An Effective Job Market Strategy or Redundant Investment? Evaluating the Relationship between Private Education Participation and Occupational Outcomes for College Students

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요 약

본 연구는 한국교육고용패널조사(KEEP) 데이터를 활용하여 대학생의 사교육 참여가 취업에 미치는 영향을 분석하였다. Propensity Score Matching 기법을 적용하여 분석을 실시한 결과, 대학생의 사교육 참여는 졸업 이후 취업에 통계적으로 유의미한 영향을 미치지 못하는 것으로 나타났다. 사교육 참여는 학생들의 취업 여부에는 부정적 영향을 미치지만 정규직 취업과 임금 수준에는 긍정적인 영향을 미치는 것으로 나타났다. 더불어 사교육 참여의 취업 여부, 정규직 취업, 임금 수준에 미치는 긍정적 영향은 서울 소재 대학을 졸업한 학생들에게 더욱 크게 작용하는 것으로 나타났다. 따라서 학생들은 취업 준비 과정에서 무조건적으로 '스펙'쌓기를 위한 사교육에 집중하기 보다는 특정 직업에 직접적으로 연관이 되는 활동 들을 중심으로 준비하는 것이 바람직하며 대학들은 이러한 과정을 지원해야 할 것이다.

I. Introduction

In recent years, job market for college graduates has become tight. The youth unemployment rate was 7.5% in 2012, which is about two times higher than 3.5% of the average unemployment rate (Statistics Korea, 2012). One third of the available jobs are filled by part-time positions. Under these circumstances, college students fear about not securing a decent job. Students perceive that they need to be equipped with good "spec"[2] — a high GPA, high English and other language proficiency test scores, and more certificates.

Expecting better "spec" on their resume to make them look better to employers' eyes and help them secure a job, students invest significant amount of time and money in improving these factors (Park, 2006). In particular, college students' participation in private education has significantly increased in recent years. According to a survey conducted by a career portal, 77% of the respondents who are in college are receiving

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[2] the word "spec" is the abbreviation of the word "specification." Regarding job searching process, "spec" refers to possible evaluation criteria or requirements that are considered to reflect the ability of an individual. Often it includes educational credential, GPA, language proficiency, work experience, and others.

private education, and the average spending on private education was 321,000 KRW per month.

Meanwhile, mixed trends have reported on whether employers value what students invest for. Some argue that employers look for candidates' skills based on their college major, English test score (Lee & Kim, 2006), and work-related certificates (Kang & Park, 2002; Kim, 2002; Lee, 2006), thus, college students need to be strategic and prepare for those requirements (Jin & Yoon, 2003). On the other hand, others insist that the increased spending on "spec" is not necessarily beneficial for job attainment. From their observation of new workforce who just graduated from college, companies learned that what they see on the resume does not guarantee individuals' job performance. Therefore, companies rather look for "soft" skills, such as interpersonal skills, communication skills, and personality (Conrad, 1999).

Despite an increased participation of college students in private education, there is a dearth of research that investigates whether this investment leads to a better occupational outcomes. Previous studies assume that private education is a way of preparing for occupational attainment. However, studies indicate mixed findings: some studies found private education experience to have a negative influence on full-time employment or no significant effect on securing a job in the big firms and increasing wages (Kang, 2010). Other studies argued that private education has a positive association with full-time employment at the big firms and level of wages for college graduates (Hwang & Baek, 2008; Kim, 2009; Sung & Ahn, 2012). Although these studies have tried to control for various factors that influence occupational outcomes, they failed to address that students self-select into private education. Unobserved characteristics of students who participated or not participated in private education may over or underestimate the effect of private education.

This study aims to examine the effect of private education on students' occupational outcomes. Particularly, I will investigate whether taking private education increases students' likelihood of being employed, having a full-time job, and income level upon their college graduation. Since students are self-select into private education, and students who participate in private education may have a better occupational outcomes by their nature, I will employ a quasi-experimental methodology－propensity score matching (PSM)－to account for this issue. I will first review previous studies to understand factors that are related to private education and occupational outcomes of college students. Based on previous research and theoretical framework, explanations for analytic approach and findings will be provided.

Ⅱ. Literature Review

Since a significant number of students participate in private education and invest significant amount of money, private education has been a keen interest of researchers. Yet, most research on private education have focused on the secondary school level. While private education at college level has considered to be a recent phenomena, a number of studies tried to describe the patterns of college students' private education and factors that influence students' participation in private education. Based on a survey, Kim (2005) showed that college students take private education mostly for foreign language proficiency, followed by certificates and employment related tests. Furthermore, he found that lower- and upper-level students participate in different types of private education: while freshman and sophomore class students tend to spend most of the time for taking courses for foreign languages, junior and senior students look for private education that is closely related to particular careers by taking classes for certificates or test preparation.

Previous studies investigated the factors that influence college students' participation in private education. The underlying assumption of the studies is that students' motivation for securing a decent job is a driving factor for private education, and therefore, factors that affect occupational outcomes may overlap with the factors that predict private education participation. Focusing on family related factors, Chun, Lee, and Lee (2004)'s study highlighted that family income determines how much a student can spend on private education. Supporting this argument, Min (2003) also found parental education and family income to be influential for college students' private education, particularly for the spending on foreign language related education. Furthermore, her study showed that school characteristics such as the location and selectivity of the university, as well as college major differentiate students' private education participation. Students who attend selective schools located in Seoul, and those who major in law, business, humanities and social sciences spend more on private education compared to their counterparts who attend less selective schools in other regions and students major in science, respectively.

Jung and Kim (2009)'s study integrated students' demographic, family background, academic experience, and school characteristics and examined whether these factors have different effects on students' participation in and spendings on private education. Using the Korean Education and Employment Panel Survey, they found that the type of college, college GPA, major, and private education in high school to be influential for participation. On the other hand, family income, followed by attitude in class, and

private education in high school are the factors that determine students' spending on private education, conditioning on participation. Students who have higher GPA are more likely to participate in and spend more on private education. Students in four-year universities tend to take private education more than students in two-year colleges by 21.5%. Humanities, social sciences, and education major students are 12% more likely to take private education compared to their counterparts in performing arts. Having private education in high school increases the probability of participation by 7% and spending by 21,000 KRW per month. Students with better in-class attitude have a lesser level of participation and spending, and an increase in family income is associated with an increase in spending on private education.

The effect of private education on occupational outcomes have been investigated in a series of studies on college graduates' transition to the labor market. Hwang and Baek (2008) included private education as a predictor for job attainment as it is considered to be a part of efforts for employment. Using the Graduates Occupational Mobility Survey, they found that spending on private education does not affect employment but has a significant influence on securing a position at the big firms/companies. Taking a similar approach, Kang (2010)'s study found a contradicting result using a different data. Using the Youth Panel, she found that private education has a negative consequences on full-time employment. Private education has no significant effect on the pecuniary benefits (i.e. big firm employment and wages), but increases the non-pecuniary benefits (i.e. job satisfaction).

Kim (2009) and Sung and Ahn (2012) focused on how specific types of private education affect occupational outcomes. Kim (2009)'s study estimated the relationship between taking private education for English proficiency and college graduates' occupational outcomes. She found that gender (female), father's education level (higher than 2-year), family income, and college major (social sciences) differentiates (increases) students' private education participation. The study concluded that having private education for English proficiency has a positive effect on the big firm employment. Sung and Ahn (2012)'s study confirmed Kim (2009)'s findings with regard to English related private education. In addition to that, they estimated the effect of private education that offers job training and test preparation. They found that job training does not have a significant effect on employment and even have a negative effect on wages. Test preparation is not related to the probability of employment but increases the level of wages. The researchers conclude that private education for employment requires significant investment of time and money, yet it may not have significant effect or may have a negative influence on occupational outcomes.

Findings from the previous research suggest that studies on college students' private

education is in its early stage and it is difficult to conclude the effect of private education on subsequent outcomes. Only a few study integrated various dimensions of students, job market preparation and college experience in particular, in predicting students' private education participation and occupational outcomes. Furthermore, whether or how private education differently affect students with different backgrounds (heterogeneous effect) has not been sufficiently investigated. Finally, these studies fail to address that students self-select into private education. Unobserved characteristics of students who participated or not participated in private education may over or underestimate the effect of private education.

Accounting for these limitations, this study aims to answer the causal question of interest: does college students' private education affect their subsequent occupational outcomes? Does private education have a differential effect for students with different background?

Ⅲ. Theoretical Framework

Human capital theory explains education as an investment in human capital (Becker, 1975; Mincer, 1993). For individuals, increases in human capital are associated with the accrual of future monetary and non-monetary benefits. Therefore, an individual's educational choice may be driven by changes in the marginal benefits and costs associated with the educational investment. For example, individuals will assess returns to taking private educations based on expectations about the benefits of these choices compared to the costs. If the rate of return to investment of these choices compares favorably with the rates of return available on other financial assets, then the investment will be worthwhile (Cohn & Geske, 1990; McMahon & Wagner, 1982; Paulsen & Peseau, 1989; Thurow, 1970). Taking private education can help students earning skills and credentials that are valued by employers and therefore increasing their employability. Employers consider individuals who have more or better education more valuable, and these individuals will attain occupations with greater wages, opportunities for securing jobs, or higher positions (Becker, 1964; Bowman, 1966; Mincer, 1958, 1989; Schultz, 1962; Ishida et al., 1997).

Yet, private education requires time and financial investment in addition to a student's educational experience/time at and cost for college. Therefore, students with different characteristics will make different choices in taking private education. Students differ in their access to financial resources to take extra education in addition to their college

(Chun et al., 2004; Min, 2003). School characteristics such as types of college, location and selectivity of the college, college major, as well as students' prior educational experience and ability (private education in high school, in-class attitude, GPA) also affect whether a student take private education (Min, 2003; Jung & Kim, 2009). Therefore, the theoretical framework suggest that the varying characteristics of students influence them to take private education; then, taking private education develops human capital of the students and this will benefit students in their occupational outcomes.

Ⅳ. Methodology

1. Data

The data used for the study came from the Korean Education and Employment Panel Survey (KEEP). In 2003-2004, the Korea Research Institute for vocational Education and Training (KRIVET) sampled 6,000 9th and 12th grade students from middle and high schools, including both the vocational and college track, across the country. A follow-up has administered every year. In this study, specifically, the third through seventh follow-up data for the high school cohort were employed as students are graduating from college and transitioning to occupations.

The final sample for the analysis was 1,238. I constructed the dataset by tracking students who anticipate to graduate from college in the 3rd through 6th wave. I matched their subsequent occupational outcomes in the next wave (4th through 7th wave). Analysis for occupational outcomes focused on students who attained at a bachelor's degree and did not pursue a graduate education.

Students' private education was measured by their participation in private education for their study of major field, English, other foreign languages, and test preparation. In the sample, 625 (50.48%) students were taking private education in the year when they expect to graduate. The occupational outcome was measured in three ways: i) employment status (i.e. employed or unemployed), ii) full-time employment (i.e. working full-time vs. working part-time or not working), and average monthly income. In the sample, 542 (43.78%) were employed within an year after their graduation; 320 were working full-time (25.85%) and the average monthly income of all college graduates was 320,888 KRW. Variables included in the study and descriptive statistics of these variables are presented in Table 1.

Table 1 Descriptive Statistics

	Variables	Mean/% (S.E.)	Description
Outcomes	Employed	43.78%	1 if employed, 0 if not working
	Full-time employment	25.85%	1 if working full-time, 0 if working part-time or out of labor force
	Wage (10,000 KRW)	32.089 (61.202)	Monthly Income in 10,000 KRW
Treatment	Private Education	50.48%	1 if received private education, 0 if not
Controls	Male	54.04%	1 if male, 0 if female
	Family Income (10,000 KRW)	295.513 (355.367)	Annual family income in 10,000 KRW
	Parental Education		
	Father less than HS	20.93%	1 if highest level of father's education is less than high school, 0 otherwise
	Father HS	48.65%	1 if highest level of father's education is high school, 0 otherwise
	Father BA	24.69%	1 if highest level of father's education is a bachelor's degree, 0 otherwise
	Father GRAD	5.72%	1 if highest level of father's education is a graduate degree, 0 otherwise
	Mother less than HS	26.57%	1 if highest level of mother's education is less than high school, 0 otherwise
	Mother HS	59.61%	1 if highest level of mother's education is high school, 0 otherwise
	Mother BA	12.92%	1 if highest level of mother's education is a bachelor's degree, 0 otherwise
	Mother GRAD	0.90%	1 if highest level of mother's education is a graduate degree, 0 otherwise
	High School Private Ed	80.37%	1 if received private education in higih school, 0 otherwise
	College GPA	.790 (.135)	College GPA, standardized
	In-class Attitude	3.35 (.672)	Students' self-reported in-class attitude; ranges 1 to 5
	Job Plan	46.93%	1 if have a specified job plan, 0 otherwise
	Job Search experience	73.91%	1 if have a job search experience, 0 otherwise
	College Location: Seoul	20.11%	1 if college located in Seoul, 0 otherwise
	College Major		
	Humanities	10.90%	1 if major in Humanities, 0 otherwise
	Social Sciences	28.19%	1 if major in Social Sciences, 0 otherwise
	Education	5.74%	1 if major in Education, 0 otherwise
	Engineering	27.14%	1 if major in Engineering, 0 otherwise
	Sciences	13.09%	1 if major in Sciences, 0 otherwise
	Medicine	2.75%	1 if major in Medicine, 0 otherwise
	Performing Arts/ Sports	12.20%	1 if major in Performing Arts and sports, 0 otherwise
Number of observations		1,238	

2. Identification Strategy

To estimate the effect of private education on students' subsequent occupational outcomes upon their graduation, I applied the propensity score matching (PSM) technique. Simple regression methods do not account for students' self-selection into private education, and the findings are not sufficient for drawing a causal inference. Students who participate in private education may be materially (in observable and not-observable characteristics) different from their counterparts who do not participate. For example, students who chose to take private education have higher motivation and ambitions for future career, and therefore, become to have better occupational outcomes. Various methods are available to reduce bias in treatment effects due to selection on observed variables, including PSM. I particularly chose PSM over other approaches (e.g., Instrumental Variable, Differences-in-Differences, and Regression Discontinuity) because PSM does not require exogenous source of variation to determine causal effects but allow researchers to make strong inferential statements using observational data (Rosenbaum & Rubin, 1983; Heckman et al., 1997).

Propensity-score-matching is an attempt to mimic the desirable properties of randomized experiments (Reynolds & DesJardins, 2009). When correctly applied to observational data, PSM allows researchers to construct a comparison (control) group for treated individuals that possess identical observable characteristics, save their receipt of the intervention or resource of interest. This control group is used to infer what the outcome would have been absent treatment (i.e., the counterfactual outcome) for individuals who received the treatment. Like with a randomized experiment, the goal of PSM is to produce treatment and control groups that have the same distributions of pre-treatment characteristics. However, in PSM it is unknown if the distribution of unobserved covariates is balanced between the groups (Rosenbaum, 2005).

PSM entails two important steps: study design and outcomes analysis (Stuart, 2010). The first stage analysis focuses on the selection process based on individuals' "observable" pre-treatment characteristics. I began by producing a propensity score, which is the probability of receiving the treatment－private education. Propensity scores are estimated with the following logit specification using the pooled sample of treated and untreated students:

$$\ln \frac{Pi}{1 - pi} = \alpha + \beta X_i + \gamma Y_i + \delta Z_i + \varepsilon_i$$

where ln is the natural log; P_i represents the probability that student i receiving the

treatment (private education); X is a vector of demographic and personal characteristics, such as gender, family income, and father and mother's education; Y is a vector of individual's educational experience including a student's college GPA, attitude in class, experience of private education in high school, college location, and college major; Z is job related experience variable that refers to whether a student has a specified career plan and job search experience; and β, γ, and δ are estimated coefficients; ε is an error term that is logistically distributed. Students' demographics, ability, as well as educational and occupational experience are likely to both influence the student's private education participation and occupational outcomes. Therefore, matching students based on these variables helps minimizing the possibility of omitted variable bias. Using the estimated probability of a student receives private education, I estimate the propensity score, then treated students are matched to untreated students who have similar propensities of receiving the treatment using one of the several matching algorithms (Guo & Fraser, 2009).

In the second stage, the treatment effect is attained by estimating average difference in outcomes of treated student i and his or her observably similar untreated peers. This difference represents the average effect of the treatment on treated (ATT). In this study, the ATT measures the impact of private education on students' job attainment and wages after balancing the observable characteristics across the treated and untreated groups; the observed outcome for untreated cases serves as the correct counterfactual for what would have happened if the treated individuals had not received the treatment (Murnane & Willett, 2011).

To make a valid causal claims about the ATT using PSM with observational data, three critical assumptions must be met: conditional independence, common support, and covariate balance (Reynolds & DesJardins, 2009). The conditional independence assumption (CIA) holds if there is no correlation between the treatment and the outcome that occurs without treatment, conditional on observable characteristics. Because there is no way to directly test this assumption, I imposed the CIA assumption, restricting the sample to students who are expecting to graduate from a 4-year university (receive a bachelor's degree) in the respective academic year and excluded students who pursue graduate education while they are working.

The common support assumption is that the observable characteristics between the treatment and control groups should have sufficient overlap so a match can actually be made between the treated and untreated observations. Therefore, it is important to ascertain whether the treated and untreated groups have "common support" or overlapping distribution of the propensity scores (Reynolds & DesJardins, 2009; Stuart, 2010; Titus, 2007). To evaluate the common support assumption, I graphically present

the propensity scores that result from the regressions specified in above for treated and untreated individuals. As depicted in Figure 1, treated and untreated students have very similar propensity score distributions. Thus, most observations in the sample have common support.
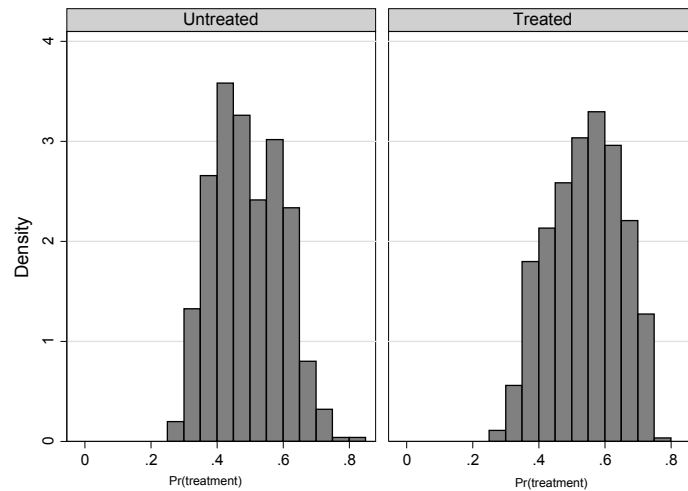

Figure 1 Common Support Histograms of Propensity to Take Private Education

Furthermore, the observable characteristics in the treated and untreated groups should be similar after the matching procedure. Using the PSMATCH2 Stata module by Leuven and Sianesi (2003), I matched which untreated observations are appropriate counterparts for treated observations. As indicated in Table 2, the control groups matched to the treated groups have very similar pre-treatment characteristics. This suggests that the covariates balance requirement needed to make causal inferences from the ATT has been met.

Finally, to explore heterogeneous effects of private education, I replicate the methodology described previously for various subgroups in the population by restricting the sample to members of that subgroup. Particularly, to estimate the effect of taking private education on students who graduate colleges located in Seoul[3] (or other regions), students who attend colleges in other regions (or Seoul) are dropped from the sample and the propensity scores and matching estimators are re-estimated.

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3) In the Korean context, the location of colleges are considered to be a proxy for institutional selectivity. For the detailed discussions and examples, see (Nam, 2003; Shin, 2009; Lee, 2007; Ko and Park, 2010; Shim and Seol, 2010, Kim, 2011)

Table 2 Distribution of Selected Characteristics for Matched and Unmatched Samples, by Treatment Status

Variable		Mean		|% bias|	p⟩|t|
		Treated	Control		
Gender	pre-match	.536	.545	1.8	0.754
	post-match	.529	.536	1.4	0.823
High school Private Ed	pre-match	.829	.778	12.8	0.024
	post-match	.818	.813	1.5	0.807
college GPA	pre-match	.815	.796	13.8	0.025
	post-match	.816	.813	2.8	0.623
Job Plan	pre-match	.554	.383	34.6	.000
	post-match	.568	.550	3.8	0.541
Job Search	pre-match	1.740	1.739	0.0	0.993
	post-match	1.749	1.749	0.1	0.985
Family Income (10,000 KWR)	pre-match	302.24	288.64	3.8	5.000
	post-match	310.79	308.43	0.6	0.920
Mother's Education	pre-match	1.913	1.849	9.8	0.086
	post-match	1.908	1.905	0.5	0.937
Father's Education	pre-match	2.188	2.116	8.8	0.120
	post-match	2.198	2.184	1.9	0.764
College Location	pre-match	.229	.173	14	0.014
	post-match	.221	.197	6.2	0.328
Major: Social Sciences	pre-match	.293	.270	4.9	0.388
	post-match	0.289	.286	0.7	0.912
Education	pre-match	.059	.055	1.6	0.777
	post-match	.062	.066	1.5	0.807
Engineering	pre-match	.267	.276	1.9	0.736
	post-match	.266	.270	0.8	0.890
Sciences	pre-match	.122	.140	5.5	0.328
	post-match	.122	.121	0.3	0.957
Medicine	pre-match	.030	.024	3.6	0.521
	post-match	.034	.036	1.5	0.822
Performing Arts/Sports	pre-match	.110	.134	7.1	0.207
	post-match	.111	.105	1.9	0.751
In-Class Attitude	pre-match	3.371	3.238	19.9	0.000
	post-match	3.392	3.361	4.7	0.436

Mean Standardized Bias of Observed X's: Pre-match: 9.0

Post-match: 1.9

Note. Treated and control sub-samples are balanced using a kernel matching algorithm with a bandwidth of 0.14.

Ⅴ. Results

1. Estimated Effects of Taking Private Education in College

Table 3 presents the estimated effects of participating in private education in college on occupational outcomes in subsequent years (column 3-5). The differences in all the three occupational outcomes between the students who take private education (treated) and do not take private education (control) are not statistically significant from zero. Taking private education does not necessarily benefit the graduating college students' job attainment. Also, experiencing private education does not affect the type of job attainment (full- or part-time). The estimates suggest that taking private education decreases the likelihood of being employed by 2.4%, but increases the chances of working full-time by 1.1%. Yet, private education increases monthly income by 60,100 KRW. However, the results are statistically insignificant at the .05 level. The estimates do not change significantly across different matching algorithms.

Table 3 Propensity Score Matching Estimates of the Effects of Taking Private Education

	OLS	NN	Kenel	LLR
Employed	-.029 (.030)	-.024 (.043)	-.025 (.031)	-.020 (.030)
Full-time	-.016 (.027)	.011 (.038)	.010 (.028)	.015 (.027)
Wages (in 10,000KRW)	-1.266 (3.802)	.601 (5.321)	.586 (3.926)	.883 (3.797)

Notes. Linear probability controls for covariates listed in Table 1. To account for weighting, PSM model is matched on odds ratio. Standard errors are in parentheses.

2. Model comparisons and sensitivity analysis

The results from Table 3 suggest that the naive model (column 2) underestimates the effect of the treatment, though numerically small, particularly the effect on monthly income. While PSM may provide an improvement for estimating a causal effect of treatment, it is still limited in accounting for unobserved factors. Despite the strong controls, the estimates may be upward biased by unobserved student ambition/motivation that is positively correlated with the student's private education participation and the outcomes. Although it is not possible to directly test for the existence of bias from

unobserved factors when using PSM, it is possible to test the robustness of results to the possible presence of an unobserved confounder (Caliendo, Hujer, & Thomsen, 2005; Guo & Fraser, 2010)[4]. The results of the sensitivity analysis suggest that the matching estimates are only moderately robust to the presence of hidden biases. In Table 4, gamma corresponds to the critical value of the Mantel-Haenszel test statistic at which an unobserved variable's effect on the odds of treatment would cause the estimated treatment effect to be insignificant. The results indicate that a confounding variable would need to cause the odds of private education to differ between treated and control groups by a factor of 1.32 in order to invalidate the effect of treatment on employment status, by a factor of 1.45 to invalidate the effect of treatment on full-time status, and a factor of 1.51 in order to make the ATT for wages excessively to be zero.

Table 4 Sensitivity to Hidden Bias in Significant Outcomes

Outcome	Gamma
Employment	1.32
Full-time Employment	1.45
Wage	1.51

3. Heterogeneous effects of taking private education in college

Since the location of college may limit the availability of private education and occupational choices, it is important to investigate whether the effect of private education differs by this factor. Table 5 indicates that private education does not have a statistically significant effect on occupational outcomes for both students attend colleges in Seoul and other regions; yet, private education has a stronger positive influence on students who attend institutions in Seoul compared the students who are living in other regions. For students who attend colleges in Seoul, private education experience increases their chances of having any type of job by about 13% and that of a full-time job by 4.3%. Students who take private education has 12,222 KRW higher monthly income than students who do not receive private education. Meanwhile, for students in other regions, this effect does not exist: taking private education decreases the likelihood of having a job by 3.9%; yet, private education has a positive effect on securing a full-time job. The monthly income is lower for the treated group by about 20,680 KRW.

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4) I used the Stata MHBOUNDS module to determine the degree to which a binary confounder that has a strong relationship with the outcome would need to affect the odds of treatment in order to render the significant results insignificant (Becker & Caliendo, 2007).

Table 5 Propensity Score Matching Estimates of the Effects of Taking Private Education: by university location

	University Location	ATT	S.E.
Employed	Seoul	.128	.106
	other region	-.039	.045
Full-time	Seoul	.043	.091
	other region	.029	.039
Wages (in 10,000KRW)	Seoul	.122	.157
	other region	-.206	.005

Notes. 99.99 to 100% of cases were matched. Sample sizes: Seoul (n=199); other region (n=832).

Ⅵ. Discussions and Conclusions

The findings of this study suggest that private education does not differentiate college graduates' occupational outcomes. Taking private education negatively affects students' employment status but has a positive impact on full-time employment and monthly income. It is assumable that employers may have other ways to gauge candidates' future productivity rather than what is presented in resume that students attempt to prepare through private education. Yet, it is not sufficient to conclude that private education does not help students to gain skills to secure a job. The insignificant effect may be due to for what occupations students pursue and use private education in order to access to the job. If students take private education for occupations that take longer time for being employed but that comes with higher starting salaries, private education would not have benefits or would have only a small gains in a short term after graduation. To unpack the process of job preparation to occupational attainment, future studies need to investigate how employers in different sectors evaluate candidates based on the information that appears on the resume (Cole, Rubin, & Giles, 2007; Rivera, 2011), how college students perceive about what is required to secure their desired occupations, and how these criteria align with things that are offered by private education.

Taking private education has bigger effects for students who attend colleges located in Seoul. The availability of resources and information may drive this result. There are more occupations, more information about the job market, and more options for private education in Seoul than other regions. Therefore, students who attend colleges in Seoul are more likely to have an easy access to the job and training opportunities. They can improve the skills that are directly related to the jobs or have unique training that may differentiate themselves from other candidates. Meanwhile, most selective universities are

located in Seoul. If attaining additional "spec" along with the selective educational credential (degree) boosts a student's occupational outcomes, private education may have bigger effect for students who attend selective schools in Seoul.

The findings provide implications for students and universities. Since private education does not necessarily increase the chances of securing a job, students need to be specific about what is required for their desired occupation and prepare for specific skill set that are directly related to the position. Schools need to support this process and accommodate varying needs of students. Particularly, universities in non-Seoul regions need to strengthen their career service by providing information section or educational programs for certificates and tests.

This study attempt to estimate the causal effect of private education for college students, accounting for selection bias. Yet, it is limited as it does not consider the qualitative differences of private education. There are various private education that provide different subject matters; students invest different amount of time and financial resources from different purposes. Future studies need to consider these dynamics to better answer the question that whether private education is an effective strategy for job market or redundant investment, especially when financial burden for college education has increased.

⁑ 참고문헌 ⁑

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⁞ Abstract ⁞

An effective job market strategy or redundant investment?
Evaluating the relationship between private education participation and occupational outcomes for college students

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This article examines the causal effect of private education on college students' occupational outcomes, using the Korean Education and Employment Panel Survey (KEEP). Employing the Propensity Score Matching technique, the results of the study indicate that taking private education does not significantly influence college graduates' occupational outcomes. Taking private education negatively affects students' employment status but has a positive impact on full-time employment and monthly income. Furthermore, taking private education has bigger, positive effects on employment status, full-time employment, and wages of students who attend colleges located in Seoul. The findings provide implications for students to specify their desired occupations and prepare for the particular job market, and universities must support students needs in this process.

Key words: private education, occupational outcomes, job market preparation, keep