PAA 2019 Annual Meeting

How Does the Inequality of Educational Opportunity Change When Education Expands Sharply? Evidence from the Multiple Surveys of South Korea

Seongsoo Choi*

Subin Lee**

Abstract

In this study, we explore how the inequality of educational opportunity (IEO) changed across cohorts in the context of sharp educational expansion, examining the case of South Korea. We analyze data from eight nationally representative surveys to estimate more reliable trends. We found two results. First, the gaps by parental education in the completion of junior colleges or higher widened till the 1961-1970 cohort and began to narrow remarkably. The gap in the completion of 4-year colleges grew till the 1971-1980 cohort and stopped growing. The gap in the completion of highly selective universities gradually grew from the 1950-60 cohorts. This suggests that the IEO in Korea shifted continuously from high school to higher postsecondary levels, and less evidently to 'elite' universities. Second, the relative gaps between the top 20th percentile and the bottom 20th percentile of parental education show generally consistent but much weaker trends.

---

* Sungkyunkwan University, Seoul, South Korea; s.choi@g.skku.edu

** Sungkyunkwan University, Seoul, South Korea; sblee8904@gmail.com

Background and Research Question

In this study, we explore how the inequality of educational opportunity (IEO) changed across cohorts in the context of sharp educational expansion, taking the case of South Korea as an example. South Korea underwent a sharp expansion in its educational system during the path of fast socioeconomic development and compressed industrialization. In the late 1970s, for example, only about a quarter of high school graduates advanced to postsecondary institutions. A series of government policies draw substantially more high school graduates into higher education. Between 1978 and 1981, the college enrollment jumped from 22% to 35%, by 13%p. A more dramatic increase was introduced by another government reforms in the early and mid-1990s, which boosted the enrollment rate from 34% in 1992 to 80% in 2003.

Education expansion works as a critical condition for the equalization in the access to education especially across social classes (Breen and Jonsson 2005; Shavit and Blossfeld 1993). A casual expectation is that a wider opening of the opportunity in the access to education will decrease in the gaps in the access to education across groups of students with different social origins. However, empirical evidence from comparative research suggests that much more complicated processes are at work, therefore making difficult to draw such a naïve and straightforward conclusion. On the one hand, it had been a consensus for a while that an increase in education access does not guarantee the narrowing gap in the access across social origin groups ("persistent inequality") among major advanced western countries (Shavit and Blossfeld 1993). However, recent evidence documents notably narrowing gaps across children with different parental classes in major European countries and suggests that the IEO declined over the past century ("nonpersistent inequality," Breen et al. 2009). On the other hand, scholars provided convincing theoretical explanations suggesting that educational expansion may be a necessary condition for the equalization of educational opportunity, but not a sufficient condition (Raftery and Hout 1993; Breen and Goldthorpe 1997). IEO also can be extended to qualitative dimensions. Even with the observation of the equalization in a quantitative dimension, IEO may persist in alternative qualitative dimensions (Lucas 2001; Alon 2009). This theoretical development implies that we probably should shift our question from *whether IEO persists* or not to in *what form or in what domain IEO persists*.

The historical experience of South Korea over the past several decades provides a very unique empirical setting to examine how IEO changed in the context of the rapid and sharp expansion of the education system. However, studies addressing this issue – how the IEO of South Korea has changed across birth cohorts that are exposed variably to educational expansion – are either outdated or have considerable limitations. In Table 1, we listed the published studies examining the cohort trend in IEO in South Korea since the year of 2000 alongside the details and summaries of their analyses. One important finding from this review is that no consistent trend can be identified. In other words, we do not have good empirical evidence based on which we can discuss about how the IEO in South Korea changed over time.

Table 1 here

We identified five limitations that those previous studies show. First, all of those existing studies used a single survey data to infer the cohort trend of IEO. We can come across a few problems when we rely simply on a single survey. We cannot control for the survey effect when we assess the cohort trends estimated by those previous studies using different surveys. The size of the cohort cells also tends to be small, and it is, therefore, difficult to get reliable estimates for the cohort trend. Moreover, only a few data points for birth cohort are available from each of single surveys. Most importantly, there exist several more surveys that represent the Korean society and can be used for the estimation of the cohort trend in IEO. There is no legitimate reason why we do not use those multiple sources. Second, most of previous studies do not include the recent birth cohort of young adults who were exposed to the government policies in 1990s, which drove the large-scale expansion in higher education. Third, previous studies used the absolute markers of parental origins, such as the highest years or levels of education completed. However, education is also a positional good signaling unobserved ability (Caplan 2018; Spence 1973) or social and cultural status (Bourdieu 1986; Brown 2001). For a more comprehensive understanding of the IEO and its change, we need to see how the trend differs between the trend based on the absolute measures of parental SES and the trend based on the relative measures. Fourth, previous studies did not address the IEO in the horizontal or qualitative dimensions of higher education, especially the IEO in the access to selective postsecondary institutions. This may be a critical omission considering that the college enrollment in South Korea after the expansion in 1990s reached nearly a universal level (e.g., 80%). A legitimate question that arises, then, is whether the IEO decreased after all or it shifted to a qualitative dimension such as the entry into 'elite' universities in this unprecedented period of near universal college education.

To address the problems that arise from the limitations of existing studies, we adopt a few strategies. First, we use eight nationally representative surveys that cover the cohorts born from 1930s up to 1990. The sample we construct from those eight surveys includes 30 birth cohort samples with more than 200,000 individuals. Second, we use parental education as social origin markers. We use two measures for parental education: the highest level of education completed (absolute) and the gap between the top 20 percentile and the bottom 20 percentile (P80/P20 gap, henceforth). Third, we consider several outcomes of offspring's education: high school completion or higher, junior college completion or higher, 4-year college completion or higher, and the completion of highly selective 4-year colleges (top 15 universities plus medical and dental majors). To avoid the issue of incomparable coefficients that results from the nonlinear probability models analyzing different samples (Breen, Karlson and Holm 2018), we use the linear probability models for the analysis.

Data and Measures

Data and Samples

We use eight nationally representative surveys in South Korea. They include Korea Labor and Income Panel Study (KLIPS), The Study of Education and Social Stratification

and Social Mobility (KESSM), Korea Welfare Panel Study (KWPS), Korea General Social Survey (KGSS), Youth Panel 2001 (YP2001), Youth Panel 2007 (YP2007), Graduates Occupational Mobility Survey (GOMS), and Korea Education and Employment Panel (KEEP). We divided each of these eight datasets into several birth cohort samples, considering the cohort coverage of the datasets. We constructed 30 subsamples by birth cohort and survey in total. Table 2 lists the sample size of those 30 cohort-survey samples along with the distribution of respondent's (offspring's) education attained.

Table 2 here

We constructed post-stratification weights for some cohort-survey samples using Census data to make sure that they represent the birth cohort. For example, we constructed 30 weight values representing 30 groups defined by gender and 15 regions for the KLIPS cohort born in 1960s using the 1980 Census data in which individuals of the cohort were in their teens. However, the overall result of our analysis was not sensitive to the application of those post-stratification weights.

Measures

As we explained earlier, we consider several outcomes of offspring's education: high school completion or higher, junior college completion or higher, 4-year college completion or higher, and the completion of highly selective 4-year colleges (top 15 universities plus medical and dental majors). The information on college selectivity, however, is only available from some surveys. Table 3 summarize the availability of the outcome variables by survey source across birth cohorts.

Table 3 here

We measure parental education using the highest level between one of two parents. We control for sex, region in which a respondent lived in adolescence and the year of birth.

Analytical Strategy

For the analysis, we fit a linear probability model for each cohort-survey sample, *j*, to estimate the predicted probability of completing a certain educational level (e.g., 4-year colleges).

$$\Pr(EDUC=1)_{ij} = \alpha_j + \sum_{k=1}^{4}\beta_{jk}(PAEDUC)_{ijk} + \gamma_j(Female)_{ij} + \sum_{l=1}^{L-1}\delta_{jl}(Region)_{ijl} + \sum_{m=1}^{M=1}\lambda_{jm}(Birth\,YR)_{ijm} + \varepsilon_{ij}$$

where *EDUC* denotes offspring's educational level we are interested in, *PAEDUC* denotes a series of dummy variables indicating parental educational level (e.g., =middle school, =high school, =junior college, ≥4-year college), *Female*, *Region*, and *BirthYR* denote dummy variables indicating sex, region and the year of birth respectively. Subscript *i* represents individual and ε_{ij} is a random error. The IEO in *EDUC* is captured by β_{jk}.

β_{jk} shows the gap in the probability of completing *EDUC* between children with parents who did not complete middle school (<middle school) and children with parents whose attained the given level of educational degree. In many analyses, we also use a dummy variable indicating whether either parent has a 4-year college degree as a more simplified measure for *PAEDUC*. Then the parameter β_j captures the gap between the children of college-educated parents and the children of parents with no college degrees.

We also track the trend of P80/P20 gap to see the influence of parents' relative rank in the distribution of education in a given offspring's birth cohort. Most of surveys provide the information of parental education as categories indicating the highest levels completed. More importantly, the categorical schemes are not completely consistent across surveys. To address these challenges, we use a method proposed by Reardon (2011). Imagine a latent continuous variable showing one's rank in the distribution of parental education, θ. The average value of θ for each of the observed categorical variable of PAEDUC (say x_k) will be $\overline{\theta_k} = \frac{c_k + c_{k-1}}{2}$, where c_k indicates the proportion of individuals belong to categories *k* or below. If we assume the linearity in the relationship between outcome variable *y* and $\overline{\theta_k}$ ($\overline{y_k} = a + b\overline{\theta_k}$), we can estimate $\hat{a}$ and $\hat{b}$ using the observed information of x_k. Because the gap in *y* between the 80th percentile of θ and the 20th percentile of θ is $[\hat{y}|\theta = 0.8] - [\hat{y}|\theta = 0.2] = \left[\hat{a} + \hat{b}(0.8)\right] - \left[\hat{a} + \hat{b}(0.2)\right] = \hat{b}\ (0.6)$, we can compete the P80/P20 gap using the estimated value of $\hat{b}$.

As a second stage, we estimate the cohort trend from a set of up 30 gaps ($\hat{\beta}_{jk}$ or P80/P20) that are estimated from the cohort-survey samples. We regress the estimated gaps on the mid-point year for each birth cohort, C_j (e.g., 1945.5 for the cohort born in 1941-1950). We consider the flexibility of the cohort trend by including the squared term and the cubic term of C_j.

$$\hat{\beta}_j = \tau_0 + \tau_1 C_j + \tau_2 C_j^2 + \tau_3 C_j^3 + \epsilon_j$$

When we fit the model using the regression equation above, we use the inverse of the variance of the estimated gap, $\hat{\beta}_{jk}$ or P80/P20, as a weight so that we give more weight to the estimates with higher levels of certainty.

Results

Figure 1 shows how the gap in the various outcomes of child's education between children with at least one parent who has a 4-year college degree and children whose parents do not have a 4-year college degree. Panel (a) shows a clear trend of falling IEO in the years of offspring's education, from about 4 years for the 1941-1950 cohort to about a year among those born in 1980s. Panel (b) also shows a remarkable decline in the gap in the probability of high school completion. For those born before 1960, the gap by parental college degree was substantial, but the gap has approached to nearly zero

for the most recent cohorts. This seems to result from the achievement of universal secondary education in South Korea.

Figure 1 here

Panel (c) and (d) in Figure 1 show the trend in parental college degree gap in the completion of any postsecondary education (junior colleges and 4-year colleges). In (d), we limited the samples to those who completed high school. As shown, conditioning on high school completion did not make any difference. The trend reveals an inverted U shape with its peak around those born in 1960s. In other words, the gap increased but began to decrease steadily from those who were born after 1970s. The gap by parental college degree in the completion of junior colleges or higher fell to about 0.1 for the most recent cohorts (e.g., those born between 1986-1990). This pattern is well explained by the maximally maintained inequality (MMI) thesis (Raftery and Hout 1993). For the 1961-1970 cohort, the completion of junior colleges or higher among the children of 4-year college graduates became nearly universal, and, for later-born cohorts, more influx in junior college graduates was largely driven by the children of non-4-year college graduates, thereby resulting in the fall of the parental origin gap in the completion of junior college.

Panel (e) and (f) in Figure 1 show an equivalent trend for the gap in the completion of 4-year colleges. Again, (e) and (f) reveal a similar trend curve, which suggests that limiting the samples to high school graduates does not make a meaningful difference. The trend in parental college gap in the completion of 4-year colleges also shows an inverted U shape, but the inflexion point is different. Unlike the gap in the completion of junior college or higher, the peak in (e) and (f) is observed for those born in 1960s and 1970s (about 0.35), and a notable decline for those born in 1980s follows (down to 0.2~0.25). The comparison between (c) and (e), or (d) and (f), suggests that junior college completion began to lose its effectiveness for maintaining inequality after the cohort born in the 1960s, but the effectiveness of 4-year college completion persisted about 10 years longer before it began to show a signal for a fall in the gap after the cohort born in 1970s, especially among those born in the late 1980s. The timing in the falling trend of the gap in the completion of 4-year colleges is overlapped with the period of the sharp expansion of higher education in the mid-1990s and early 2000s. Our results suggest that, for the youngest cohorts (born in 1986-1990), a 4-year college degree became less valuable as a channel for the intergenerational transmission of parental educational prestige.

Figure 2 shows how the gap in the completion of the top-tier universities between children with a college-educated parent and the children of parents without a college degree changed across the cohorts. Panel (a) is a trend from all individual respondents and panel (b) is a trend from individuals who completed either junior colleges or 4-year colleges. To figure out whether a pattern predicted by the effectively maintained inequality (EMI) thesis (Lucas 2001) is manifest, conditioning on the college completion, (b) in other words, is a more desirable approach. Excluding a few data

points with relatively large standard errors before 1950, we do not find a systematic trend. The samples from KLIPS and KESSM show notable reductions in the gap among those born in 1980s, but YP2001 and GOMS show rather a slight increase for those born in 1980s, compared with their earlier-born counterparts.

Figure 2 here

In Figure 3, we extend our analysis to the gaps across five groups of parental education. The trends Figure 3 reveal are generally consistent with the patterns reported in Figures 1 and 2, but it also suggests three implications that need to be noted additionally.

Figure 3 here

First, the difference in the timing of the peak between the parental education gaps in the completion of junior colleges or higher (panels (a) and (b)) and those in the completion of 4-year colleges or higher (panels (c) and (d)) appears to be more remarkable. The gaps in the attainment of any types of postsecondary degree by parental origin (measured by parental education) were widest among those born in 1960s, but the gaps in the attainment of a 4-year college degree were widest among those born in 1970s and 1980s. The growth in the parental origin inequality of a 4-year college degree began to stop. We may interpret that (c) and (d) are suggestive of an initial stage of declining the gaps.

Second, Figure 3 suggests that the growing gaps in the completion of colleges are not only driven by the increasing advantages among children with more educated parents but also driven by the increasing disadvantages among children with low-educated parents, especially the children of parents with no high school diploma. The difference between parents who completed middle school only and parents who completed elementary school only is getting smaller especially among the recent birth cohorts.

Third, the gaps in the completion of highly selective universities in (f) shows a clearer pattern of a growing trend between those born in 1950s and those born in 1980s. The gap in the probability of completing highly selective universities between the children of 4-year college graduates and the children of middle school graduates was 0.1 in the 1951-1960 cohort, but it rose to 0.2 for those born in the late 1980s. More precisely, the increase between two cohort groups was 0.071 and it was statistically significant at the 0.1 significant level (90% confidence interval: [0.0001, 0.143], N=8).

Figure 4 shows the trends of the P80/P20 gaps in the offspring's education outcomes. First, we found very similar patterns for the years of education, (a), and high school completion (b) to the patterns in Figure 1. Even when we consider the gap in parental relative position, we still see consistent declines in the years of education and high school completion. For colleges, panels (c) to (f) in Figure 4 show generally consistent patterns with those reported in Figure 1 and Figure 3 but substantially weakly. The P80/P20 gaps in which variation in the marginal distribution of parental education is controlled for show substantively and statistically weaker trends. This result suggests that the patterns in Figures 1 and 3 are considerably due to changes in the marginal

distribution of parental education, particularly driven by educational expansion.

Figure 4 here

Figure 5 shows the trend of the P80/P20 gap in the completion of highly selective universities. The trend is also quite consistent with but weaker than Figure 2. Panel (b) in Figure 5 shows a considerably stable trend of the P80/P20 gap particularly from the 1951-1960 cohort. This suggests that the positional gap in the access to the 'elite' universities has not changed in South Korea over the past half century. This is a bit unexpected because the country experienced rapid economic growth, very dynamic social structural changes, radical and large-scale educational expansion in a very compressed way. This finding uncovers an important aspect of the hidden structure of the inequality of opportunity in the South Korean society.

Figure 5 here

Conclusion and Discussion

In this study, we estimated the trends of IEO across offspring's various educational outcomes and the cohorts born over the past century using eight nationally representative surveys. Our analysis of up to 30 cohort-survey samples reveal largely two results. First, the gap by parental education in the completion of any types of colleges (junior and 4-year) widened till the 1961-1970 cohort and began to narrow remarkably. The gap in the completion of 4-year universities grew till the 1971-1980 cohort and began to slow down or decline. The gap in the completion of highly selective universities gradually but measurably grew from the 1950-60 cohorts. This pattern suggests that the IEO in Korea shifted continuously from high school completion to higher stages, and less evidently to the completion of 'elite' universities. Second, the P80/P20 gaps show generally consistent but much weaker trends. The P80/P20 gap in highly selective universities show a considerably stable trend since the 1950 birth cohort.

We will discuss the implications of our findings in the full version of our manuscript.

References

Alon, Sigal. 2009. "The Evolution of Class Inequality in Higher Education Competition, Exclusion, and Adaptation." *American Sociological Review* 74(5): 731-755.

Bourdieu, Pierre. 1986. "The Forms of Capital." in *Handbook of Theory and Research for the Sociology of Education*, New York: Greenwood, Pp. 241-258.

Breen, Richard and John H. Goldthorpe. 1997. "Explaining Educational Differentials Towards a Formal Rational Action Theory." *Rationality and Society* 9(3):275-305

Breen, Richard and Jan O. Jonsson. 2005. "Inequality of Opportunity in Comparative Perspective: Recent Research on Educational Attainment and Social Mobility." *Annual Review of Sociology* 31: 223-243.

Breen, Richard, Kristian Bernt Karlson, and Anders Holm. 2018. "Interpreting and Understanding Logits, Probits and Other Non-Linear Probability Models." *Annual Review of Sociology* 44: 1-16.

Brown, David K. 2001. "The Social Sources of Educational Credentialism: Status Cultures, Labor Markets, and Organizations." *Sociology of Education* 74: 19-34.

Caplan, Bryan. 2018. *The Case against Education: Why the Education System Is a Waste of Time and Money*. Princeton: Princeton University Press.

Chang, Sang-su. 2000. "Inequality of Educational Inequality in Korea: The Effects of Family Background on Educational Attainment." *Korean Journal of Sociology* 34(3): 671-708 (in Korean).

Lucas, Samuel R. 2001. "Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effects." *American Journal of Sociology* 106(6): 1642-1690

Moon, Soo-Yeon. 2016. "Trend of Educational Inequality: Focusing on the Middle Class and Birth Cohorts in South Korea." *Korean Journal of Sociology* 50(5): 141-171 (in Korean).

Park, Byung-Young, Mee-Ran Kim, Kihun Kim and Kirak Ryu. 2011. *Education and Social Mobility: The Case of 1976-1986 Birth Cohort*. Seoul: Korean Educational Development Institute.

Park, Hyunjoon. 2003. "Educational Expansion and Inequality in Korea." *Research in the Sociology of Education* 14: 33–58

Park, Hyunjoon. 2007. "South Korea: Educational Expansion and Inequality of Opportunity for Higher Education." Pp. 87–112 in *Stratification in Higher Education: A Comparative Study*. Stanford, CA: Stanford University Press.

Phang, Hanam and Kihun Kim. 2003. "Trends and Differentials in Educational Stratification in Korea." *Korean Journal of Sociology* 37(4): 31-65 (in Korean).

Raftery, Adrian E. and Michael Hout. 1993. "Maximally Maintained Inequality: Expansion,

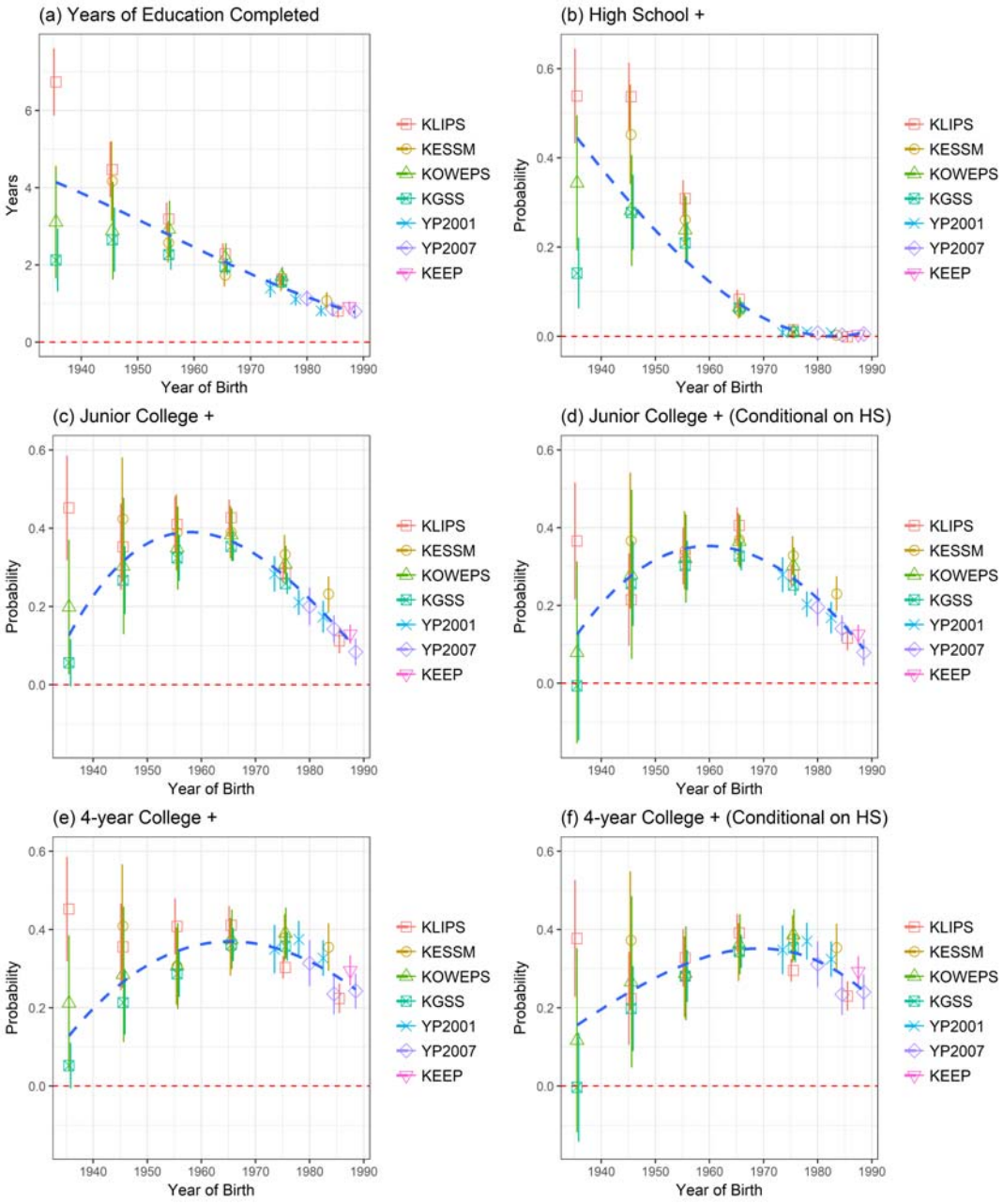
Reform, and Opportunity in Irish Education, 1921-75." *Sociology of Education* 66(1): 41-62

Reardon, Sean F. 2011. “The Widening Academic Achievement Gap Between the Rich and the Poor: New Evidence and Possible Explanations.” Pp. 91–115 in *Whither Opportunity?: Rising Inequality, Schools, and Children’s Life Chances*, edited by G. J. Duncan and R. J. Murnane. New York, NY: Russell Sage.

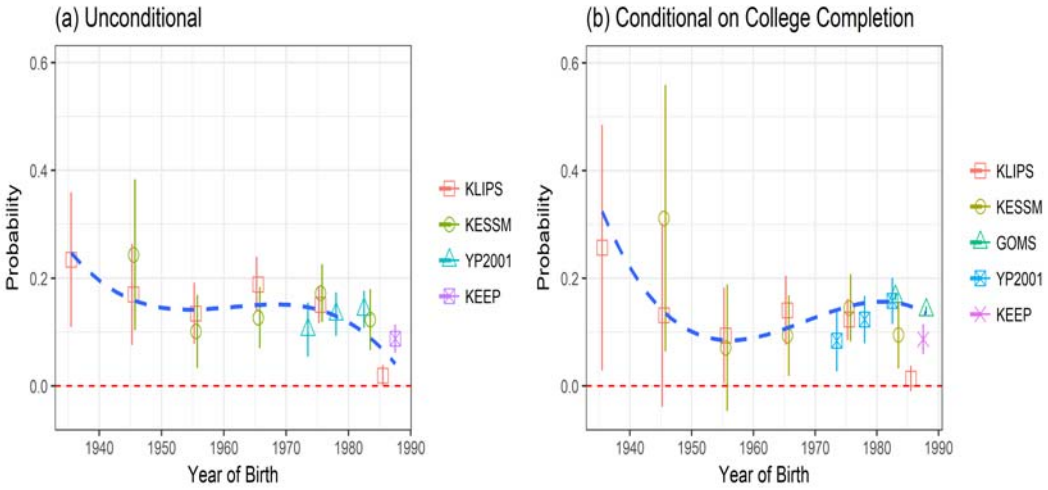
Shavit, Yossi and Hans-Peter Blossfeld. 1993. *Persistent Inequality: Changing Educational Attainment in Thirteen Countries*. Boulder: Westview Press.

Spence, Michael. 1973. "Job Market Signaling." *The Quarterly Journal of Economics* 87(3): 355-374

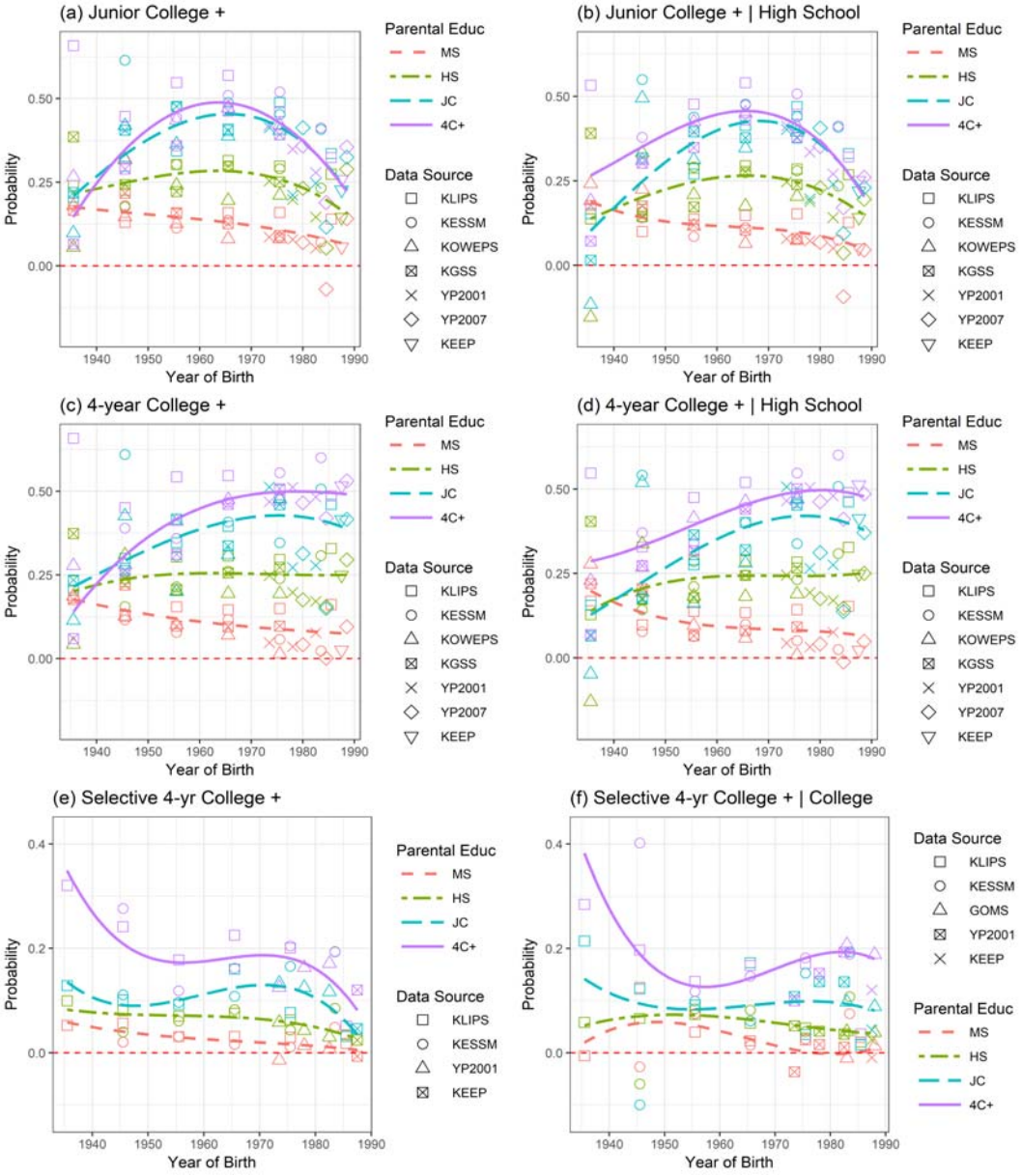
<Figure 1> Gap in Educational Attainment by Parent's 4-Year College Degree



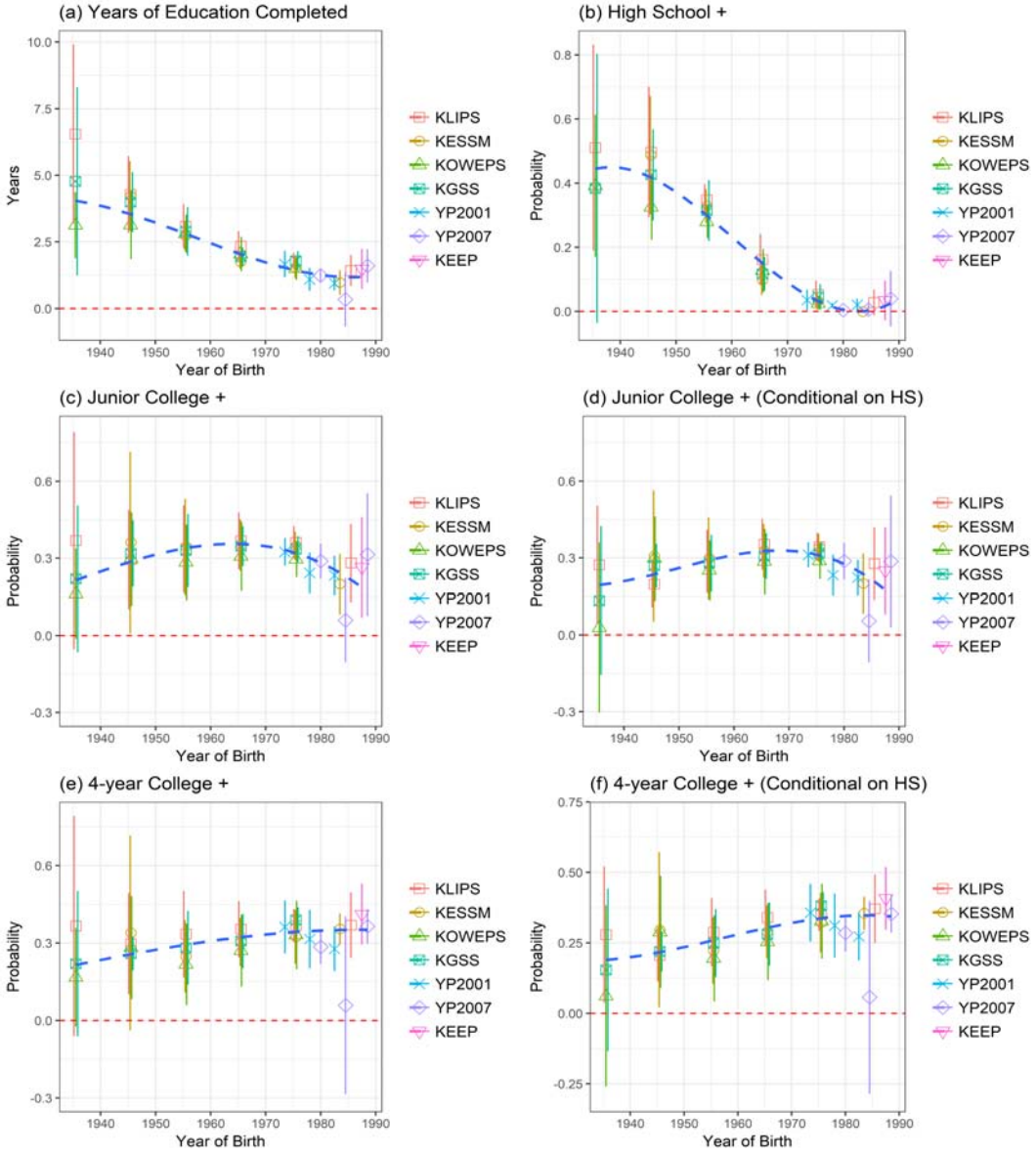
<Figure 2> Gap in the Completion of Selective Universities by Parent's 4-Year College Degree



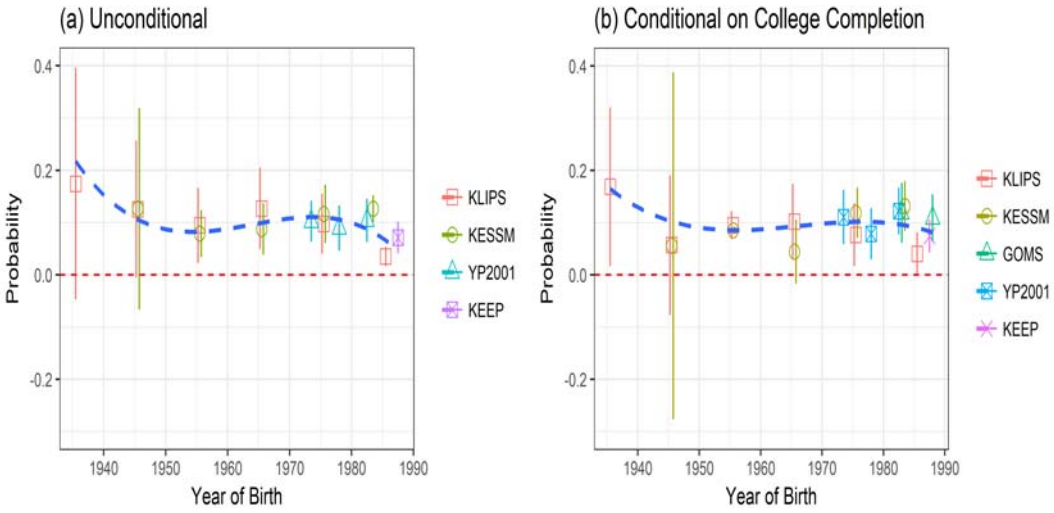
<Figure 3> Gaps in Educational Attainment between Children with Different Levels of Parent's Education



<Figure 4> Gap in Educational Attainment between the Top 20 Percentile and Bottom 20 Percentile of Parent's Education



<Figure 5> Gap in the Completion of Selective Universities between the Top 20 Percentile and Bottom 20 Percentile of Parent's Education



<Table 1> Published Studies on the Cohort Trend in the Inequality of Educational Opportunity (IEO) in South Korea since 2000

	Birth Cohort	Data	Meausres of Child's Education	Measures of Parental Socioeconomic Status	Key Findings
Chang(2000)	1935~1970	Social Inequality Study in Korea (1990, 1995)	Years of schooling (OLS) enrollment in middle school, high school, and college (binary logit)	Occupation(EGP)	- Decline in IEO for the years of schooling - No notable trends in the IEO of school transitions
Phang and Kim (2003)	1940~1970s	KLIPS(2001)	Years of schooling (OLS), enrollment in high school and college (binary and multinomial logit)*	Years of schooling, occupation(SEI), number of siblings, social capital, etc.	- Decline in IEO for the years of schooling - Rising trends in the IEO of school transitions
Park(2003)	1920~1960s	Social Inequality Study in Korea (1990)	Enrollment in middle school, high school, and college (binary and multinomial logit)	Years of schooling, occupation(SEI), birth place	- Growing influence of father's schooling on college entry
Park(2007)	1960~1970s	KLIPS(2001)	Completion of high school, enrollment in College (binary and multinomial logit)*	Occupation(EGP), education	- Persistent influence of father's occupation - Growing influence of father's college degree
Park et al. (2011)	1940~1986	KESSM(2008-2011)	Years of schooling(OLS), enrollment in high school, college and graduate school (binary and multinomial logit)*	Years of schooling, occupation (SEI), parental involvement in education, etc.	- Decline in IEO for the years of schooling, but rebound for the recent cohort - No notable trend in the influence of parental education, growing influence of parental occupation
Moon(2016)	1940~1986	KESSM(2008-2011)	Enrollment in high school (tracking) and college(by region), training/studying abroad (binary and multinomial logit)*	Occupation(Wright), education, etc.	- Advantage of middle class families in 4-year colleges in Seoul for the recent cohort - Growing trend in disdvantage for children from farming class - No detectable trend of the influence of parental education

* Analysis uses nonlinear probability models for cross-sample comparisons to detect the cohort trend.

<Table 2> Distribution of Respondent's Educational Attainment and the Sample Size of Cohort Samples

Data	Birth cohort	Middle school or less	High school	Junior college	4-year college or more	Total	N
KLIPS	-1940	83.00	10.39	0.78	5.66	100	2,810
KLIPS	1941-1950	65.48	23.42	1.21	9.90	100	2,323
KLIPS	1951-1960	42.00	38.74	4.82	14.64	100	3,361
KLIPS	1961-1970	12.48	49.36	11.1	27.05	100	3,981
KLIPS	1971-1980	2.00	34.00	22.9	41.74	100	4,930
KLIPS	1981-1990	1.95	22.38	26.42	49.25	100	3,338
KESSM	1941-1950	62.92	27.00	1.09	9.00	100	828
KESSM	1951-1960	35.07	44.35	7.05	13.53	100	1,574
KESSM	1961-1970	6.49	53.00	11.00	29.00	100	2,187
KESSM	1971-1980	0.79	41.22	17.72	40.27	100	1,783
KESSM	1981-1986	0.19	23.81	22.6	53.00	100	1,075
KOWEPS	-1940	86.12	8.91	0.55	4.43	100	3,818
KOWEPS	1941-1950	74.96	18.31	0.62	6.10	100	2,752
KOWEPS	1951-1960	52.32	34.39	3.30	9.99	100	2,483
KOWEPS	1961-1970	14.69	53.12	8.31	23.88	100	2,948
KOWEPS	1971-1980	1.93	40.91	21.05	36.11	100	3,102
KGSS	-1940	74.37	14.00	1.21	10.80	100	1,814
KGSS	1941-1950	57.47	25.95	2.16	14.42	100	1,761
KGSS	1951-1960	31.17	39.93	6.98	21.92	100	2,737
KGSS	1961-1970	6.86	41.33	13.14	38.68	100	4,271
KGSS	1971-1980	1.04	29.19	21.17	48.61	100	3,841
GOMS	1981-1985	0.00	0.00	25.86	74.14	100	71,501
GOMS	1986-1990	0.00	0.00	33.85	66.15	100	56,075
YP2001	1972-1975	1.17	32.84	22.16	43.83	100	1,629
YP2001	1976-1980	1.00	23.31	29.98	45.92	100	2,548
YP2001	1981-1984	0.62	33.18	25.08	41.13	100	2,592
YP2007	1978-1982	0.49	25.74	25.12	48.64	100	2,249
YP2007	1983-1986	0.00	14.04	24.70	60.88	100	1,595
YP2007	1987-1990	0.24	15.14	22.92	61.70	100	2,094
KEEP	1986, 1989	0.33	19.52	29.95	50.20	100	4,191
Total		8.87	11.24	23.83	56.07	100	202,191

Note: Unweighted proportions are presented.

<Table 3> Availability of Dependent Variables across Birth Cohorts and by Survey Data Source

Birth cohort	-1940	1941-1950	1951-1960	1961-1970	1971-1980	1981-1990
Child's highest level of education completed						
Years of education	○□●	○◇□●	○◇□●	○◇□●	○◇□●	◇■⊙♥
Completed high school	○□●	○◇□●	○◇□●	○◇□●	○◇□●	◇■⊙♥
Completed any college	○□●	○◇□●	○◇□●	○◇□●	○◇□●	◇■⊙♥
Completed 4-year college	○□●	○◇□●	○◇□●	○◇□●	○◇□●	◇■⊙▲♥
Completed selective college	○	○◇	○◇	○◇	○◇■	◇■▲♥

○: KLIPS
◇: KESSM
□: KOWEPS
●: KGSS
■: YP2001
⊙: YP2007
▲: GOMS
♥: KEEP