Family Background and Women's Participation in Higher Education in Korea

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Abstract: Prior research on educational attainment has revealed that (1) class differentials have either been stable or fluctuated over time in most countries, (2) gender differentials have steadily declined in advanced countries. This paper examines the changes of gender differentials and of class differentials among women in higher education in Korea. It found that while gender differentials have steadily decreased during the past decades, class differentials among women have increased over time. This is not fully explained by the existing several hypotheses. This paper suggests that several factors such as the saturation of secondary education and the rise of family income should be considered to properly explain the change of women's educational inequality in Korea.

Key words: higher education, class differentials in educational attainment, gender differentials in educational attainment, saturation of secondary education, family income

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Prior research on the inequality of educational opportunity has uncovered several consistent facts[1]: (1) class differentials in educational attainment in almost all countries have been stable or fluctuated, rather than declined, despite the expansion of educational system and the various educational reforms aimed at removing the barriers impeding the schooling of lower classes.[2] (2) In contrast to the trends of class differentials, gender differentials have steadily declined in advanced countries since the 1970s (Blossfeld and Shavit, 1993; Shavit and Blossfeld, 1996; Breen and Goldthorpe, 1997).

There is no particular reason to suspect Korea to be an exception in these aspects. As will be seen later, both trends are also true in Korea: class differentials among men have persisted and gender differentials have decreased during the past decades. However, we have some reasons to raise a question why gender differentials have declined in Korea. The decline of gender differentials in educational attainment generally tends to be accompanied with the industrial and occupational changes favoring women. The expansion of service industries and the increase of white-collar jobs foster the employment of women, encouraging women to aspire for a higher education (Walters, 1986; Goldin, 1995). However, such transformation of industrial and occupational structure has not greatly increased the employment of women in some of East Asian countries such as Japan and Korea

1. By *the inequality of educational opportunity*, Boudon (1974) means the differences in level of educational attainment according to family background. If family background is measured by class, the inequality of educational opportunity can be called as class differentials in educational attainment. Needless to say, family background is conceptually broader than class. However, this paper will regard two terms as the same just for the sake of convenience.
2. But see Breen, Luijkx, Müller, and Pollak(2005) for the various research against this persistent inequality in education.

(Brinton, 2001). For what reasons, then, have gender differentials so rapidly decreased in Korea? This is the first research question of this paper.

The second research question deals with class differentials among women in Korea. Several authors found that class differentials in educational attainment among men have been persistent during the past decades in Korea (Chang, 2001; Phang and Kim, 2002; Park, 2003). However, mainly due to data limitations, they did not cover the women's case. Have class differentials among women been also stable over time in Korea, where women's education has been greatly enhanced during the relatively short period?

In the next section, this paper summarizes several hypotheses predicting the trends of gender differentials and women's class differentials in educational attainment. The third section will show the various findings of prior empirical research pertaining to Korean women's education. A few alternative hypotheses will be derived from such results in the fourth section. The next two sections provide the description of data, variables, statistical methods, and analytical results, followed by the discussion and conclusion in the final section.

Ⅰ. Theories and Hypotheses

Class differentials and gender differentials in educational attainment, while related to some extent, retain a clear distinction from each other. While class differentials reflect only intergenerational relations, gender differentials are related to an additional factor, the resource allocation among sons and daughters within a family. The theoretical resources to explain the differences in the level of educational attainment according to social background are well established and neatly summarized (Blossfeld and Shavit, 1993; Erikson and Jonsson, 1996; Goldthorpe, 1996; Breen and

Goldthorpe, 1997). This paper, however, focuses on the much less developed area of research: explaining gender differentials in educational attainment.

Although gender is a great fault line of societies according to which resources and power are distributed and allocated (Papanek, 1985), the theoretical resources available to explain the gender differentials in educational attainment are conspicuously lacking (Jacobs, 1996; Schultz, 1995a). The few current general frameworks to explain gender differentials in educational attainment are the *wealth maximization hypothesis*, the *rational action theory*, and the *education-induced egalitarianism hypothesis* (Buchmann, DiPrete, and Powell, 2003; Goldthorpe, 1996).[3]

Wealth Maximization Hypothesis

The wealth maximization hypothesis, coming from the human capital theory, deals with the relations between a family's resource allocation and the maximization of family wealth (Behrman, Pollak, and Taubman, 1986; Becker and Tomes, 1986; Becker, 1981). Providing that parents consider the maximization of family wealth when deciding their children's education, differential educational investment in sons and daughters depends on the differences in educational returns to males and females. Where labor markets favor the males, a family would prioritize the sons' education. If women's participation in the labor market increases, however, women's increasing returns to schooling would stimulate an increase in the investment in daughters' education, leading to a decrease of gender differentials in educational attainment. More jobs for women would encourage parents to invest family resources more liberally into their daughters' education because their daughter's increasing returns to education would contribute to the maximization of family wealth.

3. See Jacobs (1996), and Buchmann et al. (2003) for other minor hypotheses.

This hypothesis makes another prediction regarding the relationship between the family resources and the differential investment for sons and daughters. If perceived returns do not vary by the investment size, the extent that parents favor sons over daughters would not depend on the level of family resources. However, rational parents perceive diminishing returns to investments in sons as the amount of investment in them increases. Parents with better endowments will therefore devote a relatively larger share of their resources to daughters, even if gender-specific returns to schooling are held constant. Thus the educational investment in daughters would have higher income elasticity than that in sons, and gender differentials in educational outcomes would be lower for better endowed parents.

Summarizing, the wealth maximization hypothesis assumes that gender differentials in educational attainment depend on both the perceived returns to education and the level of family income. The trends of gender differentials and class differentials among women would be therefore dependent upon the changes of these two factors. As industrialization transcends its manufacturing base and expands into the service sector, women's participation in the labor market tend to increase. Under this condition that the perceived returns to women's education rise, gender differentials in educational attainment should decrease over time. But it is expected that gender differentials would unequally decrease among stratified groups, because rational parents with various levels of income perceive different amounts of diminishing returns to a son's education. Expressing this in statistical terms, the wealth maximization hypothesis predicts a significant three-way interaction among family income, gender, and a time-related variable.

Rational Action Theory

The rational action theory presupposes that the relative risk

aversion generates class differentials in educational attainment. All parents seek to ensure that their children acquire a class position equal to or higher than their own. In other words, they try to avoid the risk of downward mobility. However, the same strategy results in quite different consequences for people from different classes. While working class children may be satisfied with the working class jobs, middle class children have to get at least middle class jobs. In terms of education, this strategy gives rise to a tendency for middle class children to prefer higher education or more prestigious educational options than working class children (Goldthorpe, 1996; Breen and Goldthorpe, 1997; Goldthorpe, 2000)

Although the rational action theory focuses more on socially encompassing rationality than economic, it is very similar to the wealth maximization hypothesis as far as gender stratification in educational attainment is concerned; it regards the expected returns to education as critical (Goldthorpe, 1996; Jonsson, 1999). Under the condition women's returns to education are lower than those of men, first, women would be less willing to advance their educational career than men, and thereby gender differentials would be large. Second, class differences would be lower among women than among men, because the smaller differences in the returns associated with the various possible educational outcomes decrease the disparity of educational aspirations among classes.

As mentioned above, the returns to education for women tend to draw closer to that for men as women's participation in the labor market increase. The rational action theory predicts that such changes result in the following; first, gender differentials would decrease as women aspire to have more education. Second, class differentials among women would increase from a level lower than that among men so as to approximate the male level, just because the increasing importance of educational qualifications in the labor market tends to increase the disparity of preference for continuing

education among classes (Goldthorpe, 1996). Thus the rational action theory predicts a significant three-way interaction among family positions in a stratified system, gender, and a time covariate.

The Education-Induced Egalitarianism Hypothesis

In contrast to the first two hypotheses, the education-induced egalitarianism hypothesis emphasizes the non-economic value of education. While parents undoubtedly take their own interests or the economic benefits to the family into consideration when educating their children, decision-making in educational investments does not depend only on economic calculations of costs and benefits. Education is not pursued only for better jobs or higher income but also for its own intrinsic value: self-realization, self-satisfaction, leisure, religious relief, the marriage market, and the prestige of a family (Jacobs, 1996). The egalitarianism hypothesis emphasizes these intrinsic or cultural values of education. It assumes that parents' attitudes regarding the cultural dimension of education depend upon their educational levels. Supposing that labor market conditions and family income are held constant, well-educated parents who attach more importance to the cultural value of education would be more willing to invest their resources in children's education than less educated parents. More importantly in this context, well-educated parents are more willing to invest their resources in daughters' education, because they have more egalitarian attitudes towards children's education than their counterparts (Buchmann, et al., 2003).

Thus the egalitarianism hypothesis considers the parents' own education as critical. The educational levels of parents have substantially risen. At the same time the gaps of parental education have narrowed during the last decades. This created the groundwork for a parental generation with more egalitarian attitudes. Therefore the hypothesis obviously predicts that gender differentials would decline over time, although it is not clear in

its predictions of the trends in class differentials among women unlike the prior hypotheses. Assuming that well-educated parents tend to invest more resources in daughters' education as the hypothesis presupposes, and keeping in mind that gender differentials have decreased over the past decades, however, several possibilities could be inferred from formal logic.[4] First, rising levels of parental education may proportionally change its effects on son's and daughter's education over time. This possibility implies that while the three-way interaction term among father's education, gender, and a time variable is not significant, two-way interaction terms among the relevant variables are significant. Second, more possibly, the effects of parental education may become more salient over time among daughters than among sons. This means that the three-way interaction term among the relevant variables should be statistically significant.

The above three hypotheses are the general frameworks currently available to explain both gender differentials and class differentials among women. The next section describes which hypotheses have been utilized in prior research when explaining the decline of gender differentials in Korea.

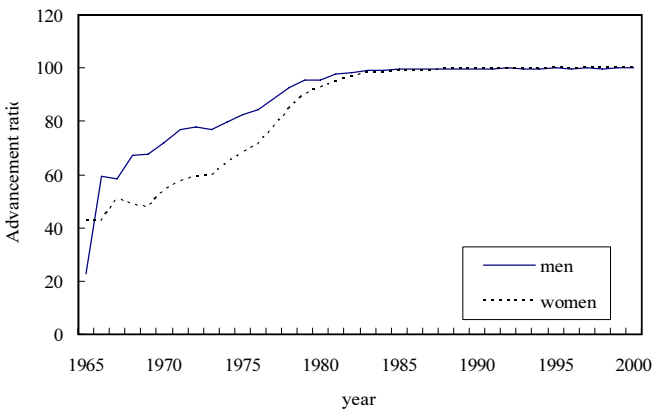
Ⅱ. Empirical Research on Korean Women's Education

Women's educational attainment has risen significantly during the past decades in Korea. The ratio of advancement from lower secondary to upper secondary school rapidly increased during the 1970s (*see* Figure 1). Gender disparity in tertiary education also has been reduced since the 1980s as seen in Figure 2,

4. All of the interaction terms among father's education (E), gender (G), and a time-related variable (T) are E·G, E·T, G·T, and E·G·T. Assuming that both E·G and G·T are significant as described in the text, the remaining interactions to which significance should be attached are E·T and E·G·T.

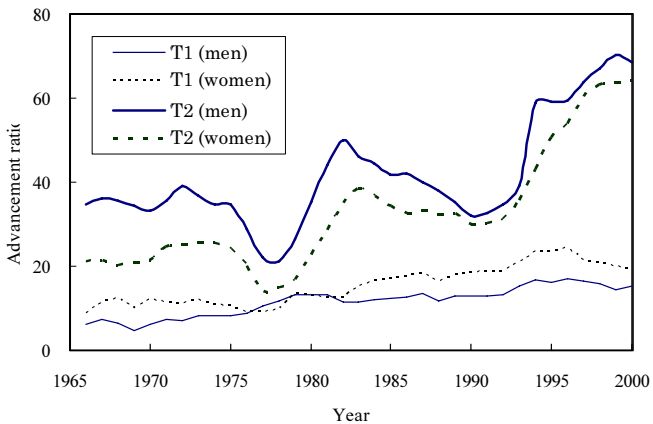
where T1 and T2 respectively represent the transition from upper secondary school to a junior college and the transition from upper secondary school to a four-year university.

Figure 1. The trend of advancement ratios from lower secondary school to upper secondary school



Source: Ministry of Education, Korea, *Statistical Yearbook of Education*, various years.

Figure 2. The trends of advancement ratios from upper secondary education to tertiary education

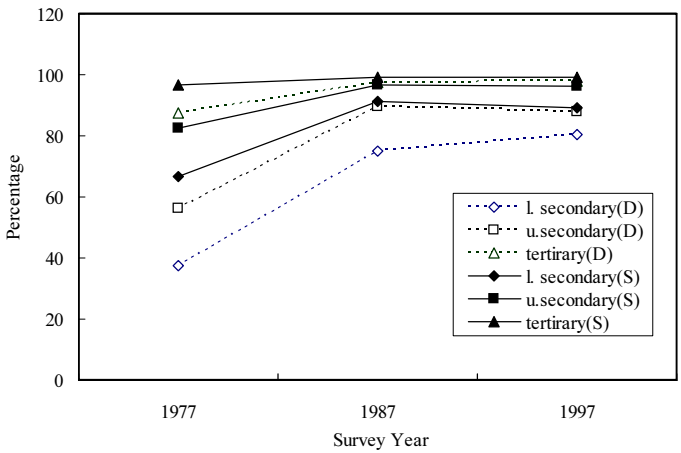


Source: Ministry of Education, Korea, *Statistical Yearbook of Education*, various years.

Despite much research on educational stratification in Korea (for a review, *see* Chang, 2001), there has been less empirical research on gender differentials in educational attainment. Lee (1998) showed that the gender-discriminatory resource allocation has been observed among families of larger size and of lower socioeconomic status, although she did not consider the changeability of families' gender-based educational investment across cohorts or over time. A few researchers empirically demonstrated that gender differentials have declined across cohorts or over time during the past decades (Kim, 1993; Lee and Cho, 1999; Chang, 2001; Park, 2003; Phang and Kim, 2002). However only Kim (1993) and Lee and Cho (1999) have suggested the reasons why gender differentials have decreased.

Kim (1993) tried to explain the decline of gender differentials by the increasing and converging trends of parental egalitarianism, which is very similar to the explanation of the egalitarianism hypothesis. Such trends are clearly shown in Figure 3, which represents the proportions of parents who want their sons and daughters to complete higher education in various years by their educational level (solid lines for sons and dotted lines for daughters).

Figure 3. The porportion of parents who want their children to complete tertiary education by their educational level



Source: Korea National Statistical Office, *Social Indicators in Korea,* various years.

Following Walters (1986), in contrast, Lee and Cho (1999) accounted for the enhancement of women's education by the changes of economic conditions. Women's rate of participation in the labor force have steadily increased since the mid-1980s in Korea, from 39% in 1986 to 41.5% in 1992, and to 49.5% in 1997 (Lee, 1996; Choi, 1998; Brinton, 2001). The increasing rate was noticeable among women with the qualifications of tertiary education. The rates of employment for unmarried women who graduated from four-year universities increased from about 50% in 1970 to 70% in the early 1990s (Lee and Cho, 1999). In addition, the possibility for a woman to get a desirable job has also increased. The proportion of employed women in professional and managerial jobs increased from 5.2% in 1986 to 9.2% in 1992. Including clerical jobs, the figures have changed from 15.1% to 23.7% (Lee 1996).

Judging from the changes of these figures, Lee and Cho

(1999)'s explanation, which is quite similar to those of the wealth maximization hypothesis and the rational action theory, appears to be successful; gender differentials seems to have declined due to the increase of perceived returns to schooling. However, some researchers suggested several pieces of opposing evidence against this kind of argument. The employment rate of married women has been very low despite their gradual increase of participation in the labor market. The participation rate has changed from 40.0% in 1980 to 47.6% in 1995 (KLI, 2002), however, all of which were the lowest figures in OECD countries in each year (OECD, 2001). Moreover, married women's education is negatively related to the employment in Korea. Married women having tertiary qualifications are less employed in their thirties and forties than those graduating from secondary education (Lee, Brinton, and Parish, 1995). This implies that economic returns to tertiary education might not have been as high among women as expected.

A few authors suggested further evidence. Ahn (2005) showed that women's enrollment in tertiary education has greatly increased despite that the wage premium of female university graduates over high school graduates has rapidly declined since the early 1980s. More directly, Brinton and Lee (2001) found that women's enrollments in tertiary education have indeed been unassociated with the change of women's labor force participation rate and the white-collar composition of the labor force. Elaborating the findings, they concluded that women's education in Korea has been decoupled from, or at best loosely coupled with the industrial and occupational change (Brinton and Lee, 2001). Two factors were suggested for this loose coupling; 1) the government's policy to allow higher education to expand at a speed disproportionate to that of economic and occupational change, and 2) a very high social demand for education to fulfill social status concerns.

Tertiary education in Korea has continuously expanded since

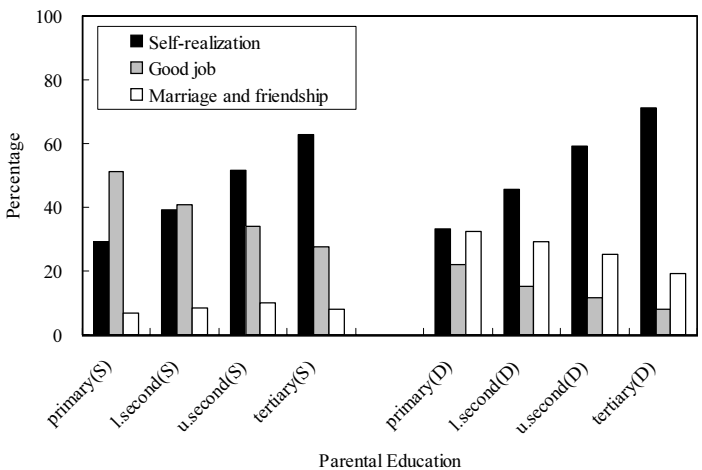
the 1950s. The increasing rates in the 1980s and 1990s were especially great (*see* Figure 2), which have been unprecedented except for a few countries such as Poland and Hungary (OECD, 2002). A natural result of the excessive expansion of tertiary education was the over-education of men. Men with tertiary qualifications have always exceeded the number of appropriate jobs, and the educated unemployment has been prevalent since the late 1950s (McGinn et al., 1980; Michell, 1988; Amsden, 1989). This over-education of young men has generated two results for women: the deterrence of women's employment and the intensification of competition in the marriage market. The employment of women has not significantly increased because the long queues of highly educated males have provided little incentive for the employers to lower traditional barriers against women's employment. The over-education of men has also given a crucial social pressure affecting women and their parents, making a university education an important credential for the competition in the marriage market (Lee et al., 1995; Brinton and Lee, 2001).

Rephrasing Brinton and Lee (2001)'s statements, the increase of women's enrollment and the decline of gender differentials in tertiary education have been driven by the competition for the marriage market, which was accelerated by excessive educational expansion. Their argument is quite consistent with the *marriage market returns hypothesis* which has been repeatedly advocated by other research (Kim, 1993; Sorenson, 1994; Lett, 1998; Seth, 2002). According to the hypothesis, Korean women have advanced their education in order to secure an advantageous position in the marriage market. This hypothesis was indirectly supported by the observations that although Korean women's participation in tertiary education has produced few advantages in the labor market in terms of jobs, promotional potential, and earnings, it brought higher socioeconomic benefits for marriage (Lee, 1998; Lee, 2001).

Ⅲ. Alternative Hypotheses

Although the marriage market returns hypothesis has been most popular in Korea, no research so far has made it clear whether the concerns on marriage market returns is the true motive of women and their parents to advance the educational career. Figure 4 represents the various purposes parents had for their children's education in 1993 (the left half for sons and the right one for daughters), revealing two important points. First, Korean parents seem to be well aware of the low occupational returns to education for their daughters; they do not have great expectations for the occupational success of their daughters. Second, although Korean parents pay greater attention to the marriage market returns of, especially, their daughters, they have more than this in mind; the self-realization and self-satisfaction.

Figure 4. Purposes of parents with various qualifications to educate their children



Source: Korea National Statistical Office, *Social Indicators in Korea,* 1996.

Figure 4 shows us that the marriage market returns hypothesis is incomplete. It is true that parents pay more attention to the marriage market returns to education of their daughters than to the occupational or economic returns. But the marriage market returns are not the main target of parents. Considering that the concerns of the marriage market returns are inversely related to parental education, the hypothesis sounds even more implausible; while 33% of parents with primary schooling or less replied that the marriage market returns are their most important purpose for educating daughters, only 19% of parents with tertiary qualifications answered so. If the pursuit of returns in the marriage market was the driving force for the increase of women's education, the level of enrollment in tertiary education should be higher among daughters of less educated parents than among those of well-educated parents. This is contradictory to the well-known fact.

Figure 4 clearly demonstrates that the enhancement of women's education has not been driven by the perceived economic returns but by cultural motives, irrespective of whether such motives include the concerns on the marriage market returns. Provided that the cultural propensity of parents is really responsible for the increase of women's education, some new hypotheses can be created to predict the change of gender differentials and class differentials among women.

The cultural propensity for education is related to parental egalitarian attitudes as the egalitarianism hypothesis states. However, such a propensity also depends on family income. Even under the condition that higher education is a high-risk one in that the investment fails to reap its returns, children of better endowed parents are prone to advance their educational career. It is either because higher education becomes a social norm among them (Boudon, 1974), or because with higher living standards, they are able to regard higher education for their children as

simply a desirable consumption good (Goldthorpe, 1996; Schultz, 1995b).[5] If the cultural propensity for education depends on such factors as parental egalitarianism and family income, it is necessary to build the hypotheses around these.

Converging Cultural Propensity Hypothesis

Due to the rising trend of parental education, gender egalitarianism has greatly increased even in East Asian countries where patriarchal ideology was prevalent (Kim, 1993; Lee, 1998; Shu, 2004). So it is entirely probable that the cultural propensity of parents for daughter's education would have increased. Remembering that parental egalitarian attitudes have also converged among various strata in Korea (*see* Figure 3), the increase of cultural propensity parents have for daughter's education should have reduced both gender differentials and class differentials among women. This will be called as the *converging cultural propensity hypothesis*, which can be regarded as another version of the egalitarianism hypothesis.

Family Income Effect Hypothesis

Focusing on family income, we can speculate another hypothesis. Some research found that young women's likelihood of college enrollment was not significantly affected by the expected returns to schooling in Japan and the United States (Arai, 1998; Beattie, 2002). Instead, family income and the direct cost of college education accounted for most of the variation of enrollment rates (Arai, 1998). The implication of this finding is as follows; contrary to the expectations of the wealth maximization hypoth-

5. Such cultural demand tends to become stronger as the educational system expands. Once schooling starts to expand and educational credentials becomes a ticket to desirable jobs, an inflation of educational credentials is set up, regardless of the extent to which education can provide valued jobs (Boudon, 1974; Collins, 1979).

esis, parents are not such competent econometricians. They seldom calculate the expected economic returns when deciding their children's education. Myopic parents only compare the cost of schooling with their income. If their financial capacity can cover the cost, they are ready to invest their resources in daughter's education even when it does not bring higher economic benefits. Such actions may arise because they regard the non-pecuniary returns of tertiary education, such as psychological and social rewards, as important as the monetary returns (Arai, 1998; Beattie, 2002). This argument will be referred to as the *family income effect hypothesis*.[6]

The family income effect hypothesis presupposes that better endowed parents always want to send their daughters to university either for the consumption value of education or non-monetary returns to education. However, as far as parents are interested in the non-monetary returns to education, they do not have to send their daughters to university when secondary education brings enough benefits. They tend to be interested in tertiary education when and only when the non-monetary returns to upper secondary education are threatened by the saturation of it. On the other hand, even if the saturation of secondary education raises the demand for tertiary education, such demand cannot be easily met unless tertiary education expands; a restricted enrollment quota in tertiary education might not allow them to avoid the extreme competition with males. So it is highly probable that the family income effect hypothesis is more applicable when upper secondary education is nearly universalized and tertiary edu-

6. This hypothesis looks similar to the wealth maximization hypothesis in that they focus on a family's economic resources, but differs from the latter in that it does not focus on the expected economic returns to education. The hypothesis is similar to the egalitarianism hypothesis in that they share the recognition of the importance of non-monetary returns, but differs from it that the former assumes family income to be more decisive.

cation expands.

The hypothesis predicts that both gender differentials and class differentials among women would decrease as the economy grows and family income rises. However, class differentials in higher education could increase among women *until* the economic growth reaches a certain level where the lower strata can afford the expense of their daughter's higher education. Once the economic growth exceeds such a level and family income of lower strata increases enough to afford the expense, class differentials among women could decline to the male level.

So far this paper has summarized the results of empirical research on Korean women's education and derived some alternative hypotheses from them and the other relevant research. Empirical results in Korea are clearly contrasted with the predictions of the wealth maximization hypothesis and the rational action theory; gender differentials have not been reduced by the perceived economic returns to education. So it is quite probable that both hypotheses would not succeed in explaining the Korea case. If it is true that the pursuit of non-monetary returns has driven the decline of gender differentials, some of the other hypotheses such as the egalitarianism hypothesis, the converging cultural propensity hypothesis, and the family income effect hypothesis would successfully explain the Korean case. The next sections consider which hypothesis is most applicable.

Ⅳ. Data, Variables, and Method

Data

This paper used the *Korean Labor and Income Panel Study* (KLIPS) data which were collected by the Korea Labor Institute in 1998. The data were collected by the multi-stage stratification cluster sampling. The total observations are 13,738 out of about 5,000 households in non-rural area.[7] Women composed about 50%

of all respondents. Final sample sizes may vary, however, because of the missing cases and the exclusion of the respondents under the age of 25 and over the age 64 as of the survey year. Sample sizes will be noted where necessary.

Variables

The dependent variable is the transition from upper secondary education to tertiary education. This transition is divided into the two. The one is the transition from upper secondary school to a junior college (T1), and the other is the transition from upper secondary school to a four-year university (T2). Therefore this variable has 3 values. If a high school graduate failed to advance his/her educational career, its value is 0. If he/she enrolled in a junior college or a four-year university, the values are 1 and 2, respectively.

Independent variables are father's education, father's class, gender, and birth cohort. Father's education is classified into 4 categories: primary education or less, lower secondary education, upper secondary education, and tertiary education. Origin class is measured by the EGP 5 class scheme: service class (Ⅰ+Ⅱ), non-manual workers (Ⅲ), self-employers (Ⅳab), farmers (Ⅳcd+Ⅶb), and manual workers (Ⅴ+Ⅵ+Ⅶa) (Erikson and Goldthorpe, 1992). Only the respondents born in 1934-1973 are analyzed here. Birth cohort is classified into 3 categories: 1934-53, 1954-63, and 1964-73. Note that in order to make cohort sizes comparable, the oldest cohort covers 20 years while the other two are ten years in duration. The reference categories of each independent variable are primary education or less, manual workers, men, and the youngest cohort, respectively.

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7. See Phang et al. (1999) on further details of the data.

Table 1. Descriptive statistics

Variables \ Cohort	1934-53	1954-63	1964-73
Men (N=3,839)			
Respondent's Education			
Primary or less	27.5	9.1	1.7
Lower Secondary	20.4	14.8	5.8
Upper Secondary	33.3	47.1	48.8
Junior College	3.7	9.2	15.0
University	15.1	19.9	28.7
Father's Education			
Primary or less	83.2	69.2	51.7
Lower Secondary	8.0	13.0	19.3
Upper Secondary	4.7	10.3	19.3
Tertiary	4.2	7.6	9.8
Origin Class			
I + II	3.2	4.3	5.4
III	7.3	10.1	13.2
IVab	11.8	17.0	20.0
IVcd+VIIb	73.0	59.0	40.7
V + VI + VIIa	4.7	9.6	20.7
Total (n)	100(1,446)	100(1,245)	100(1,148)
Women (N=3,887)			
Respondent's Education			
Primary or less	56.8	15.4	2.0
Lower Secondary	19.9	26.6	6.9
Upper Secondary	18.3	44.1	61.0
Junior College	1.3	5.6	11.7
University	3.7	7.4	18.4
Father's Education			
Primary or less	83.3	71.4	51.8
Lower Secondary	7.6	12.6	18.6
Upper Secondary	4.9	8.5	19.7
Tertiary	4.1	7.6	10.0
Origin Class			
I + II	3.0	4.9	5.2
III	6.7	10.9	13.7
IVab	11.7	16.0	19.9
IVcd+VIIb	75.7	61.1	45.4
V + VI + VIIa	3.1	7.1	15.8
Total (n)	100(1,459)	100(1,243)	100(1,185)

Notes: 1) The numbers are percentages.
2) The numbers in parentheses indicate persons.
3) I + II, III, IVab, IVcd+VIIb, V + VI + VIIa represent service class, non-manual workers, self-employers, farmers, and manual workers respectively.

Table 1 shows the descriptive statistics of each variable. The distributions of respondent's education demonstrate the increasing trend of educational attainment. Especially remarkable is women's increasing participation in four-year universities. The proportion of university graduates among women born in 1964-73 is 18.4%, while it is only 3.7% in the oldest cohort. One can calculate the conditional transition rates from the respondent's education in each sex. For example, the transition rates of women into four-year universities, conditional on completing high school, are respectively 15.9%, 12.8%, and 20.2% in the successive cohorts from the oldest to the youngest. The distributions of father's education and father's class in each sex are very similar.

Method

When analyzing the data, this paper uses the standard method for measuring the inequality of educational attainment, the multinomial logistic regression (Breen and Jonsson, 2000). Full model can be represented as follows, where p_{i0} is the probability of failing to enter tertiary education, and p_{ij} represents the probability that *i*th individual reaches *j*th level of tertiary education, conditional or unconditional on completing upper secondary education.[8] F, G, and C stand for family background, gender, and cohort respectively.

$$\ln\frac{p_{ij}}{p_{i0}} = b_0 + b_1F + b_2G + b_3C + b_4G\cdot C + b_5F\cdot C + b_6F\cdot G + b_7F\cdot G\cdot C$$

$$(j = 1,\ 2)$$

8. A conditional regression deals with a sample which includes only high school graduates. Its dependent variable contrasts the probability of entering tertiary education with that of failing to advance the educational career. On the other hand, the dependent variable in an unconditional regression contrasts the probability of entering tertiary education with that of failing to do in a larger sample which includes the respondents with all kinds of qualifications.

When simultaneously predicting the trends of gender differentials and class differentials, most of the hypotheses discussed above explicitly or implicitly assume that the coefficient of three-way interaction term (F·G·C), b_7, would be significant. They are divided only in that the F variable is differently represented. The wealth maximization hypothesis and the family income effect hypothesis consider family income as primary, while the rational action theory does class origin. The other hypotheses regard the parental education as crucial.

A critical point should be noted here. If all of the information on family resources is available, the above hypotheses can be easily tested. However, the information on family income is not available in current data. This may give rise to several serious problems; first, the wealth maximization hypothesis and the family income effect hypothesis cannot be directly tested. Second, to make matters worse, the other hypotheses cannot be completely tested, either. It is widely known that father's education, father's class, and family income are correlated with each other. So the effect of a variable could in part be that of other ones. For example, one cannot discern the effect of father's education in its own from that of family income unless the latter is properly controlled. So father's education introduced here has such various meanings as the egalitarian attitudes, cultural propensity, or family income. Such ambivalence is a major limitation of this paper.

Ⅴ. Findings

Table 2 represents the parameter estimates of the best-fitted models of conditional and unconditional multinomial logistic regressions in the transition from secondary or non-tertiary education to tertiary education.[9] Because the estimates of uncondi-

9. Model selection procedure is not shown here. It is available upon request.

tional logistic regression are suggested just for ascertaining the reliability of conditional regression estimates, only the latter estimates will be mentioned hereafter. Table 2 shows, first, that the coefficients of family background variables are positive and significant. Offspring of a family in a higher socioeconomic position have more opportunities for a successful transition. For example, the odds that a male respondent whose father has tertiary qualification completes a four-year university are about 4.1 ($=e^{1.400}$) times larger than that of a man whose father's education is primary education or less.[10] In the case of women, such odds amounts to 13.3 ($=e^{1.400+1.185}$). The odds that children of service class origin completes a four-year university are about 3.3 ($=e^{1.183}$) times higher than that of manual workers' children.

Second, as will be discussed in detail later, men are in a more advantageous position than women.

Third, birth cohort is also a significant factor that influences educational attainment. The possibilities that younger cohorts continue education are higher than that of older cohorts. The odds that the youngest cohort completes a four-year university are about 1.3 ($=1/e^{-.285}$) times higher than that of the second youngest cohort born in 1954-63.[11]

When estimating the parameters, the design effect of the stratification cluster sampling was considered for unbiased parameter estimates and correct standard errors (StataCorp, 2001; Deaton, 1997).

The best fitted model in unconditional logistic regression was somewhat different from that of conditional logistic regression. However, for convenience of comparison, Table 2 represents the parameter estimates of unconditional regression in the same model as that in conditional regression.

10. Note that this odds ratio is applicable only to men in the youngest cohort, because the coefficient of any independent dummy variable in an interactive logistic regression is conditioned to the reference categories of moderator variables (Jaccard, 2001). The same should be applied to the interpretation of other estimates.

Table 2. Conditional and unconditional multinomial logistic regression coefficients of the best fitted model in the transition from upper secondary education or non-tertiary education to tertiary education.

	conditional		unconditional	
	T1	T2	T1	T2
Father's education				
lower secondary	.388*	.359*	.503**	.489***
upper secondary	.433*	.758***	.635***	.986***
Tertiary	.821**	1.400***	1.056***	1.648***
Father's class				
I + II	.566	1.183***	.730*	1.339***
III	.131	.837***	.356	1.055***
IVab	.111	.384*	.203	.478**
IVcd+VIIb	-.173	-.058	-.189	-.103
Gender				
Women	-.340	-.897***	-.456	-1.066***
Birth cohort				
1954-63	-.297**	-.285*	-.604***	-.547***
1934-53	-.763***	-.053	-1.621***	-.791***
Father's education*Gender				
l. secondary*women	-.038	.421	.101	.638*
u. secondary*women	.376	.342	.402	.436
tertiary*women	.482	1.185***	.546	1.339***
Father's class*Gender				
I + II *women	-.139	-.304	-.321	-.515
III *women	.217	-.299	.055	-.475
IVab *women	-.042	-.070	-.016	-.002
IVcd+VIIb *women	-.711*	-.637*	-.876**	-.825**
Father's education*Gender*Cohort				
l. secondary*women*(1954-63)	-.482	-.362	-.453	-.374
l. secondary*women*(1934-53)	.123	-.141	.269	-.112
u. secondary*women*(1954-63)	-.245	-.541	-.136	-.469
u. secondary*women*(1934-53)	-1.028	-.544	-.744	-.382
tertiary*women*(1954-63)	-.474	-.666***	-.237	-.475
tertiary*women*(1934-53)	-.981	-1.639***	-.450	-1.232**
Constant	-1.431***	-1.149***	-1.602***	-1.350***
N	4,902		7,726	

Notes: 1. Reference categories of father's education, father's class, gender, and birth cohort are respectively primary school graduation or less, manual working class(V + VI + VII a), men, and the youngest cohort (born in 1964-73).
2. I + II, III, IVab, IVcd+VIIb represent service class, non-manual workers, self-employers, farmers respectively.
3. *p < .05 **p < .01 ***p < .001

11. The odds that the oldest cohort completes a four-year university are not lower than that of the second youngest cohort. This may be due to the strong policy of the government not to enlarge the enrollment quota of four-year universities in the 1970s when the second youngest cohort entered universities.

Fourth, the effects of family background are stronger in the transition from upper secondary education to a four-year university than in the transition from high school to a junior college. For example, the odds that a male offspring whose father has tertiary qualification completes a four-year university are about 1.8 ($=e^{1.400-.821}$) times higher than that of completing a junior college. This means that social competition is more intense for entering or completing the more academic and prestigious level of higher education (Breen and Jonsson, 2000; Breen et al., 2005).

These patterns are very similar to those of other countries. However, it is not these patterns themselves but the changes of such patterns that attract much more concern. Changes or trends can be caught by the interaction terms between independent variables and the birth cohort. The selected model in the transition from upper secondary education to four-year universities includes several interaction terms. Especially notable is the three-way interaction term among father's education, gender, and cohort. Keeping in mind both that the reference categories of gender and birth cohort are men and the youngest cohort and that two-way interaction term between father's education and cohort is not significant, the three-way interaction term means that the effect of father's education on the transition from upper secondary education to four-year universities have been stable across cohorts in the case of men, but increased in the case of women. Combining this coefficient together with that of the two-way interaction term between gender and father's education, the effect of father's tertiary education is 2.585 ($=1.400+1.185$) for women in the youngest cohort, while this is respectively 1.919 ($=2.585-.666$) in the middle age cohort and .946 ($=2.585-1.639$) in the oldest cohort. This means that the effect of father's education among women have increased from a level lower than that amongst men to a similar or higher level; the inequality of educational opportunity has deteriorated in the case of women.

Table 2 reflects another noteworthy fact about the timing of significant change in class differentials. Women's class differentials have increased 2.6 ($=e^{1.639-.666}$) times between the cohort born in 1934-53 and the cohort born in 1954-63, while it has increased only 1.9 ($=e^{.666}$) times between the second youngest cohort and the youngest cohort. Recognizing that the oldest and the second youngest cohort might start their tertiary education around 1972-81 and 1982-91 respectively, it was in the 1970s rather than the 1980s that class differentials among women increased to a greater extent.[12]

Turning to the patterns of gender differentials, one can find that women have been in a disadvantageous position during the past decades. The odds that women advance into a four-year university are 2.4 ($=e^{-.897}$) times less than that of men even in the youngest cohort. However, as is seen in the coefficients of three-way interaction term, this kind of gender disparity has changed in favor of women, although gender differentials have been reduced only among daughters whose fathers have tertiary qualifications. This means that the decline of gender differentials in higher education has hitherto been led by women who have better-educated fathers.

Ⅵ. Discussion

Using multinomial logistic regressions, this paper showed patterns and changes of gender differentials and class differentials in higher education in Korea. Findings can be summarized: first, gender differentials have declined in higher education,

12. The estimates of unconditional logistic regression in Table 2 show that women's class differentials increased only between the middle cohort and the oldest cohort. This supports the argument that the increase of women's class differentials was relatively weak in the 1980s.

while the decline has occurred unequally according to father's educational level. The decline has been observed only among daughters who have well-educated fathers. Second, class differentials in higher education have not changed for men in the last decades, but the effect of father's education on the transition from upper secondary school to a four-year university has increased for women.

Both the decline of gender differentials and the persistence of class differentials among men are consistent with the results in other countries. Uncommon is the fact that the educational inequality has increased for women during the past decades. What brought such an increase? Due to data limitations, it is not possible to provide an appropriate answer for this question. What we can do here is to apply various hypotheses to the Korea case. Such a trial will help us to guess the reason of change in Korea.

The formal meaning of father's education in the three-way interaction term is straightforward. Considering that father's education is correlated with a family's economic resources and thereby that father's education has multi-faceted meanings, however, it is not clear what father's education exactly stands for.

If father's education is correlated with family income or origin class to some extent, the interaction term can be interpreted as favoring the wealth maximization hypothesis or the rational action theory; as the industrialization proceeds, class differentials among women might have increased either because better-endowed parents perceived diminishing returns to the investment in son's education much earlier than less endowed parents, or because the increasing returns to education expanded the disparity of preference for tertiary education among classes. Such explanations of both hypotheses for the increase of class differentials sound quite plausible. However, these hypotheses fail to explain the decline of gender differentials in Korea; as described in the above sections, the decline of gender differentials have not

been driven by the change of economic returns to education.

If father's education in the three-way interaction term stands for the parental egalitarian attitudes or their cultural propensity, the sign of the interaction term should be positive. Women's class differentials would be reduced because the egalitarian attitudes and cultural propensity of parents with various qualifications have converged over time as is seen in Figure 3. However, the empirical fact is exactly the opposite. This indicates that neither the egalitarianism hypothesis nor the converging cultural propensity hypothesis is applicable to the Korea case.

The empirical result does not seem to support the marriage market returns hypothesis, either. If father's education in the three-way interaction term represents the concerns of parents on their daughter's returns to education in the marriage market, women's class differentials should have decreased rather than increased because less-educated parents have higher concerns about marriage market than well-educated parents (*see* Figure 3).

Only the family income effect hypothesis does not contradict the empirical result. Supposing that father's education in the three-way interaction term stands for family income or family wealth, such interaction term means that daughters of better-endowed parents have become to enroll in four-year universities more and more than daughters of less endowed parents over time. Formally, this interpretation is the same as that of the wealth maximization hypothesis. But the reason why better-endowed parents became to be more willing to send their daughters to universities across cohorts is quite different. The remainder of this section will guess such reason according to the family income effect hypothesis.

As shown in the above section, the propensity of Korean well-educated parents for their daughter's higher education rapidly rose in the 1970s. Why did these parents enhance their daughter's enrollment in tertiary education in the 1970s of the all

periods? It was just for the saturation of secondary education.

Upper secondary education had been rapidly universalized in the 1970s. The ratios of women advanced their career from lower secondary school to upper secondary school were 54% in 1970, 68% in 1975, and above 90% in 1979 (*see* Figure 1). Such a rapid expansion of upper secondary education must have lowered the non-pecuniary value of it. Confronting with this situation, better-endowed parents had to send their daughters to universities to secure the non-pecuniary rewards. It can be thus said that better-endowed parents started to increase their daughter's enrollments in tertiary education earlier in the 1970s when non-pecuniary rewards of secondary education rapidly declined as it was nearly saturated.[13]

If the pursuit of non-monetary rewards were the true motive of parents for educating their daughters, better endowed parents might prefer four-year universities to junior colleges despite higher unemployment rates for women with four-year university qualifications and very small wage premium compared with junior college graduates in Korea. It is because the non-monetary rewards of the former were larger than that of the latter.

There is no reason to suspect that when the secondary education saturated, less educated parents did not notice the decreasing value of secondary education. They must have perceived the increasing non-monetary returns to tertiary education. However, they could not afford the cost of their daughter's university education. Family income was very low in the 1970s. The GNI per capita in the mid-1970s was only about 500 dollars (KNSO, 2002). Under the condition like this, they might opt for cheaper

13. On the other hand, as is seen in Figure 2, tertiary education had not expanded in the 1970s. It is therefore safely maintained that the expansion of tertiary education itself was not the motor force for the increase of women's enrollment in tertiary education.

junior colleges rather than expensive four-year universities even when positively considering the enhancement of their daughter's education. According to the family income effect hypothesis, this might be the reason for the increasing women's class differentials in the transition from upper secondary school to a four–year university in the 1970s.

Less endowed parents started to send their daughters to four-year universities in the 1980s when the economy grew and family income rose. It resulted in diminishing the increasing rates of class differentials as is found in Table 2. Recognizing that the increase of family income was accelerated in the 1990s, one might guess that class differentials among women would have dropped to the male level.[14.]

The above discussion can be summarized: first, the family income effect hypothesis is more consistent with the empirical result in Korea than any other hypotheses. Second, the family income effect hypothesis explains the findings of this paper as follows: As the secondary education has been saturated and its non–pecuniary value has declined, parents and their daughters started to pay attention to tertiary education. Such a pursuit of non-mon-

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14. This prediction is based on the Japan case. Ojima and Kondo (2000) fou nd that women's class differentials in higher education increased in Japan between the cohorts born in 1936-45 and in 1946-60, but dropped to the male level in the younger cohort born in 1961-75.

They showed the direct evidence that the change of class differentials among women was related to family wealth. However, it seems to me that the saturation of secondary education also played an important role in the increase of class differentials even in Japan. The ratio of advancement into high school rose rapidly in 1961-75 when the cohort born in 1946-60 graduated from lower secondary school. It was nearly 60% in 1960, 70% in 1965, and approximated 90% in 1975 (JME, 2000). It seems that this saturation of secondary education was another factor of the increasing class differentials in the 1960s and 1970s.

etary rewards resulted in the decline of gender differentials in tertiary education. However, family income in the 1970s was very low. It was highly probable that less-endowed parents were not able to send their daughters to a four-year university just because of the cost. This resulted in the increase of class differentials in tertiary education among women.

Ⅶ. Conclusion

The finding of this paper, the decreasing gender differentials and the increasing class differentials among women, is very interesting: first, there are very few cases in which class differentials in higher education have increased (cf. Arum, Gamoran, and Shavit, 2004). Second, it is more uncommon to find a case in which the change of class differentials over time varied according to gender, even though it is widely known that women's educational attainment is more susceptible to the differences of their family background and the historical changes of institutional arrangements (Alexander and Eckland, 1974; Stromquist, 1989; Blossfeld, 1990).

The existing several hypotheses do not seem to be successful in accounting for the Korea case. The wealth maximization hypothesis and the rational action theory are not persuasive when explaining the decline of gender differentials in Korea, although they are theoretically attractive in that they have a sophisticated tool for explaining the change of class differentials among women. The egalitarianism hypothesis and the marriage market returns hypothesis, on the other hand, are not able to properly account for the increasing class differentials among women, while they sound plausible when explaining the decline of gender differentials. Their failure basically comes from the fact that they do not take the cultural demand for education, family income, and the saturation of secondary school simultaneously into account.

Relying both on some general hypotheses and on the empirical studies on Korean women's education, this paper suggests an alternative hypothesis, the family income effect hypothesis. It also demonstrates that this hypothesis, focusing on the non-pecuniary rewards of education and family budget, can explain the Korea case more logically than any other hypotheses.

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