Education, Son Preference, and Fertility Transition in South Korea

Abstract

The current study examines the role of educational expansion and son preference in the Korean fertility transition. Educational expansion contributes to fertility decline. The implication of son preference on fertility transition, however, is complicated. Son preference would delay fertility transition because strong son preference would lead to additional births among the sonless women. Induced abortion of female fetus due to son preference, instead, may reduce fertility. I examine how educational differentials in fertility changed, how the son preference effect on fertility changed over time, and how the son preference effect depended on women's educational attainment. Using the Korean Longitudinal Study of Aging (KLoSA), I estimate logistic regression models and Cox proportional hazard models. Preliminary results point to the followings. First, negative relationship between schooling and parity progression became stronger across birth cohorts. Second, positive relationship between sonlessness and parity progression also became stronger. Finally, son preference effect does not depend upon schooling. The significant interaction between sonlessness and cohort suggests that spread of effective contraceptive methods strengthened the effect of son preference on fertility**,** contributing to fertility decline. The implications of findings for the Korean fertility transition will be discussed.

Background

The current study examines the role of educational expansion and son preference in the Korean fertility transition. Fertility transition in South Korea was dramatic: this country transited from a high fertility country to a ‘lowest-low fertility’ country (TFR below 1.2, Kohler et al. 2002) in less than a half century. This dramatic decline coincided with rapid socioeconomic changes such as industrialization, urbanization, and educational expansion. The Korean experience is notable because of the extremely rapid pace of fertility decline and socioeconomic development. Chang (2010) characterized this simultaneous change as “compressed modernization”. One of the consequences of “compressed modernization” is extant son preference in fertility decision. Given the rapid fertility transition and modernization in South Korea, preferring a son to a daughter is supposed to vanish. Nonetheless, son preference survived fertility transition. For example, sex ratio at birth (SRB) during the 1990s was around 110, which is much higher than the normal SRB (105). Kim (2011) showed that sex-selective reproductive behaviors still exist in some regions in South Korea though generally weakening. The extant son preference despite the Korean fertility transition illustrates compressed modernization, warranting sociological and demographic investigations.

Son preference, education, and fertility transition

The current study aims at examining the role of son preference and educational expansion in the Korean fertility transition. Son preference would delay fertility transition because strong son preference would lead to additional births among the sonless women. Given the availability of fetal sex-detecting technology, induced abortion of female fetus instead may reduce fertility. In this study, I examine differences in transition to next parity between sonless women and those who have at least one son. I will interpret higher transitions among sonless women as evidence of son preference effect on fertility.

South Korea also experienced rapid educational expansion. The improvement in educational attainment contributes to fertility transition (Bongaarts 2003). Improvement in schooling also tends to lead to more gender-egalitarian attitudes and improvement in women’s socioeconomic status. From this perspective, we may expect that the effect of son preference on fertility is weakening as schooling expands. However, educational expansion also contributes to more effective contraceptive practices, which can strengthen son preference effect. Chowdhury and Bairagi (1990) documented that son preference effect is stronger when effective contraceptive methods are widely used because effective contraceptive methods will lead to early cessation of childbearing among those have a surviving son. In this sense, improvement of educational attainment may yield stronger son preference effect on fertility. Hence, changing son preference effect on fertility, regarding educational expansion, should be subject to empirical test.

Then how do changes in son preference effects and educational expansion contribute to fertility transition? Examining changes in coefficients may not be enough to capture their contribution to the fertility transition. For example, the increasing son preference effect might be a result of the reduction in fertility among women with son or the increase in fertility among sonless women. The same logic can be applied to the educational differentials in fertility. To get around this problem, we should compare changing predicted parity progression 1) between sonless women and women with son, and 2) between the better-educated and the less-educated. After estimating regression models described in the next section, I will examine these changes.

Data and methods

I use the Korean Longitudinal Study of Aging (KLoSA), a biannual longitudinal survey of the non-institutionalized Korean population age 45 and older in 2006. The KLoSA has an advantage and a disadvantage for the current study. The current study aims at examining the changing son preference effect on fertility during the Korean fertility transition. The sample should include birth cohorts of women whose reproductive life span overlapped the period of Korean fertility transition, which started in the 1960s. Because the KLoSA sampled women age 45 and older, this includes enough observations to examine these birth cohorts. The KLoSA, however, provides information on age and sex of "surviving children". Ideally, we should know age and sex of "children ever-born". Information only on "surviving children" is not sufficient given mortality of children. Early infant mortality (e.g., death before age 1) might not be a big issue because existence of "surviving son" may affect fertility decision. Later deaths should be problematic because they existed when a woman made fertility decision but disappeared in the KLoSA sample. Despite this weakness, I use the KLoSA because of lack of a better alternative, but this warrants cautious interpretation of results.

Using the KLoSA, I estimate logistic regression model and Cox proportional hazard model for parity progressions. Key covariates are educational attainment, sonlessness, and interaction of these two variables. I will examine how the coefficients of these variables changed across birth cohorts. Control variables include rural residence, father's schooling, and mother's schooling, which may confound the relationships of interest.

Preliminary findings

<Table 1> about here

Table 1 shows summary statistics of the sample. 25 percent of sample women reside in rural area, mean of father's years of schooling is 2.85, and that of mother's is 1.57. The mean years of schooling of the sample is close to 7 years, and on average they have 3 surviving children. 22 percent of sample women were born before 1937, 43 percent were born between

1937 and 1951, and 36 percent were born between 1952 and 1962. Finally, percent of sonless women decrease as parity progresses.

<Table 2> about here

Table 2 shows transition to next parities by cohort, education, and sonlessness. First, parity progression rates are lower among the younger cohort than the older. Second, parity progression is negatively associated with educational attainment. Finally, sonless women are much more likely to transit to the next parity than those who have at least one son.

<Table 3> about here

Because progression to the second parity is almost universal and the sample size gets smaller above parity 4, I present the results from the logistic regression model and the Cox proportional hazard model for transitions to third and fourth parity. Table 3 shows the logistic regression results. Rural residence is positively associated with transitions to third and fourth parity, and parental schooling is not significantly associated with these transitions. I find no significant interaction between schooling and sonlessness, and significant interaction between cohort and schooling, and cohort and sonlessness for both transitions. This implies that 1) negative relationship between schooling and parity progression became stronger across birth cohorts, and 2) positive relationship between sonlessness and parity progression also became stronger, and 3) son preference effect does not depend upon schooling. The significant interaction between sonlessness and cohort suggests that spread of effective contraceptive methods strengthened the effect of son preference on fertility (Chowdhury1994).

<Table 4> about here

Table 4 presents the results from the Cox proportional hazard model. Results are similar to those in the logistic regression (Table 3) except for one point. The interaction between schooling and sonlessness is significant and positive in the progression to parity 3. This means that son preference effect on the timing of transition to the third parity is larger as women attain more schooling. This may suggest that better contraceptive practices among the highly educated may countervail more egalitarian gender attitudes among them.

Although I find significant cohort differences in the son preference effects and the educational differentials in fertility, this does not directly speak to the implications of changing son preference and educational differentials in fertility for fertility transition. In the final version of this paper, I will discuss this issue in more detail.

Next steps

The final version of paper will include 1) graphs showing predicted transition probabilities, and 2) more discussion about theoretical background, and 3) the implications of findings to the Korean fertility transition.

Table 1 Summary statistics

Variables	Mean (or percent)	S.D.
Percent rural	25	-
Father's schooling	2.85	3.99
Mather's schooling	1.57	2.98
Schooling	6.92	4.72
# of children	3.06	1.47
Birth cohort (percent)		
before 1937	22	-
1937-51	43	-
1952-62	36	-
Percent sonless		
parity 1	46	-
parity 2	24	-
parity 3	13	-
parity 4+	7	-
N=4,948		

Table 2 Transition to next parity by cohort, education, and sonless (proportion)

Variables	1 to 2	2 to 3	3 to 4	4+ to higher
Birth cohort				
before 1937	0.92	0.89	0.79	0.56
1937-51	0.94	0.72	0.51	0.36
1952-62	0.87	0.30	0.19	0.20
Education				
6 years	0.93	0.73	0.52	0.41
9 years	0.94	0.48	0.42	0.29
12 years	0.86	0.34	0.26	0.24
16 years	0.84	0.28	0.08	0.28
Sonless				
no son	0.93	0.80	0.78	0.78
have a son	0.89	0.56	0.51	0.44
All	0.91	0.62	0.54	0.47
N=4,948				

Table 3 Logistic regression, transition to next parity

From parity 2 to parity 3(N=4,500)			
Variables	Coefficient.	s.e.	Odds ratios
Rural	0.706	0.111	2.026
Father's schooling	-0.003	0.015	0.997
Mather's schooling	-0.029	0.020	0.972
Schooling	-0.107	0.015	0.899
Birth cohort			
before 1937	(ref)		
1937-51	-1.340	0.159	0.262
1952-61	-3.049	0.182	0.047
No son	1.502	0.111	4.489
Cohort×Schooling	χ^2 = 39.29 (df=2, p=.000)		
before 1937×schooilng	(ref)		
1937-51×schooling	-0.190	0.031	0.827
1952-61×schooling	-0.183	0.036	0.832
No son×Schooling	0.037	0.031	1.038
Cohort×No son	χ^2 = 7.78 (df=2, p=.020)		
before 1937×no son	(ref)		
1937-51×no son	0.458	0.356	1.581
1952-61×no son	0.968	0.378	2.631
Intercept	0.392	0.057	-
From parity 3 to parity 4(N=2,945)			
Variables	Coefficient.	s.e.	Odds ratios
Rural	0.722	0.115	2.059
Father's schooling	-0.013	0.019	0.987
Mather's schooling	-0.013	0.025	0.987
Schooling	-0.057	0.019	0.944
Birth cohort			
before 1937	(ref)		
1937-51	-1.358	0.129	0.257
1952-61	-3.098	0.228	0.045
No son	1.942	0.170	6.974
Cohort×Schooling	χ^2 = 8.95 (df=2, p=.011)		
before 1937×schooilng	(ref)		
1937-51×schooling	-0.062	0.025	0.940
1952-61×schooling	0.047	0.047	1.048
No son×Schooling	-0.062	0.045	0.940
Cohort×No son	χ^2 = 6.28 (df=2, p=.043)		
before 1937×no son	(ref)		
1937-51×no son	0.783	0.429	2.188
1952-61×no son	1.274	0.510	3.576
Intercept	-0.723	0.079	

Table 4 Cox proportional hazard model, transition to next parity

From parity 2 to parity 3(N=4,500)			
Variables	Coefficient	s.e.	Hazard ratios
Rural	0.254	0.040	1.289
Father's schooling	-0.006	0.007	0.994
Mather's schooling	-0.020	0.011	0.980
Schooling	-0.071	0.009	0.931
Birth cohort			
before 1937	(ref)		
1937-51	-0.523	0.053	0.593
1952-61	-1.647	0.094	0.193
No son	0.716	0.053	2.046
Cohort×Schooling	χ^2 = 120.48 (df=2, p=.000)		
before 1937×schooilng	(ref)		
1937-51×schooling	-0.097	0.010	0.907
1952-61×schooling	-0.175	0.022	0.840
No son×Schooling	0.048	0.012	1.050
Cohort×No son	χ^2 = 70.01 (df=2, p=.000)		
before 1937×no son	(ref)		
1937-51×no son	0.462	0.090	1.587
1952-61×no son	1.095	0.139	2.989
Cohort×Schooling×No son	χ^2 = 19.39 (df=2, p=.000)		
before 1937×schooling×no son	(ref)		
1937-51×schooling×no son	0.068	0.018	1.070
1952-61×schooling×no son	0.101	0.033	1.107
From parity 3 to parity 4(N=2,945)			
Variables	Coefficient	s.e.	Hazard ratios
Rural	0.319	0.049	1.376
Father's schooling	-0.014	0.010	0.986
Mather's schooling	-0.015	0.015	0.985
Schooling	-0.045	0.017	0.956
Birth cohort			
before 1937	(ref)		
1937-51	-0.763	0.073	0.466
1952-61	-2.180	0.191	0.113
No son	1.149	0.105	3.155
Cohort×Schooling	χ^2 = 11.12 (df=2, p=.004)		
before 1937×schooilng	(ref)		
1937-51×schooling	-0.064	0.014	0.938
1952-61×schooling	-0.024	0.045	0.976
No son×Schooling	0.016	0.025	1.016
Cohort×No son	χ^2 = 13.68 (df=2, p=.001)		
before 1937×no son	(ref)		
1937-51×no son	0.631	0.144	1.879
1952-61×no son	1.462	0.292	4.314
Cohort×Schooling×No son	χ^2 = 5.81 (df=2, p=.055)		
before 1937×schooling×no son	(ref)		
1937-51×schooling×no son	0.007	0.028	1.007
1952-61×schooling×no son	0.011	0.066	1.011

<Reference>

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