimated the cost. Knowledge of national college tuition costs may be related to family's economic and cultural background, the practice of reading newspapers, and the type of senior high school that the student attends. More than 90 percent of students surveyed in the 12th grade, as well as more than 70 percent of students surveyed in the ninth grade, were aware of the scholarship system; in addition, more than 10 percent of 12th grade students had applied for reserve scholarship loans. Among ninth-grade students, gender, achievement, and newspaper-reading have a direct influence on awareness of scholarship system; among 12th-grade students, gender, achievement, the family's cultural environment, and college access expectations directly influence awareness of the scholarship system. Determinants of application for reserve scholarship loans include achievement, parental education, household possessions, and college access expectations. Parental education and household possessions show a negative correlation, while achievement and college access expectations show a positive one.

In summary, there are information gaps among students regarding college tuition costs and scholarship system's awareness. If one were to take into consideration the striking absence of knowledge of college tuition costs and the absence of information among students with less-advantaged backgrounds, the conclusion could be readily made that schools in Japan should more actively provide their students with information about both college tuition and scholarships.

Key words: information gap, college tuition, scholarship system, family background, academic achievement, ninth grade, 12th grade

1. Introduction

In the United States, information gaps have received much attention in research into college access. Within this context, what is called "information" chiefly includes that pertaining to the cost of tuition, other higher-education expenses, the economic benefits of a higher education, and the possibility of receiving student assistance. Previous research suggests that both overestimating higher-education expenses and underestimating the return on higher education, or the possibility of receiving student assistance, may reduce the possibility of college entry among low-income students (*Research Report on USA's Scholarship System*, p. 78). Many empirical studies have been conducted on information gaps among senior high school students; and counselors' provision of financial information has

increased in many high schools in the United States (Burdman, 2005, etc.).

In Japan—where public expenditures for higher education are relatively low and families' educational expenses are increasing—research into higher education expenses and scholarships have increased since the 1990s (Yano et al., 1998; Kobayashi, 2001; Furuta, 2006; Kobayashi, 2007a and 2009). However, most of these studies focus on college students; only a few focus on senior high school students (Kobayashi, 2007b; Shima, 2007; Fujimura, 2009). At what point do youth become aware of information available vis-à-vis higher-education expenses, scholarships, and returns on higher education? Does their possession of financial information correlate with family background, academic achievement, or their educational expectations? Virtually no study even touches upon these questions.

Therefore, this paper addresses Japanese junior and

senior high school students' awareness levels regarding college tuition costs and the scholarship system¹; it also examines the determinants of whether or not they have such financial information, using data from the 2009 Japan Education Longitudinal Study (JELS2009) that were collected from an area of the Kanto region in Japan.

2. Data

2.1. About JELS2009

JELS2009 is a third-wave survey component of the Japan Education Longitudinal Study². The questionnaire surveyed students, guardians, and teachers, and tested mathematics achievement among third-, sixth-, and ninth-grade students, between October and December 2009. The object schools and grades were selected in 2003, when the first-wave survey of this study was initiated in this area. About half of the public elementary schools and junior high schools were chosen at random, and all public senior high schools in this area participated. The object

grades were the third, sixth, ninth, and 12th grades. Following the design of fixed-point observation and of a longitudinal study, the JELS research members conducted the surveys once every three years, for a total of three times.

Three surveys targeting the ninth- and 12th-grade students were conducted: (1) The ninth-grade student questionnaire survey, (2) the ninth-grade student mathematics achievement test, and (3) the 12th-grade student questionnaire survey. Eight junior high schools and nine senior high schools participated in this investigation. Students received explanations from their teachers prior to filling in the questionnaire. In brief, self-administered student questionnaire surveys were conducted; data from the ninth- and 12th-grade student questionnaires were used in this paper, as well as scores from the ninth-grade students' mathematics achievement tests. Each student survey had a high response rate, of approximately 90 percent (see Table 1).

Table 1. Grades, Samples, and Response Rates

	Samples	Response Rates
Ninth-grade Student Questionnaire	917	91.6%
Ninth-grade Math Achievement Test	880	87.9%
12th-grade Student Questionnaire	1964	92.6%

The student questionnaires asked questions about daily life in school, extra-curricular education, domestic life, the student's family's cultural and economic background, course/college selection, education expectations, awareness of college tuition and scholarships, career awareness, and value judgments. For the current study, responses regarding higher-education expenses and scholarships from the third-wave survey were incorporated for the first time.

In addition, databases were created and statistical analysis performed through the use of SPSS v.18.0. The author obtained permission to use the database, as a member of the JELS research group.

2.2. Survey Area

The survey area is a city located in the Kanto region; it has a population of 250,000. Compared to the whole of Japan, this area is somewhat affluent. The scores of this area's students in the national achievement tests are not as high as averages of the whole of the prefecture. There are college campuses in the city, and the students are quite likely to attend colleges located in the Kanto region in the near future, while living in their parents' homes. In addition, it has become relatively easy to gather information on college tuition and scholarship from the Internet. All considered, the sample students live in an

environment where information about college can be collected easily, and if they attend local colleges, education expenses will be relatively low.

3. Analytical Framework and Methods

Figure 1 shows the analytical framework of the current study, which analyzes the determinants of whether or not students have accurate information about college tuition, are aware of Japan's scholarship system, and have applied for reserve scholarship loans. As main factors, controls for gender, academic achievement, family background, information collection, and college access expectations were included; in the case of 12th-grade students, a control for school type was also included.

To assess the effects of these factors on the presence or absence of an information gap—namely, the three dichotomous dependent variables mentioned above—a logistic regression model was used. The equation is of the form

$$\log(p/(1 - p)) = B_0 + B_1X_1 + B_2X_2 + \dots + B_pX_p,$$

where $p/(1 - p)$ is the odds, and $\log(p/(1 - p))$ is the odds ratio—namely, $\text{Exp}(B)$ in Tables 6, 7, and 8. B_0 is the intercept. B_p is the regression coefficient of X_p —namely, Beta in Tables 6, 7, and 8.

Table 2 provides descriptions of the dependent and independent variables of the current study. The family

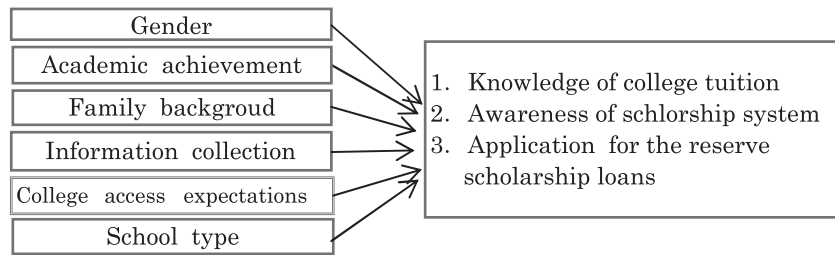


Figure 1. Analytical Framework

background variables included parental education, household possessions, and cultural environment. Newspaper-reading and Internet access represent the practice of information collection. Senior high schools are sorted into three types: academic senior high schools,

general senior high schools, and vocational senior high schools. Academic senior high schools and general senior high schools were input into the senior high school models as dummy variables, and the vocational high schools served as the reference group.

Table 2. Descriptions of Variables

Name of Variable	Description
Dependent Variables	
Knowledge of college tuition	Coded (1) for students who answered the cost of national college tuition correctly and (0) for others.
Awareness of scholarship system	Coded (1) for students who know about the scholarship system and (0) for others.
Application for reserve scholarship loans	Coded (1) for 12th-grade students who know about the scholarship system and applied for reserve scholarship loans, and (0) for students who know about the scholarship system but did not apply for any reserve scholarship loan.
Independent Variables	
Gender	Coded (1) for boys and (0) for girls.
Academic scores	Ninth-grade students' mathematical scores on JELS's achievement test.
Academic self-evaluation	12th-grade students' self-rating of academic ability coded (5) highest, (4) above average, (3) average, (2) below average, (1) lowest.
Parental education	Combined level of parents' education. In the ninth grade, coded (1) for "father or mother has experience at junior college or university" and (0) for "father and mother have no experience at junior college or university." In the 12th grade, it is the average of father's and mother's educational level (years).
Household possessions	This variable was formed by summing seven dichotomous items representing household possessions. Scores were calculated by Hayashi's Quantification Methods. Items include a computer for respondent's study, clothes dryer, dishwasher, digital camera, flat-screen television, respondent's own cell phone, and newspaper subscriptions. Each of these items was coded (1) yes or (0) no.
Cultural environment	This variable was formed by summing six dichotomous items representing the family's cultural environment. Scores were calculated by Hayashi's Quantification Methods. The items are as follows. 1. We have a lot of books at home (not including comics and magazines). 2. I watch news on TV or on the Internet with my family. 3. I have space to study at home. 4. When I was young, my family often read books to me. 5. My family has checked my homework in the past month. 6. My family has taken me to a museum or gallery. Each of these six items was coded (1) yes, or (0) no.
Internet access	Students' self-rating of Internet access was coded (1) never, (2) rarely, (3) sometimes, (4) often.
Newspaper reading	Students' self-rating of newspaper reading. Same coding as above.
College access expectations	A dichotomous variable indicating whether the student wants to go to college or not. Coded (1) for college access expectation and (0) for others.
Academic senior high school	Most of students at this type of senior high school go to college. A dummy variable with vocational senior high school as the reference group.
General senior high school	About half of students at this type of high school go to college. A dummy variable with vocational senior high school as the reference group.

4. Findings

4.1. Descriptive Results

At present, the annual tuition for national colleges is about 530,000 yen; while the annual tuition for private colleges varies widely, most of them charge 0.6–1.0 million yen. Some of them charge 1.0 – 1.5 million yen each year, and only a few charge more than 1.5 million yen. However, in our student surveys, only 16.6 percent of the ninth-grade students and 15.5 percent of the 12th-

grade students selected the correct range for national college tuition. Only 7.0 percent of those in the ninth grade and 5.0 percent in the 12th grade indicated that they thought private college tuition cost between 0.6 and 1.0 million yen (see Table 3). More than half of the students overestimated both national college tuition and private college tuition. Although in Japan parents generally pay college tuition on behalf of the students, the students' obvious overestimation of college tuition costs is still a notable result.

Table 3. Student Knowledge of National/Private College Tuition

	Ninth Grade		12th Grade	
	National College	Private College	National College	Private College
Under 300,000 yen	8.7	2.0	4.1	0.6
300,000 – 600,000 yen	16.6	1.7	15.5	0.5
600,000 – 1,000,000 yen	23.2	7.0	30.2	5.0
1,000,000 – 1,500,000 yen	22.1	14.9	24.6	28.7
1,500,000 – 2,000,000 yen	15.5	26.0	13.4	30.4
2,000,000 yen and over	7.2	41.9	5.6	28.9
NA	6.7	6.5	6.6	5.9

On the other hand, more than 70 percent of students in the ninth grade and 90 percent of students in the 12th grade were aware of the scholarship loan programs for college students (see Table 4). Table 4 also shows that

25.5 percent of ninth-grade students and 6.1 percent of 12th-grade students know nothing about the scholarship system.

Table 4. Student Awareness of Scholarship System

	Ninth Grade	12th Grade
“Yes, I know”	72.3	91.7
“No, I don't know”	25.5	6.1
NA	2.2	2.2
Total (N)	100% (895)	100% (1964)

Question: “Do you know there are scholarship loan programs for college students?”

It is certain that there is an information gap, or at least an uneven distribution of knowledge, regarding college tuition and the scholarship system among Japanese students in both the ninth and 12th grades.

The 12th-grade students who were aware of the scholarship system were also asked whether they had applied for any reserve scholarship loans. Table 5 shows

that 78.7 percent of these students had not applied for any reserve scholarship loans, 3.9 percent had applied for category 1 loans (i.e., without interest), 7.7 percent had applied for category 2 loans (i.e., with interest), and 7.1 percent had applied for both. The current study will also examine the determinants of application for reserve scholarship loans.

Table 5. Reserve Scholarship Loan Application Percentages, among Students Aware of Scholarship System

I did not apply for any loans	I applied for Category 1 loans	I applied for Category 2 loans	I applied for both Category 1 and 2	NA	Total
78.7	3.9	7.7	7.1	2.6	100% (1801)

4.2. Logistic Regression Analysis Results

4.2.1. Determinants of Information Gap on College Tuition

Constructing a proper logistic regression model on knowledge of college tuition is not a straightforward task, whether one is using data from ninth-grade or from 12th-

grade students. A proper model regarding knowledge of private college tuition could not be constructed, despite every effort having been made. Table 6 shows the results for the determinants of knowledge of national college tuition. Although a model test and a Hosmer & Lemeshow test indicate significant values in both the ninth- and 12th-grade models, the Nagelkerke R^2 values are small³. The ninth-grade model shows that household possessions have a negative effect and that the family's

cultural environment has a positive effect on knowledge of national college tuition. The findings from the 12th-grade model were that both household possessions and newspaper-reading had a positive effect, and that the effect of household possessions was not significant. In addition, a greater percentage of students from academic senior high schools and general senior high schools answered this question correctly than those from vocational senior high schools.

Table 6. Logistic Regression Analysis of Knowledge of National University Tuition

	Ninth Grade		12th Grade	
	Beta	Exp (B)	Beta	Exp (B)
Gender	-.334	.716	.264	1.302
Academic scores	-.004	.996		
Academic self-evaluation			.049	1.050
Parental education	.255	1.291	.019	1.019
Household possessions	-.466 *	.627	.316 *	1.372
Cultural environment	.458 *	1.580	-.253	.776
Internet access	.204	1.227	-.012	.988
Newspaper reading	-.136	.873	.137 *	1.147
College access expectations	-.043	.958	.331	1.392
Academic senior high school			.434 *	1.543
General senior high school			.417 *	1.518
Intercept	-1.726 ***	.178	-3.028 ***	.048
Hosmer & Lemeshow test χ^2 p-level	9.422	.308	8.239	.410
Model χ^2	16.322 *		31.470 ***	
-2logL		618.082		1360.244
Nagelkerke R^2		.039		.034
<i>N</i>		707		1548

* $p < .05$, *** $p < .001$.

4.2.2. Determinants of Information Gap Regarding the Scholarship System

In the logistic regression model of whether ninth-grade students were aware of Japan's scholarship system (see Table 7), the direct effects of gender, academic scores, and newspaper-reading were documented. Girls tend to be more aware of this system than boys, and both students with high scores in our achievement test and those who often read the newspaper are more aware of this system. The cultural environment of the family indirectly affects academic scores, and thus impinges upon awareness of the scholarship system. Students from more cultured environments exhibit better achievement and are also well aware of the scholarship system. Moreover, the influence of college access expectations disappeared when a control was added for academic scores.

Table 8 shows the determinants of the 12th-grade students' awareness of the scholarship system and those

students' applications for reserve scholarship loans. Gender, academic self-evaluation, family cultural environment, and college access expectations each has a direct influence on awareness of the scholarship system. In particular, college access expectations have a strong impact. The odds ratio of 4.418 indicates that those who expected to go to college are more than three times more likely to know about the system than those who did not want to go to college. Furthermore, academic self-evaluation, parental education, household possessions, and college access expectations directly influence the application for reserve scholarship loans. Those with lower-income backgrounds and those who assessed their own achievement highly tend to apply for this type of loan more frequently. College access expectations also have a strong impact. School type is not significant in either of the two models; there are two postulated reasons for this. The first is that the percentage of awareness of the scholarship system is very high in this

Table 7. Logistic Regression Analysis of Awareness of Scholarship System (Ninth Grade, N = 727)

	M1		M2	
	Beta	Exp (B)	Beta	Exp (B)
Gender	-.338 *	.713	-.370 *	.691
Academic scores			.017 ***	1.017
Parental education	-.090	.914	-.207	.813
Household possessions	-.229	.795	-.285	.752
Cultural environment	.352 *	1.422	.312	1.366
Internet access	.025	1.026	.042	1.043
Newspaper reading	.373 ***	1.452	.339 **	1.404
College access expectations	.723 ***	2.060	.379	1.461
Intercept	-.086	.918	-.770 *	.463
Hosmer & Lemeshow test χ^2 p-level	5.115	.745	17.250	.028
Model χ^2	50.132	***	64.764	***
-2logL		763.636		749.003
Nagelkerke R ²		.099		.127

*p<.05, **p<.01, ***p<.001.

grade (i.e., over 90 percent). The second is that the number of students permitted to apply for the reserve

scholarship loans is distributed among high schools on the basis of enrollment.

Table 8. Logistic Regression Analysis of Awareness of Scholarship System and Application for Reserve Scholarship Loans (12th Grade)

	Awareness of Scholarship System		Application for Reserve Scholarship Loans	
	Beta	Exp (B)	Beta	Exp (B)
Gender	-1.327 ***	.265	.136	1.146
Academic self-evaluation	.302 **	1.352	.253 ***	1.288
Parental education	.115	1.122	-.123 **	.885
Household possessions	-.245	.782	-.394 *	.674
Cultural environment	.626 **	1.870	-.016	.984
Internet access	.194	1.215	.053	1.055
Newspaper reading	.103	1.109	.055	1.057
College access expectations	1.486 ***	4.418	2.177 ***	8.820
Academic senior high school	-.607	.545	-.069	.822
General senior high school	-.432	.649	-.196	.933
Intercept	.192	1.211	-2.865 ***	.057
Hosmer & Lemeshow test χ^2 p-level	3.873	.868	4.918	.766
Model χ^2	110.951	***	118.611	***
-2logL		517.380		1357.986
Nagelkerke R ²		.206		.120
N		1590		1558

*p<.05, **p<.01, ***p<.001.

5. Conclusions

In the area we surveyed, the percentage of students

who correctly know college tuition costs are small in both ninth and 12th grades, with a high proportion of students overall overestimating those costs. It is not easy to

construct a logistic regression model that shows who knows the correct cost of college tuition; attempts were made to construct logistic regression models on the dichotomous variables of national college tuition, private college tuition⁴, and a combination of both, coding 1 for students who answered either the national college tuition or private college tuition correctly, and coding 0 for others. Unfortunately, only the model test of the logistic regression analysis on national college tuition was found to be significant; however, the Nagelkerke R^2 values show that the fit of that model is not very good. The finding derived from this model is that knowledge of national college tuition costs may correlate with one's family's economic and cultural background, the practice of newspaper-reading, and the type of senior high school that one attends.

With regard to awareness of Japan's scholarship system—perhaps because this study asked only the question, “Do you know there are scholarship loan programs for college students?”—almost of the students gave an affirmative answer. In addition, the 12th-grade students who had applied for reserve scholarship loans accounted for about 18 percent of those who knew about the scholarship system. Their levels of awareness of the scholarship system are expected to differ greatly from that of other students. In the ninth grade, gender, achievement, and newspaper-reading were each found to bear a direct influence; in the 12th grade, meanwhile, gender, achievement, family cultural environment, and college access expectations each have a direct influence on awareness of the scholarship system. The fit of models *vis-à-vis* awareness of Japan's scholarship system are relatively good. The determinants of application for reserve scholarship loans include achievement, parental education, household possessions, and college access expectations. Parental education and household possessions show negative correlations, while achievement and college access expectations each show positive ones. The speculation is that this is a reflection of the application requirements: students, for example, are required to cite achievement scores and household income when filling out applications for reserve scholarship loans. Regarding information collection, the impact of newspaper-reading was determined (Tables 6 and 7), but Internet access was not found to bear any impact.

In summary, there are information gaps among students regarding their knowledge of college tuition costs and their awareness of scholarship programs. An absence of knowledge concerning college tuition is conspicuous in both of the two grades studied. It does appear that the percentage of students who become aware of the Japanese scholarship system increases during the three years of senior high school. Considering the striking absence of knowledge regarding college

tuition costs and the absence of information among students from less-advantaged families, schools in Japan should be more active in providing students with the aforementioned financial information. With respect to students' educational expectations and path selections, it is highly desirable to focus attention to the provision of information by school—in particular, among junior high schools.

Notes

1. The only official scholarships in Japan are loans, not grants.
2. This study was initiated in 2003 to examine the growth process of children from elementary school to the beginning of adulthood. In addition to the area analyzed in this paper, surveys were also conducted in an area of the Tohoku region.
3. For details pertaining to the testing of the logistic regression model, please refer to Uchida (2004).
4. To construct a good-fitting logistic regression model *vis-à-vis* knowledge of private college tuition costs, an attempt was made to code the alternative of 0.6–1.0 million yen for the correct answer, or code the interval of 0.6–1.5 million yen for the correct answer. Nonetheless, it is difficult to construct a significant model.

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