# The Effects of Family Background on Educational Continuation: From Middle School to Graduate School*

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## Abstract

This study analyzes the effects of family background on educational continuation in Korea. Previous research has insisted that parental effects decline across school transitions. Using 1998-2002 data from the *Korea Labor and Income Panel Study* (the KLIPS), this study examines whether or not the effects of family background decline in higher education levels and vanish in graduate school level in Korea though binary logit model and multinomial logit model. First of all, this study examines whether or not family background declines school transitions using Mare model (1980). As a result, the effect of family's cultural and social capital declines across transitions, while the effect of family's economical capital never declines across transitions. In addition, family background variables do not have substantial effects on the likelihood that university graduates go to graduate school or not. In the following analysis, this study additionally analyzed the multinomial logit model in comparison with the traditional binary model. This study confirms that the Mare model tends to deflate family background effects on school transitions, especially, at the secondary education levels. Also, this study observes that different educational pathway in the school system leads to different conditional probability on school transitions.

Key Words: educational continuation, family background, educational pathway, logit model

## I. Introduction

Research on educational stratification has passed through two different phases. First, researchers have paid attention to how family background variables affect school transitions (primary school => secondary school => tertiary education) within birth cohort. Secondly, researchers have dealt with how the effects of family background variables vary between birth cohorts (older cohorts => recent cohorts) within school transitions (Mare, 1993: 351).

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The former means personal time of life course, and the latter means social-historical time of stratification process (Phang and Kim, 2001: 3). There is less research on school transitions than on variations of birth cohorts[1]. Especially, there is little detailed analysis of the effects of family background on transition from university to the graduate school (Stolzenberg, 1994).

In relation to educational continuation[2], Mare (1980) insisted that parental effects decline sharply from the earliest school transitions to the latest ones as a consequence of differential attrition patterns. This finding would give us a misunderstanding that children of lower class parents are more likely to go to higher education institutes than secondary education institutes. This result does not explain that family background variables affect a little the *probability* of entering higher education institutes, but explain that the *conditional probability* of entering secondary education institutes is affected stronger by family background than that of entering higher education institutes. This result explains that children who continue to go to school after secondary education may have higher family background than the general population. In national comparative study of thirteen countries (Blossfeld and Shavit, 1993) [3], only a few countries showed an exceptional rising effect pattern of social origins across transitions. In some countries (for example, the Netherlands, Sweden, and Germany), the effects of family background on the transitions to tertiary education are so small as to be insignificant. Blossfeld and Shavit (1993: 20) concluded this argument that socioeconomic election occurs at early stages of the educational career. In addition, Mare (1980) insisted that the passage to graduate school is not affected by the effects of family background. Also, Stolzenberg (1994: 67) suggests that family background is not relevant to educational continuation of university graduates and that the aspirations of students to graduate school are formed in university without parental influence.

Why the effects of family background are strong at the beginning of the educational ladder and then declines for later transitions? Several hypotheses have been introduced to explicate it. Mare explains that this is caused by the reduction of heterogeneity of family background in later transitions (the *differential selection hypothesis*). Otherwise, the *life course hypothesis* explains that children become more independent on their parents socially and economically as they grow

[1] Korean previous research on educational inequality shows empirical regularity that the effects of family background never decrease over time or across birth cohorts (Chang, 2003; Kim and Kim, 1999; Park, 2001; Phang and Kim, 2003). Blossfeld and Shavit (1993) showed that the effects of family background are little change across birth cohorts in ten countries.

[2] Research on educational continuation has diffused from Mare's new analysis method. Mare (1980) showed empirically the advantages of using a sequential logit model. He criticized the traditional linear regression model, because this model cannot distinguish between the effect of family background and the impact of educational expansion. Since then, Mare model has become standard in empirical research in educational stratification (Breen and Jonsson, 2000: 754).

[3] Thirteen countries are classified three major groups. Western capitalist countries are the United States of America, Germany, United Kingdom, Italy, Switzerland, the Netherlands, and Sweden. Non-western counties are Japan and Taiwan. Western formerly socialist countries are Poland, Hungary, and Czechoslovakia (Blossfeld and Shavit, 1993: 10).

up (Müller and Karle, 1993). By contrast, Lucas (2001) proposes an opposing hypothesis against the declining effects of social origins across school transitions, the *effectively maintained inequality hypothesis* (EMI). This hypothesis explains that family background effects are not small in later transitions as well as earlier transitions, and that upper class parents try to get any advantages in the educational ladder in terms of both quantitative differences and qualitative differences. Breen and Jonsson (2000) propose the *path dependence hypothesis*. This is similar to EMI hypothesis. This hypothesis explains that the degree which transition probabilities from on level and/or type of education to another may be influenced by the particular educational pathway by which students arrived at the point of choice. They propose a new method, multinomial logit model, which measures the effects of family background on qualitative different pathways of school transitions[4]. Karen (2002) insisted that analysis of educational stratification must include the uniqueness of educational system. Also, Mullen, Goyette and Soares (2003) analyzed educational continuation after university using multinomial logit model. They stated that parents' education has an effect on their children's entry to graduate school by type of graduate programs. Although family background has no effect on entry into MBA programs and master's programs, it has a strong effect on entry into first-professional and doctoral programs.

In my research, I would like to elucidate the effects of family background on educational continuation. My main purpose is to examine that the effects of family background decline in higher education levels and vanish in graduate school level in Korea. Next, I argue data source, variables measures included in this study, empirical design, and statistical procedure. Finally, I present the empirical findings, and discuss the implications of results.

## 2. Research Questions

This study addresses the following three questions. *First, I examine whether parental effects decline across school transitions in Korea or not*. Previous research of Korea has been inconsistent. Chang (2003) insists that the effects of social origins have not decreased across transitions in Korea. Contrary to this result, Phang and Kim (2003) state that the extent of educational stratification is larger at the secondary than at the tertiary schooling transition in Korea. Especially, I compare Mare model with multinomial logit model (MT model). Recently, MT model often has been used to analyze educational continuation (Becker, 2003; Breen and Jonsson, 2000; Phang and Kim, 2002, 2003). In relation to comparative study about Mare model

[4] This is related with criticisms of Mare model (binary logit model). Breen and Jonsson (2000) criticized the assumption of Mare model that individuals progress through the educational system in a unilinear sequential mode. This model cannot explain the qualitative differences in each educational level. School systems are seen as

and MT model, Breen and Jonsson (2000: 771) insisted that application of the Mare model to complex and differentiated educational systems were likely to result in misleading or oversimplified conclusions about educational continuation. Really, distribution of alternative pathways[5] through upper secondary education shows large differences among countries (Presented in the Appendix, see Figure A-1). Participation in general education pathway is highest in Canada (94%), United States (88%), and Japan (74%). They account for some three quarters of all students in these countries. Otherwise, participation in school-based vocational pathways is greatest in the Hungary, Sweden, and Italy where they account for over 60% of all students. Participation of the apprenticeship is greatest in Switzerland, Germany, and Denmark where they account for some 40%. Korea has a far more different distribution of high school students across three types. The Korean high school system divides into two types, general education (58%) and vocational education (42%). Historically, the Korean education system has changed from *an organizational space* to *a qualificational space*, according to typology of Maurice, Sellier, and Silvertre (1982) [6]. Until the 1970s, many affluent middle school students were attracted to vocational high schools, because these schools were formally required to be the solution of demand for manpower by the rapid industrialization, and students in vocational schools could receive such financial supports as various scholarships. But, after the 1980s, the vocational high schools have come to a crisis by losing the reason for foundation. Although the vocational schools were founded to provide technical semi-skilled workers, the vocational schools recently have little contribution to bear technical manpower.

*Secondly, I examine how four measures of family background variables affect on school transitions in Korea*. I compare the explanatory power of the cultural capital of family (father's education, mother's education) with that of the economical capital of family (father's occupation) and the social capital of family (relatives who have employed as upper professions)[7].

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qualitatively different alternative pathways with different probabilities of school transitions attached to them.

[5] Pathways through upper secondary education can distinguish into three types (OECD, 2000: 58-59). First, general education pathways mean that these have as their principal purpose the preparation of students for entry to tertiary education. Secondly, school-based vocational pathways mean that these have as their principal goal the provision of an upper secondary level occupational qualification for entry to labor market. Finally, apprenticeship-type pathways mean that students in apprenticeship-type pathways normally spend the majority of their time in the workplace, the minority of their time in school.

[6] Maurice, Sellier, and Silvestre (1982) explain that Germany as a system pattered along a qualificational space, while France is patterned in an organizational space. School education in Germany is used by employers to organize jobs in Germany. Contrary to this, school education in France less closely related to the workplace and vocational skills are mostly obtained on the job training. Kim (2003) insists that Korean educational system is similar to organizational space. Because many graduates have entered into the world of work without making the least preparations in school, and education in school does almost not provide adequate skills in the workplace.

[7] The 3rd (2000) wave of the KLIPS asks "Do you have relatives who have following occupations? Do you keep with the person close relationship?" Questions are included 8 categories of profession. These categories are a college professor, a government officer (senior level), a medical doctor, a journalist, a general in military service (star level), an assemblyman, executives in large size company, a lawyer including a judge and prosecutor.

Chang (2003) and Park (2001) explain that the exceptional pattern in Korea is the financial aspect of tertiary education. Expenditure on institutions of tertiary education is very higher as shown in the 2.6% of GDP in Korea (OECD, 2003). Expenditure from private sources is the world highest as shown in the 1.9% of GDP. And up to 80% of tertiary education institutes are private schools. Funding for private schools mostly depends on tuition from parents of students[8]. Therefore the explanatory power of the family's economical capital may be stronger at the higher education levels than at the secondary education levels in Korea. Also, Korean education is characterized with extreme competition to enter universities, especially high reputed universities almost located in Seoul, a capital city in Korea, and required very academic high ability. Therefore, the burgeoning enlargement of private tutoring across extreme competition has been very serious problem in Korea (Presented in the Appendix, see Figure A-2). In 1980, 14.9% of all students experienced a private tutoring, while 58.1% of all students experienced a private tutoring in 2000 (Kim at al, 2001: 40). This result can make the entrance of high reputed universities to the contest terrain of social class, and can be caused by expansion of educational inequality at the tertiary education levels.

*Thirdly, I examine the effects of family background on transitions from university to graduate school in Korea*. Yet I do not know whether or not it does have a substantial effect on the likelihood that university graduates go to graduate school. A lot of Korean parents hope that their children go to graduate school. In other countries, the expectation level of parents may be up to the college or university (Noriko, 2000). For examples, about 40% of Korean parents hope that their children go to graduate school, but the expectation level of Japanese parents is smaller than 5% when it comes to graduate school (Presented in the Appendix, see Figure A-3). According to Nakamura, at al (2002: 76-77), up to 20% of Korean senior high school students want to go to graduate school, while Japanese cases merely shows 9.7% of male, 4.8% of female (see Table A-1). Also, students enrolled in graduate school per 1,000 persons in Korea are twice as large as that in Japan in 2000 (see Table A-2 and Table A-3). If university credential loses values or benefits through higher educational expansion, post-graduate credential can be to the field of competition of social class. Therefore, in Korea, family background may have significant effects on transitions from university to graduate school.

## 3. Method and Model

Data

[8] The proportion of tuition among total incomes of private universities shows 61.6% in Korea (Son, 2003).

I use the KLIPS data of 1st (1998) - 5th (2002) wave that was collected by the Korea Labor Institute after 1998 and that is a longitudinal survey of households and individuals residing in urban areas regarding their family life and economic activities. Total Observations number 5,635 respondents except missing cases. Sample sizes decline across school transitions. Because analytic cases in higher school transitions are the respondents that successfully advances from lower school transitions.

Table 1. Dependent Variables and Their Measurements

| Name | Data Sources | Items used with coding |
|---|---|---|
| T1 | 2002 KLIPS Data | Middle School Completion = 1, Leave School = 0<br>Middle School 90.7 % (4,549), Leave School 9.3 % (1,086) |
| T2 | 2002 KLIPS Data | High School Entrance = 1, Leave School = 0<br>High School 78.6 % (3,573), Leave School 21.4 % (976) |
| MT2 | 2002 KLIPS Data<br>2001 KLIPS Data | General Track = 1, Vocational Track = 2, Leave School= 3<br>General 46.7%(2,214), Vocational 31.9%(1,449), Leave 21.4(976) |
| T3 | 2002 KLIPS Data | Junior colleges/University Entrance = 1, Leave School = 0<br>Colleges/University 38.3 % (1,370), Leave School 61.7 % (2,203) |
| MT3 | 2002 KLIPS Data | University=1, Junior Colleges = 2, Leave School= 3<br>University 25.0%(895), Colleges 13.3%(475), Leave 61.7%(2,203) |
| T4 | 2002 KLIPS Data | Graduate School Entrance = 1, Leave School = 0<br>Graduate School 14.4 % (129), Leave School 85.6 % (766) |

Dependent Variables

The first transition point (T1) is whether the respondents complete middle school (lower secondary education) or not. The second transition point (T2) is whether the respondents begin studies at high school (upper secondary education) or leave school over middle school. At this point, the alternatives (MT2) are to start studies at either general high school or vocational high school. The 4th (2001) wave of The KLIPS offers information about the types of high schools. General high schools include academic high schools[9] of humanities class and natural science class, scientific high schools[10], foreign language high schools. Vocational schools include academic high schools of vocational class, agricultural high schools, industrial high schools, commercial high schools, fisheries and oceanography high schools, comprehensive high schools[11], and the other vocational high schools. Meanwhile, MT2 variable is used as the

[9] The curriculum for the first year of the academic high schools consists of common subjects, while the curriculum for the second and third years includes humanities, natural sciences, vocational training, and other necessary subjects. The category of general high school in this study excludes students of vocational training class of academic high schools.

[10] Science high schools were established to provide places for the education of students with affluent scientific talent. There are 16 science high schools in Korea, including the Seoul Science High School. Students who have completed two years in a science high school can be admitted to entry at the Korea Advanced Institute for Science and Technology (the KAIST).

[11] Comprehensive high schools are combination schools of academic and vocational courses. These schools mostly locate in rural areas or small and medium-sized cities. The category of vocational high school in this study includes

independent variable.

The third transition point (T3) is whether the respondents start studies at the tertiary education level (over 2-3 year junior colleges) or not. At this point, the tertiary education entrance as a dependent variable is differentiated between 2-3 year junior college and 4-6 year university (MT3). Final transition point (T4) is whether the respondents graduated from university get into graduate school or not. Table 1 shows dependent variables and their percent distributions.

Independent Variables

In this analysis, main independent variables are family background variables. This analysis focuses on three family background measures[12]: cultural capital of family, economical capital of family, and social capital of family. Family's cultural capital is measured by father's grades of school completed and mother's grades of school completed. Family's economical capital is measured by father's occupation. The KLIPS data make an offer about father's occupation when the respondent was 14 years old. Father's occupation is diverted to units of the Ganzeboom et al (1992)'s international socio-economic index. This study does not treat family income, because the KLIPS do not offer information about family income when the respondent grew up[13]. Finally, social capital of family is measured by dichotomizing whether or not the respondent have relatives who have employed as upper professions, for example, a lawyer, a doctor, etc.

Academic ability is very important variable in analysis of educational continuation. This is known as a factors intervening between family background and educational attainment (Mare, 1980: 296). However the KLIPS merely offer information about academic ability on young people under 30 years old in the 5$^{th}$ (2002) wave. Also, this information is the College Scholastic Ability Test (the CSAT) that students who completed high school only are taken. Therefore, this study only includes academic ability at the transition from university to graduate school (T4).

Control variables are sex, age, and region. Region variable indicates the place in which the respondent grew up mostly during the early teens (middle school ages). This variable is distinguished the metropolitan areas from other areas[14].

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students of comprehensive high schools.

[12] Mare model includes sibling size as family structure variable. This study does not include it, because the KLIPS does not directly offer this variable. Although Phang and Kim (2003) analyzed models including sibling size using the KLIPS, they measured indirectly this variable. The KLIPS merely offers relationships and numbers of current family members. Meanwhile, the 6$^{th}$ (2003) wave of the KLIPS in ongoing data making includes family structure variables, for example, birth order of siblings, total numbers of siblings, brother and sister's numbers.

[13] The KLIPS merely offer household incomes over the last year.

[14] The metropolitan areas include 7 cities: Seoul, Pusan, Taegue, Inchon, Kwangju, and Ulsan. The Non-

Table 2. Independent Variables and Their Measurements

| Name | Data Sources | Items used with coding | Mean (S.D.) |
|---|---|---|---|
| SEX | 2002 KLIPS Data | Male = 1, Female =0<br>Male 48.6 % (2,745), Female 51.4 % (2,890) | |
| AGE | 2002 KLIPS Data | Respondents' current age | 43.8(0.50) |
| LOCAL | 1998 KLIPS Data<br>1999-2001 KLIPS Data (new respondents) | The place in which respondents grew up<br>The metropolitan areas =1, Non-metropolitan areas=0<br>The metropolitan 31.2 % (1,699), Non 68.8 % (3,936) | |
| FEDU | 1998 KLIPS Data<br>1999-2001 KLIPS Data (new respondents) | Father's grades of school completed<br>None=0, Elementary School=6, Middle School=9, High School=12, College=14, University=16, Master or Doctoral Course=18 | 5.76(4.77) |
| MEDU | 2001 KLIPS Data | Mother's grades of school completed | 3.47(4.01) |
| FOCC | 1998 KLIPS Data<br>1999-2001 KLIPS Data (new respondents) | Father's occupation when respondents was 14 year old<br>The International Socio-Economic Index (ISEI)<br>16= Domestic Helpers to 85= Lawyers, etc | 30.3(11.6) |
| SCAP | 2000 KLIPS Data | Relatives who have employed as upper professions<br>Having=1, Not having=0<br>Having 22.2 % (1,250), Not having 77.8 % (4,385) | |
| CSAT | 2002 KLIPS Data | The College Scholastic Ability Test (self-reported)<br>1= very lower score to 12=very higher score | 8.78(2.15) |

Models

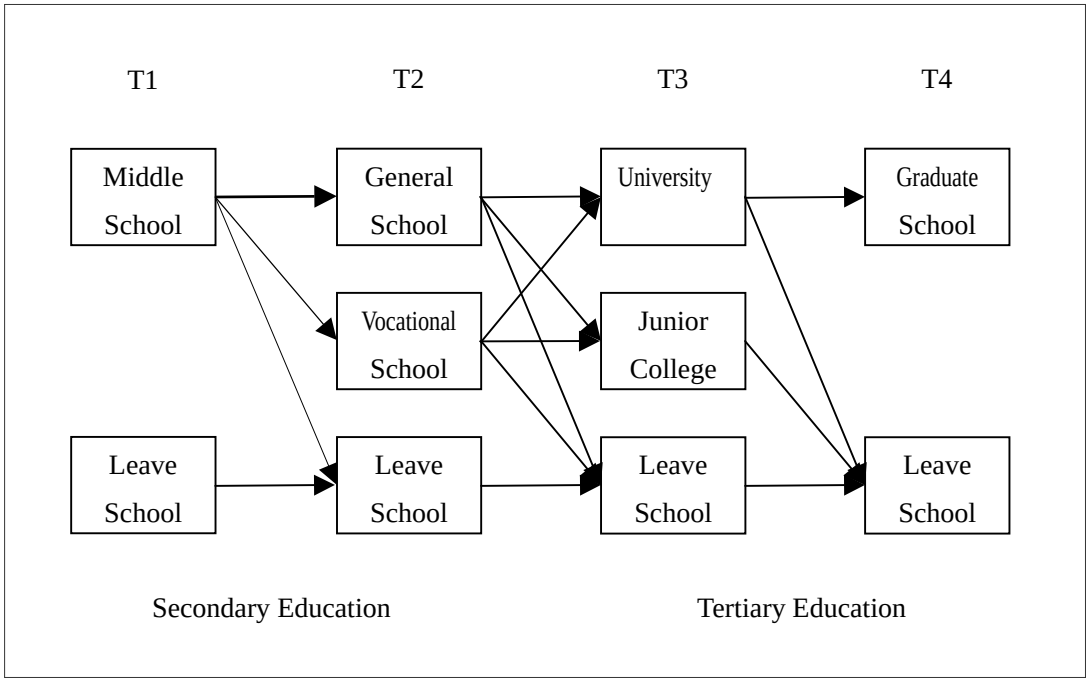
Figure 1 describes education pathways in the Korean school system. This shows that this study will form four school transitions (T1=>T2 (MT2) =>T3 (MT3) =>T4). To estimate the effects of family background on four school transitions, I first of all will use Mare model, which employed the binary logistic regression to estimate family background effects for each of school transitions. The dependents variables in Mare model are transitions from lower to higher stage in educational continuation.

As the second stage analysis, I will compare multinomial logit model (MT model) for comparison with results of traditional binary logit model (Mare model). This focuses on the two steps, upper secondary education (T2) and tertiary education (T3), because T1 and T4 do not have alternative pathways to entry upper education steps. MT model focuses on whether or not one successfully advances to alternative pathways after middle school. MT2 as a dependent

metropolitan areas include 9 provinces: Kyonggi, Kangwon, North Choong-chung, South Choong-chung, Noth Cholla, South Cholla, North Kyungsang, South Kyungsang, and Cheju Island.

variable is differentiated among (1) general high school, (2) vocational high school and (3) leave school. MT3 as a dependent variable is constituted 3 state transition: (1) entrance to 2-3 years junior colleges, (2) entrance to 4-6 years universities, and (3) leave school.

Figure 1. Education Pathways in the Korean School System




## 4. Research Findings

Table 3 shows descriptive statistics for family background variables at selected levels of school transitions. The results of the means show that these variables have consistent positive effects on educational continuation. The means of family background variables change most between middle school and high school levels. This implies that cultural capitals of family have stronger effects for this transition than for others. The standard deviations of family background variables increase steadily over transitions. This implies that the initial distributions of these variables are asymmetric and the population trends to more heterogeneous on these variables over transitions. On the other hand, the distributions of these variables are positive skewed for the population and become more negatively skewed over transitions. Therefore, the distributions of higher education are symmetric. This shows that the positive effects of these variables decline over transitions and the net positive effects of these variables relate with initial positive skewness.

Table 3. Descriptive Statistics for Family Background Variables by School Transitions

| School Transitions | Father's Education | | | Mother's Education | | | Father's Occupation | | |
|---|---|---|---|---|---|---|---|---|---|
| | mean | S.D | g | mean | S.D. | g | mean | S.D. | g |
| Elementary | 2.00 | 3.31 | 1.46 | 0.49 | 1.80 | 3.80 | 25.4 | 6.91 | 3.31 |
| Middle School | 3.57 | 3.93 | 0.69 | 1.37 | 2.71 | 1.75 | 26.5 | 8.48 | 3.01 |
| High School | 7.76 | 4.44 | -0.08 | 5.09 | 4.08 | 0.16 | 32.9 | 12.7 | 1.25 |
| Vocational | 6.85 | 4.10 | -0.08 | 4.43 | 3.75 | 0.10 | 29.8 | 10.2 | 1.58 |
| General | 8.35 | 4.55 | -0.16 | 5.52 | 4.23 | 0.13 | 34.8 | 13.8 | 1.02 |
| Tertiary education | 9.29 | 4.44 | -0.30 | 6.63 | 4.08 | -0.12 | 37.2 | 14.2 | 0.82 |
| Junior colleges | 9.13 | 4.07 | -0.44 | 6.63 | 3.58 | -0.41 | 35.6 | 12.8 | 0.98 |
| University | 9.38 | 4.62 | -0.27 | 6.63 | 4.22 | -0.03 | 38.0 | 14.8 | 0.79 |
| Graduate School | 10.2 | 4.78 | -0.27 | 7.05 | 4.60 | -0.04 | 41.0 | 15.1 | 0.42 |

Note: The S.D. is standard deviations. The g is coefficients of skewness.

Figure 2 Percentages of Family's Social Capital by School Transitions

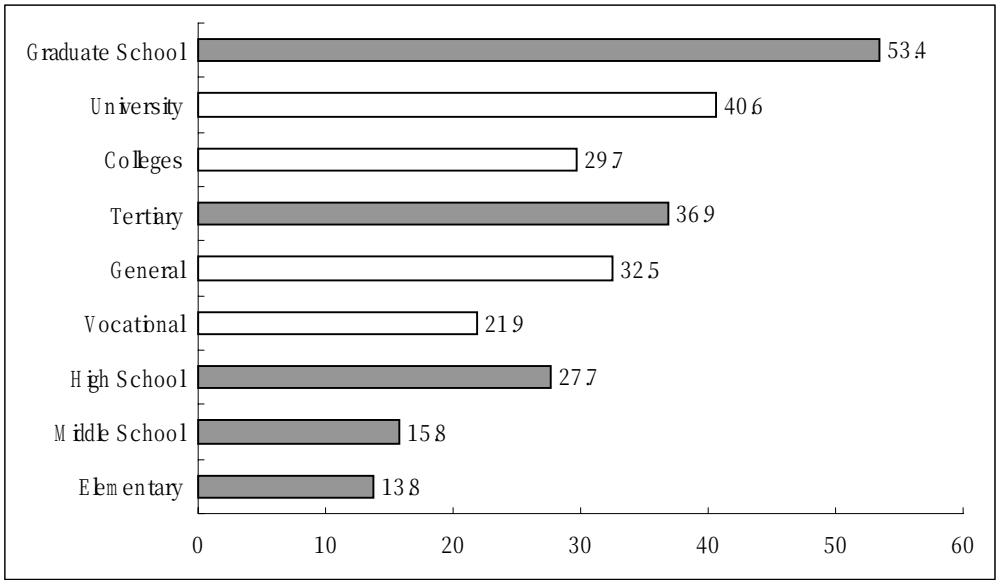



Figure 2 describes social capital of family over schooling levels. The result show that percentages of family's social capital systematically increase from lower educational stages to higher educational stages (elementary => middle=>high =>tertiary =>graduate: 13.8 =>15.8 => =>27.7 =>36.9 =>53.4). Surprisingly, the graduate school students above half have relatives who have employed as upper professions. Percentages change most between middle school completion and high school entrance (11.9 point). This implies that family's social capital variable affect the likelihood of high school entrance more than any other transitions. Otherwise, this does not mean that effect of this variable is stronger for this transition than for any other.

And the changes of educational track at the upper secondary education and the tertiary education vary from the changes at selected levels of schooling. Percentage of family's social capital at the college of the tertiary education (29.7%) is lower than that of family's social capital at the general school of the upper secondary education (32.5%). This may interpret variously, but the most reason is that the proportion of the college entrance to vocational high school is larger than that of the college entrance to general high school (51.8% : 29%).

Table 4. Coefficients of Family Background Variables in Binary Logit Model

| | T1 | T2 | T3 | T4 | | |
|---|---|---|---|---|---|---|
| | | | | Except CSAT | Included CSAT | |
| FEDU | .121(.013)*** | .101(.012)*** | .041(.011)*** | .032(.029) | -.086(.081) | -.104(.081) |
| MEDU | .236(.024)*** | .147(.015)*** | .105(.012)*** | -.006(.031) | .048(.081) | .036(.081) |
| FOCC | .022(.006)*** | .022(.005)*** | .025(.004)*** | .009(.008) | .031(.019)† | .033(.019)† |
| SCAP | .891(.124)*** | .778(.113)*** | .638(.087)*** | .672(.203)** | .445(.450) | .486(.288) |
| CSAT | | | | | | .148(.094) |
| Pseudo-$R^2$ | .543 | .399 | .211 | .063 | .082 | .100 |
| -2LL | 3187.469 | 3374.778 | 4155.007 | 705.736 | 181.375 | 178.819 |
| Chi-square | 2336.508 | 1355.513 | 602.221 | 32.456 | 11.111 | 13.667 |
| N | 5,635 | 4,549 | 3,573 | 895 | 241 | 241 |

Note: All models include sex, age, region variables. Pseudo-$R^2$ is Nagelkerke $R^2$.

1) †: p < .10 * : p < .05 ** :p < .005 ***: p < .001

Table 4 shows the binary logistic regressions of the log odds of educational continuation on five family background variables[15]. These models are the same models that Mare (1980) analyzed. Primary interest of this study is whether or not parental effects decline across school transitions. The explanatory power (Pseudo-$R^2$) of models declines from the previous steps to the afterward steps (.543 => .399 => .211 => .063). Also, the effects of family background variables decline across school transitions. In Transition 4 (enrollment of graduate school), the effects of family background are insignificant except family's social capital, moreover mother's education shows negative effect (-.006).

Second interest of this study is how four measures of family background variables affect on school transitions. The effects of father's and mother's education decline from the lower to higher school transitions. Also, the effect of father's social capital decreases across school transition. Otherwise, the effect of family's economical capital does not decrease across school

[15] Hiroshi Kanbayashi (Tohoku University) commented on model tests using goodness of fit statistics at the study meeting. Many researchers have analyzed educational continuation using the preferred model selected by model comparisons, especially BIC statistics (e.g. Blossfeld and Shavit, 1993). They have not only considered main effects for each of variables, but also have considered two-way or three-way interaction effects. But this study does not test various models including interaction terms. Because I think that this strategy does not fit the purpose of my study. If I select the preferred model including interaction terms, I cannot test comparison between Mare model and MT model. For example, in two-way interaction stage, the preferred model of Mare model included interaction term of MEDU and AGE (BIC = 3330.594), while that of MT model included interaction term of FOCC and AGE (BIC = 6502.075) at the transition 2 step. Anyway, I thank Hiroshi Kanbayashi for good comment.

transitions except transition 4 (T1=> T2 =>T3: .022=> .022 => .025). This result shows an exceptional pattern, different with research findings of previous national comparative study (Blossfeld and Shavit, 1993). This partly can be explained from the Korean financial aspect of tertiary education. Total expenditure on tertiary education has been mostly funded by private sector in Korea. Financial burden of parents in Korea are larger than that of parents in any other countries at the tertiary education levels, because private schools depend on tuition from parents. Also, as the private tutoring has increased enormously, it worsens the financial burden of the household with school age children in Korea. According to Kim, at al (2001), the ratio of private tutoring increased 3.9 times between 1980 (14.9%) and 2000 (58.1%).

Third interest of this study is whether it does have a substantial effect on the likelihood that university graduates continue to go to school or not. T4 models include the binary logit models with and without academic ability variable. These models analyze respondents under 30 years old. Family's social capital variable is only positive and significant in T4 model except academic ability variable (CSAT). In T4 model included CSAT, the effect of family's social capital variable vanishes. On the contrary, Family's economical capital variable is insignificant in T4 model except CSAT, but T4 model included CSAT shows that the effect of this variable is positive and the observed significance levels of the coefficient for this variable are less than 0.10. This can be interpreted as that family's economical capital variable at least affects on transition from university to graduate school in the newest generation under 30 years old. Meanwhile, the affect of academic ability is insignificant. Previous research shows that academic ability is a strong determinant of continuation into graduate education (Mullen, Goyette and Soares, 2003: 157). Although academic ability always does not show the strongest effect in determining entrance of graduate school, it at least shows significant positive effect in previous research (Stolzenberg, 1994: 66). Why academic ability does not show significant effects in case of new generation in Korea? This partly can be explained from abnormal motivation going to graduate school of new generation. About 11% of Korean university graduates go to graduate school because of difficult of employment (Presented in the Appendix, see Table A-4). These graduate students may do not regard graduate school as educational institutions bearing professional academic career, but as a shelters of labor market avoiding unemployment after graduation.

Table 5. Coefficients of Family Background Variables in Multinomial Logit Model

| | MT2 | | MT3 | | | |
|---|---|---|---|---|---|---|
| | | | Except Transitions | | Included Transitions | |
| | Vocational Education | General Education | Junior Colleges | 4-6 Year University | Junior Colleges | 4-6 Year University |
| FEDU | .079(.014)*** | .119(.013)*** | .023(.017) | .049(.013)*** | .018(.017) | .039(.014)** |

| | | | | | | |
|---|---|---|---|---|---|---|
| MEDU | .118(.017)*** | .169(.016)*** | .065(.018)*** | .124(.014)*** | .061(.018)** | .117(.014)*** |
| FOCC | .007(.006) | .029(.005)*** | .026(.005)*** | .024(.004)*** | .023(.005)*** | .019(.004)*** |
| SCAP | .636(.123)*** | .878(.118)*** | .534(.125)*** | .698(.097)*** | .523(.126)*** | .677(.108)*** |
| MT2[1)] | | | | | .758(.113)*** | 1.712(.108)*** |
| Pseudo-$R^2$ | .330 | | .227 | | .306 | |
| -2LL | 6588.330 | | 5349.313 | | 5242.415 | |
| Chi-square | 1556.294 | | 754.537 | | 1060.920 | |
| N | 4,549 | | 3,573 | | 3,573 | |

Note: All models include sex, age, region variables. Pseudo-$R^2$ is Nagelkerke $R^2$.

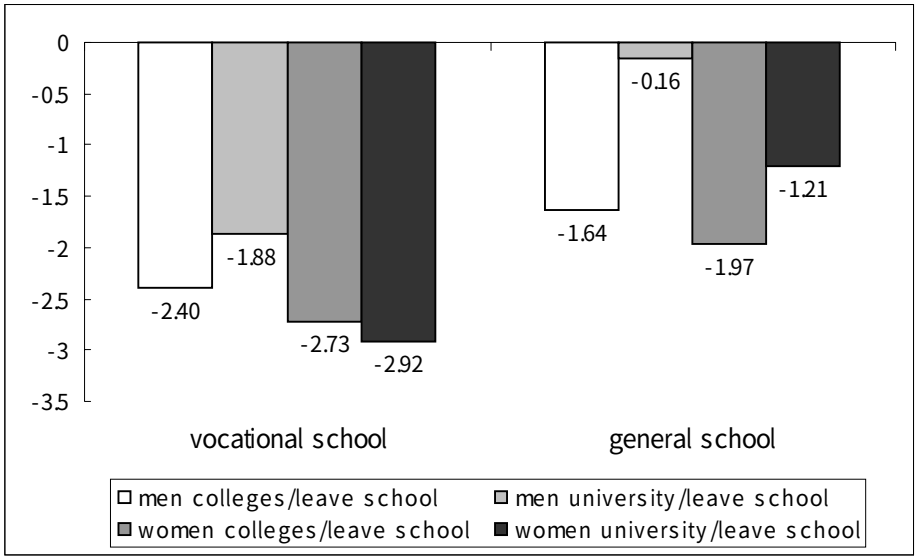
1) Reference category of MT2 variable is vocational track.

2) †: $p < .10$ *: $p < .05$ **: $p < .005$ ***: $p < .001$

Table 5 shows the multinomial logit model of the log odds of educational continuation on five family background variables. These models are additionally analyzed in comparison with the traditional binary logit model (Mare model). Mare model neglects family background difference in the pathway that a student takes through the educational system. MT models shows that family background has stronger effects on general/university tracks than on vocational/junior college tracks except father's occupation of MT3. For example, the odds of family's social capital on entering junior colleges are about 1.69 times (=exp. [.523]) greater for leave school, while the odds of university are 1.97 times (=exp. [.677]) greater for leave school in MT3 included MT2 variable.

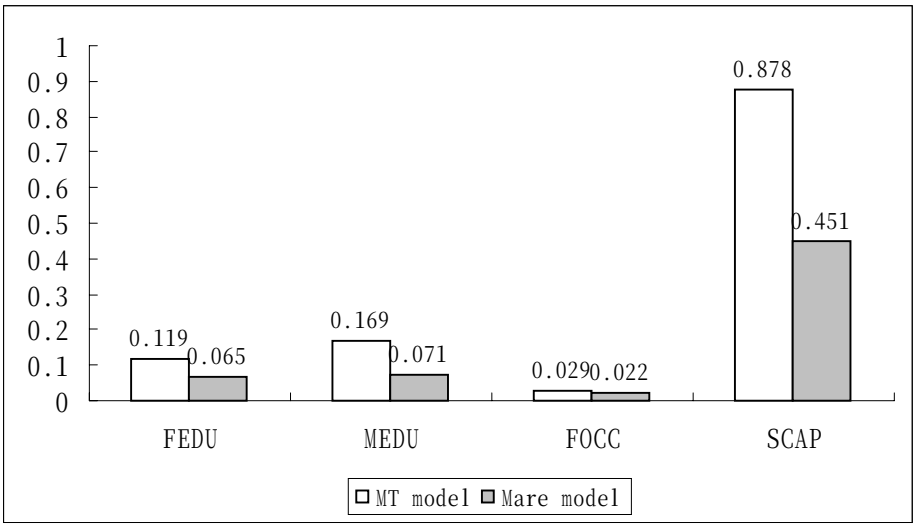
Figure 3 shows the estimated average log odds ratios for path dependence by sex at the transition 3 (tertiary levels). It is clear that different pathways lead to different conditional probabilities. Students who have followed vocational track have a very low conditional probability of entering tertiary education. Especially, conditional probability of entering university to general high school (-0.16) is 11.8 times larger than that of vocational high school (-1.88) among men. This result gives support to the Breen and Jonsson (2000)'s *path dependence hypothesis*. According to Breen and Jonsson (2000), family background effects on transition probabilities vary according to the particular choice, and the probabilities of making particular choice vary depending on the educational pathways.

Figure 3. Average Log Odds Ratios for Path Dependence in MT3 (Tertiary Levels) by Sex



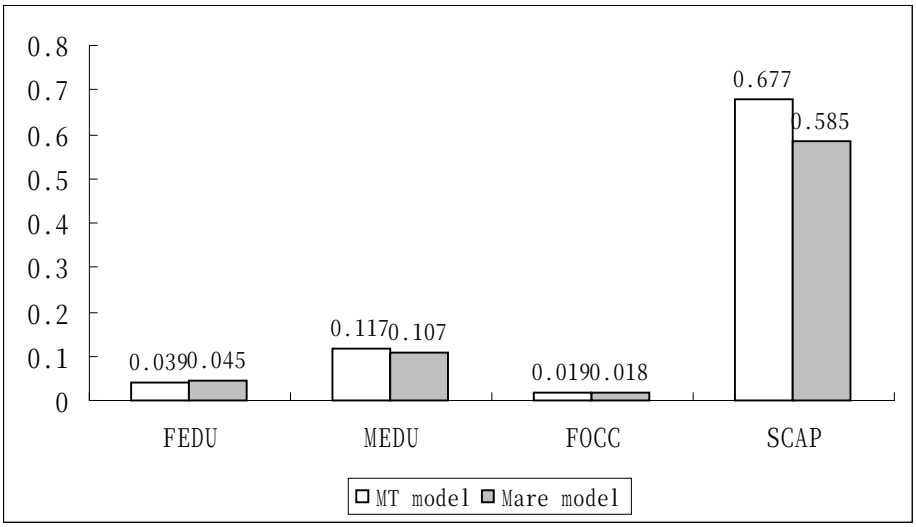

Note: Age=42.2, FEDU=6.2, MEDU=3.9, FOCC=30.7, SCAP=0, Region=1. Continuous variables are calculated at means, and category variables are calculated at values of the largest proportion in distribution.

Figure 4. The Coefficients of the Mare model and MT model at the Secondary Education (T2)




Note: the coefficients of Mare model are log odds ratios of making a transition to general high school track.

Figure 5. The Coefficients of the Mare model and MT model at the Tertiary Education (T3)




Note: the coefficients of Mare model are log odds ratios of making a transition to university

Figure 4 and Figure 5 compare the Mare model with MT model about the effects of family background on school transitions. Figure 4 shows the comparison of two models at the upper secondary education levels. Figure 5 shows the tertiary education levels. First, Figure 4 shows that the coefficients of Mare model are smaller than the coefficients of MT model. The coefficients of Mare model are equal to the coefficients of general track in MT2 model subtracting the coefficient of vocational track in MT2 model. This result shows that Mare model tends to deflate family background effects at the secondary education. Secondly, Figure 5 shows that the coefficients of Mare model are smaller than the coefficients of MT model except father's education. But differential of two models is larger at the secondary stage than at the tertiary stage. This result does not correspond with result of Breen and Jonsson (2000). They insisted that Mare model tends to deflate family background effects at early transition, while this model tends to inflate them at the transition to higher education.

## 5. Conclusions

This study analyzes the effects of family background on educational continuation in Korea. Previous research has insisted that parental effects decline across school transitions. Using 1998-2002 data from the *Korea Labor and Income Panel Study* (the KLIPS), this study examines whether or not the effects of family background decline in higher education levels and vanish in graduate school level in Korea though binary logit model and multinomial logit model. Dependent variables are transitions from lower to higher stage in educational continuations. Main independent variables are three types of family background: cultural capital of family

(father's and mother's education), economical capital of family (father's occupation), and social capital of family (whether or not respondents have relatives who employed as upper professions).

First of all, this study examines whether or not family background declines school transitions using Mare model (1980). As a result, the effect of family's cultural and social capital declines across transitions, while the effect of family's economical capital never declines across transitions. This result partly explains the large proportion of private expenditure on tertiary education and the burgeoning enlargement of private tutoring across extreme competition to entry universities. In addition, family background variables do not have substantial effects on the likelihood that university graduates go to graduate school or not. In the following analysis, this study additionally analyzed the multinomial logit model in comparison with the traditional binary model. This study confirms that the Mare model tends to deflate family background effects on school transitions, especially, at the secondary education levels. Also, this study observes that different educational pathway in the school system leads to different conditional probability on school continuations.

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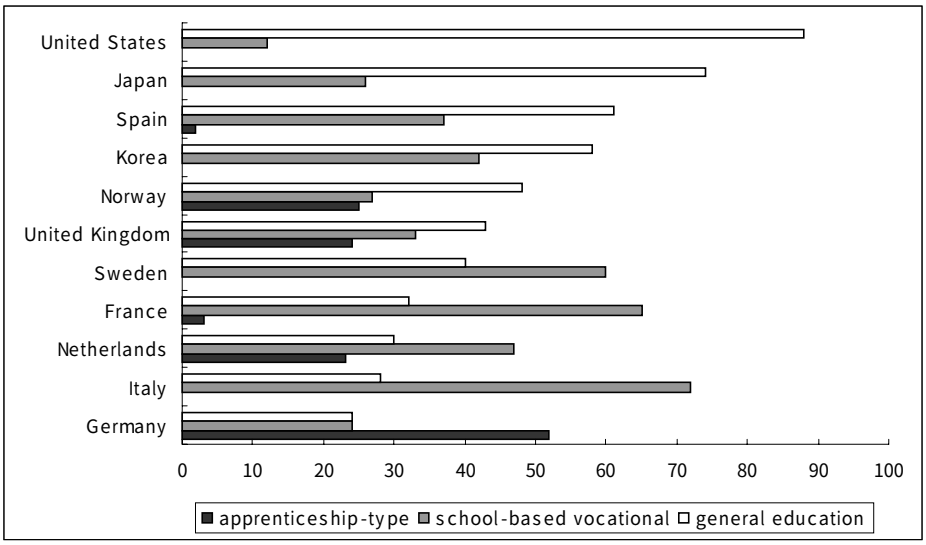
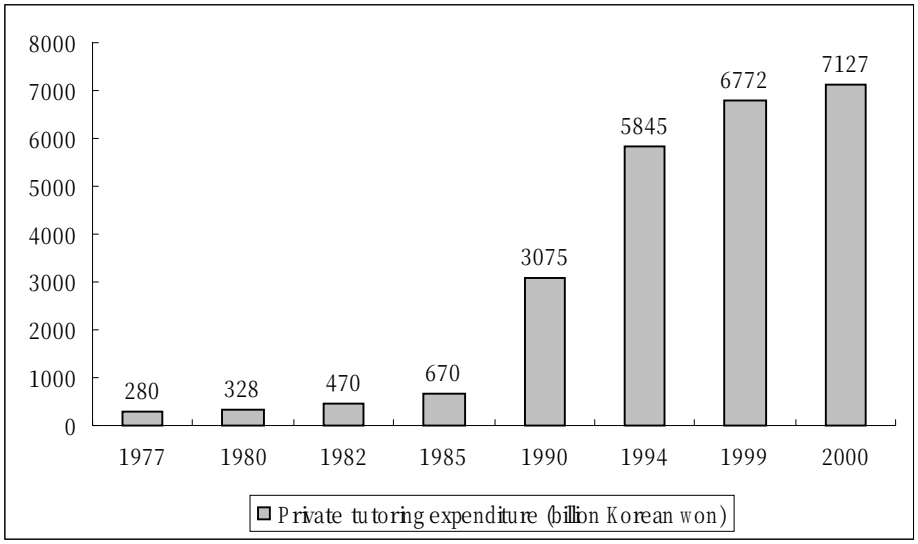
# The Appendix

Figure A-1. Distribution of Upper Secondary Students by Pathways of School Type



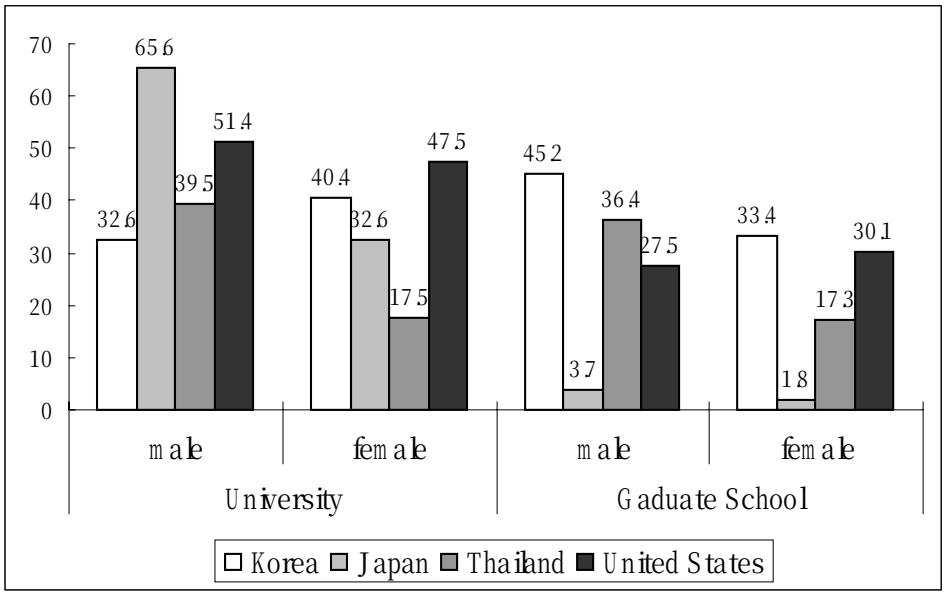

Source: OECD, 2000. *From Initial Education to Working Life: Making Transitions Work.* See Table 2.2

Figure A-2. The Expenditure for Private Tutoring in Korea



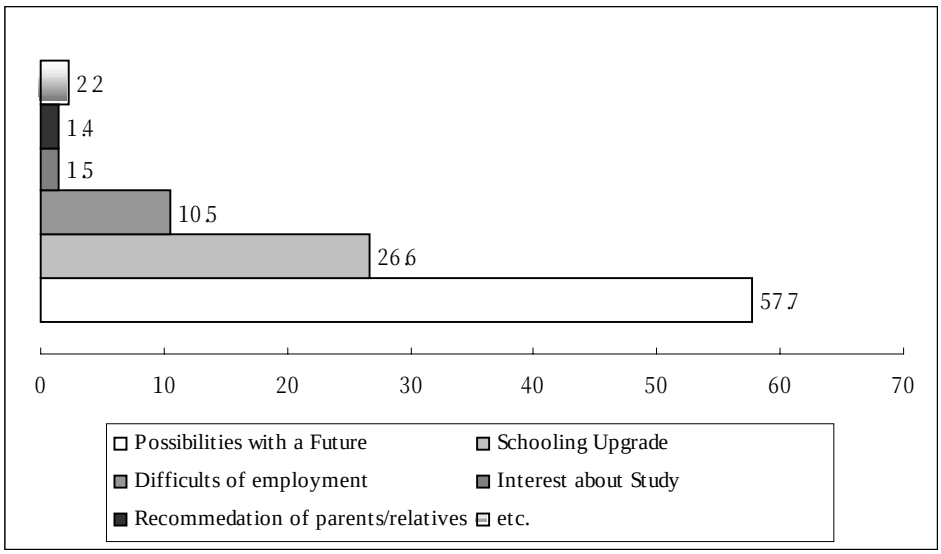

Source: Kim, Y. C., Yang, S. S., Kim, Y. H, and Lee, J. H. 2001. *Solutions for Private Tutoring.* Korean Educational Development Institute.

Figure A-3. Distribution of Parent's Expectation about Their Children Education (%)




Source: Noriko (2000), Page 28. Original source is Japanese Women Social Education Society, *the International Comparative Survey Report of Home Education*. Korean data samples are 1,004 parents living together with 1-12 years old children (the Census data of Korea National Statistical Office, 1990). Japanese data samples are 1,067 parents (國勢調查). Thailand data samples are 1,000 parents (office of Center Civil-Registration Department of Local Administration Ministry of Interior 1992). United States data samples are 1,000 parents (U. S. Bureau of the Census, 1990)

Figure A-4. Distribution of Main Motivation Going to Graduate School (%)




Source: *the Graduate Students Survey* (2002). Korea Research Institute for Vocational Education & Training (KRIVET)

Table A-1. Distribution of Educational Expectation of Senior High School Students

(%)

| | | High school | Junior College | University | Graduate School |
|---|---|---|---|---|---|
| Korea | Male[1)] | 4.6 | 12.7 | 51.4 | 24.6 |
| | Female[2)] | 4.8 | 12.1 | 54.1 | 21.2 |
| Japan | Male[3)] | 18.4 | 12.6 | 51.5 | 9.7 |
| | Female[4)] | 15.7 | 27.6 | 42.1 | 4.8 |

Source: Nakamura, at al (2002), Page 76-77. 1) "I don't think" 4.8%, "others" 1.9%, 2) "I don't think" 5.2%, "others" 2.5%, 3) "I don't think" 6.6%, "others" 1.2%, 4) "I don't know" 7.6%, "others" 2.1%.

Table A-2. Total Enrollment Students of Graduate School by Countries

(Unit: 1,000 persons)

| Year | Japan[1)] | Korea[2)] | United States[3)] |
|---|---|---|---|
| 1970 | 41 | 7 | 1,031 |
| 1980 | 54 | 34 | 1,343 |
| 1990 | 90 | 87 | 1,586 |
| 2000 | 205 | 229 | 1,850 |

Source: 1) The Japan Institute of Labour Policy and Training, *Japanese Working Life Profile 2003*, 2) Korean Educational Development Institute, *Statistical Yearbook of Education*, 3) U.S. Department of Education, National Center for Education Statistics, *Higher Education General Survey* (HEGIS).

Table A-3. Students of Graduate School per 1,000 by Countries in 2000

| | Numbers of students[1)] | Numbers of total population[2)] | students per 1,000 persons |
|---|---|---|---|
| Japan | 205 | 126,926 | 1.62 |
| Korea | 229 | 45,985 | 4.99 |
| United States | 1,850 | 281,422 | 6.57 |

Source: 1) See Table A-2, 2) 1,000 persons, The Japan Institute of Labour Policy and Training, *Japanese Working Life Profile 2003* / Korea National Statistical Office, *Statistical Data Base* (http://www.nso.go.kr) / U.S. Census Bureau, United States Department of Commerce (http://www.census.gov).