Online Appendix for
"Social Norms and the Impact of Early Life Events on Gender Inequality"

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A Data Description

We mainly use two sets of data in our analysis.

The 2000 Chinese census, officially the Fifth National Population Census of the People's Republic of China, was conducted by the government of the People's Republic of China on 1 November 2000. The census contains information on demographics, work, and households. The 2000 China National Population Census sample that we use is from IPUMS, a 1% sample of 11,804,344 persons.

China Family Panel Studies (CFPS) is a nationally representative data. The first national wave was conducted in collaboration with the Institute of Social Science Survey at the Peking University and the Survey Research Center at the University of Michigan from April to August 2010. The five main parts of the questionnaire include data on communities, households, household members, adults, and children. The CFPS sample in 2010 covers 25 provinces/municipalities/autonomous regions, representing 95% of the Chinese population. The 2010 baseline survey interviewed a total of 14,960 households and 42,590 individuals. CFPS implemented Probability-Proportional-to-Size Sampling (PPS) with implicit stratification, taking the regional differences in Chinese society and reducing survey processing costs into consideration. We report the summary statistics for selected variables in Table A1.

B Robustness checks

B.1 Son preference measure and pre-famine local conditions

To alleviate the concern that our son preference measure based on the 1953 census may be correlated with pre-famine local conditions, we searched extensively to gather pre-famine characteristics at the province level. We gather three sets of local pre-famine covariates from the Comprehensive Statistical Data and Materials on 50 Years of New China: (1) local health supplies, including the number of health institutions and number of doctors between 1949 and 1953. (2) local economic development indicators, including GDP, government revenue, and government expenditure between 1949 and 1953; (3) local population size between 1949 and 1953.

We calculate the average of these pre-famine indicators. First, we investigate the relationship between these pre-famine regional characteristics and the son preference measure by running a simple regression. Results in Table A2 show no statistically significant associations. In addition, we control for these pre-famine variables in our analysis. As they are cross-sectional variables, we interact them with famine exposure and include these interaction terms in Table A3. Panel A reports the results for cohort sex ratios, and Panel B reports the results for the gender gap in years of education. We introduce the set of control variables on the local healthcare supply in Column 1. Our estimates remain statistically significant for both outcomes. with a slightly larger magnitude. In Column 2, introducing economic development controls does not alter the significance of these estimates for both outcomes. Column 3 controls for local population size, and we find our estimates still hold with relatively smaller magnitudes compared to our baseline estimates. We further include all sets of controls in Column 4, confirming the robustness of our findings. Finally, Column 5 further includes the cohort-specific time trends of these pre-famine conditions, and our results are reassured. In sum, these results in Table A3 alleviate concerns about the son preference measure based on the 1953 census.

B.2 Other social changes

Here, we address the concern about the possible impacts of two major social changes: the Chinese Civil War and the Cultural Revolution in Table A4.

In our main text, we use the cohort sex ratios of those aged 0-10 in the 1953 China Population Census as a proxy for the culture of son preference. However, these cohorts' survival chances may be influenced by the Chinese Civil War between 1945 and 1949. To account for this, we utilize the number of months that each province experienced the Civil War to capture the intensity of the war. We introduce the interaction term between famine exposure and civil war duration in Table A4. Columns 1-2 and 5-6 in Table A4 show that our results remain robust to adding the civil war duration.

The Cultural Revolution may have affected the educational attainment of those born between 1954 and 1966 in our sample. We measure the intensity of the Cultural Revolution using the data from Walder (2014), based on recorded history from county gazetteers on the number of abnormal deaths due to the revolution between 1966 and 1976. We aggregate the total number of abnormal deaths during the CR period at the province level and introduce the interaction between famine exposure and Cultural Revolution control in Table A4. Our results hold to the inclusion of Cultural Revolution control. Meanwhile, the interaction term between famine severity and Cultural Revolution intensity produces negligible negative impacts on outcome variables of interest.

B.3 Alternative sample restriction

In the main context, we focus on cohorts born between 1954 and 1966 in the 2000 China Population Census. To test the robustness of our estimates, we also include cohorts born after the famine, specifically those born between 1967 and 1970. Table A5 shows that the average treatment effect model estimates on cohort sex ratios and the gender gap in education are similar to what we report in Tables 2 and 4. The estimated impacts of the interaction term between intrauterine famine severity and son preference on cohort sex ratios and the gender gap in years of education remain robust and similar in magnitude.

B.4 Famine exposure received in the first year of life

Even though extensive literature in biology and economics shows that fetuses are highly vulnerable and adverse fetal conditions would have significant and lasting impacts on adult outcomes, as intrauterine period is crucial for gene programming (Petronis, 2010). To explore whether exposure during other periods has similar effects, we construct a measure of famine exposure received in the first year of life. Table A6 show no statistically significant impact on sex ratios. Even though the coefficient of the interaction between famine severity received during age 0-1 and son preference on the gender gap in education is statistically significant, the magnitude and the significance of the coefficient are reduced compared to the estimates using intrauterine famine exposure.

C Additional analysis

C.1 Linking educational and health outcomes

We use the 2010 China Family Panel Studies (CFPS) data to construct the gender gap in height for each birth year cohort at the province level. Then we control for the gender gap in height in our analysis of education in Table A7. We find that the coefficient of famine severity reduces in magnitude and statistical significance after controlling for the gender gap in height. Moreover, the coefficient of the interaction term between famine severity and son preference also slightly loses its magnitude. Furthermore, we observe that the gender gap in height is positively correlated with the gender gap in education. There are two explanations for the reduction of the coefficient of famine severity in utero after adding health controls. (1) Health (nutrition) accounts for part of the results, indicating that other factors may influence education investment decisions. (2) Height represents only one dimension of health that we can control for, and various aspects of health may influence education decisions.

C.2 Absolute change in outcome variables

We reproduce the estimates for absolute changes in adult height and years of education of each gender in Table A8 (Columns 1-2 for males and Columns 3-4 for females). In Panel A, we find that famine exposure significantly increases height for males, with the he coefficient of famine term being larger for males compared to females. This pattern aligns with our model prediction that famine shocks increase the expected health among survivors in gender-neutral areas in Section 2.3.2. In addition, the coefficient of the interaction term is negative for males while positive for females. This finding indicates that the impact of famine on height is more prominent for males in gender-neutral areas than in areas with son preference. Conversely, for females, the effect of famine is smaller in gender-neutral areas than in areas in son preference. These observed patterns align with our predictions that son preference will buffer the impact of famine on health for males but not in the case of females.

In Panel B, our analysis reveals a nuanced pattern on years of education: famine exerts no discernible influence on schooling years for males, while it does lead to a reduction in schooling years for females. This pattern resonates cohesively with Section 2.3.3, which states that the impact of famine on survivors' education is ambiguous. The intricate interplay is determined by the ratio of famine survivors' expected health to non-exposed cohorts and the parental response to children's famine experience. The negative coefficient for girls indicates that parents' unfavorable responses to children's famine experience dominate the change in expected health induced by famine shocks for females. In addition, the positive coefficient of the interaction term for males (despite insignificant) and females indicates that the negative impact of famine on years of education is more significant in gender-neutral areas compared to areas with son preference.

C.3 Selection during the famine

Some literature suggests that two types of selection exist during the famine period. First, fertility decisions could be postponed during the famine. Second, individuals who are observed in later Population Census or survey data should experience the selection of mortality. We have utilized birth month to deal with the selective fertility issue in our main context. Here, we examine the overall selection during the famine using intrauterine famine severity to predict family background and sibship size, using data from the China Family Panel Studies (CFPS) 2010.

Parents' education level and party membership serve as proxies for family background. Columns 1-4 in Table A9 suggest no substantial impact of intrauterine famine exposure on family background by several yardsticks. Furthermore, we do not observe any gender difference in the effects of famine exposure on family background. The last three columns in Table A9 show that intrauterine famine exposure has no substantial effect on sibship size, regarding the total sibship size and female sibship size. Besides, there is no gender difference in the impact of famine exposure on sibship size. Overall, our results imply that the gender difference in the overall selection during the famine is not so serious regarding respondents' family background and sibship information.

D Proofs of propositions

Proof of Proposition 1

Proof. The impact of famine on survival chances between two groups is determined by the change in CDF of the health distribution, $\mathrm{F}(z_i^{'}) - \mathrm{F}(z_i^{'} + \Delta\mu)$. As $F'(h_i) > 0$, for $z_1 < z_2$, we have that $\mathrm{F}(z_2) > \mathrm{F}(z_1)$, which implies that famine reduces the survival chances. In addition, we know that

$F''(h_i) > 0$ over the interval I for any $Z \in I$. Hence for any $z_1 < z_2$ over the interval, we have that $\frac{F(z_2+\Delta\mu)-F(z_2).}{\Delta\mu} > \frac{F(z_1+\Delta\mu)-F(z_1).}{\Delta\mu}$.

(1) We first consider the situation of gender-neutral area. The distribution of boys' endowments lies slightly to the left of girls, and preferences are equal in gender-neutral areas. Conditional on boys' health distribution, the survival chance of girls can be rewritten as $F\left(z_g^{'n} - \Delta h\right)$, where Δh is the difference in health parameters between these two genders and greater than zero. Hence, we have that $F(z_b^{'n}) - F(z_b^{'n} + \Delta\mu) < F(z_g^{'n} - \Delta h) - F(z_g^{'n} - \Delta h + \Delta\mu)$. In other words, the negative impact of famine on boys' survival chances is greater than girls.

(2) Preference for boys is greater in areas with son preference than in gender-neutral areas. Thereby, the effective survival line for boys is greater in gender-neutral areas than in areas with son preference. Hence, we have, $F(z_b^{'n}) - F(z_b^{'n} + \Delta\mu) < F(z_b^{'p}) - F(z_b^{'p} + \Delta\mu)$.

(3) Similarly, preference for girls is smaller in areas with son preference than in gender-neutral areas. Thus, the effective survival line for girls is greater in areas with son preference than in gender-neutral areas. Thereby, we have that $F(z_g^{'n} - \Delta h) - F(z_g^{'n} - \Delta h + \Delta\mu) > F(z_g^{'p} - \Delta h) - F(z_g^{'p} - \Delta h + \Delta\mu)$.

(4) From the inequalities in (2) and (3), we have that $F(z_b^{'n}) - F(z_b^{'n} + \Delta\mu) - \left(F(z_g^{'n} - \Delta h) - F(z_g^{'n} - \Delta h + \Delta\mu)\right) < F(z_b^{'p}) - F(z_b^{'p} + \Delta\mu) - \left(F(z_g^{'p} - \Delta h) - F(z_g^{'p} - \Delta h + \Delta\mu)\right)$.

Proposition 1 is proved.

Proof of Proposition 2

Proof. The impact of famine on survivors' health is rewritten as the difference in the selection effect, $\lambda(z_i' + \Delta\mu) - \lambda(z_i')$. As $\lambda'(h_i) > 0$, we have $\lambda(z_i' + \Delta\mu) - \lambda(z_i') > 0$, which implies famine shocks increase the expected health among survivors (the culling effect). In addition, we know that $\lambda''(h_i) > 0$ over the interval I for any $Z \in I$. Hence for any $z_1 < z_2$ over the interval, we have that $\frac{\lambda(z_2+\Delta\mu)-\lambda(z_2).}{\Delta\mu} > \frac{\lambda(z_1+\Delta\mu)-\lambda(z_1).}{\Delta\mu}$.

(1) We first consider the case of gender-neutral areas. As the distribution of boys' endowments lies slightly to the left of girls, and preferences are equal in gender-neutral areas. Conditional on boys' health distribution, the survivors' expected heath of girls can be rewritten as

$\lambda\left(z_g^{'n} - \Delta h\right)$, where Δh is the difference in health parameters between these two genders and greater than zero. Hence, we have that $\lambda\left(z_b^{'n} + \Delta\mu\right) - \lambda(z_b^{'n}) > \lambda\left(z_g^{'n} - \Delta h + \Delta\mu\right) - \lambda\left(z_g^{'n} - \Delta h\right)$. In other words, the impact of famine on survivors' health is greater for boys than girls in gender-neutral areas.

(2) Preference for boys is greater in areas with son preference than in gender-neutral areas. The effective survival line for boys is greater in gender-neutral areas than in areas with son preference. Hence, we know, $\lambda\left(z_b^{'n} + \Delta\mu\right) - \lambda\left(z_b^{'n}\right) > \lambda\left(z_b^{'p} + \Delta\mu\right) - \lambda\left(z_b^{'p}\right)$.

(3) Similarly, preference for girls is greater in gender-neutral areas than that in regions with son preference. Thus, the effective survival line for girls in areas with son preference is greater than in gender-neutral areas. Thereby, we have, $\lambda\left(z_g^{'n} + \Delta\mu\right) - \lambda\left(z_g^{'n}\right) < \lambda\left(z_g^{'p} + \Delta\mu\right) - \lambda\left(z_g^{'p}\right)$.

(4) According to these two inequalities mentioned above, we have that $\lambda\left(z_b^{'n} + \Delta\mu\right) - \lambda\left(z_b^{'n}\right) - \left(\lambda\left(z_g^{'n} + \Delta\mu\right) - \lambda\left(z_g^{'n}\right)\right) > \lambda\left(z_b^{'p} + \Delta\mu\right) - \lambda\left(z_b^{'p}\right) - \left(\lambda\left(z_g^{'p} + \Delta\mu\right) - \lambda\left(z_g^{'p}\right)\right)$.

Proposition 2 is proved.

Proof of Proposition 3

Proof. The impact of famine on schooling is determined by relationship between $\ln\lambda\left(z_i' + \Delta\mu\right) - \ln\lambda\left(z_i'\right)$ and $\ln(1 - \Delta\mu)$,where $\ln\lambda\left(z_i' + \Delta\mu\right) - \ln\lambda\left(z_i'\right)$ captures the ratio of famine survivors' expected health to non-exposed cohorts.

(1) We first consider the case of gender-neutral areas. Since the impact of famine on boys' expected heath is greater than that for girls in gender-neutral areas. Moreover, the expected health of non-exposed boys is smaller than girls due to the weak boy assumption. We know that $\ln\frac{\lambda\left(z_b'^n + \Delta\mu\right)}{\lambda\left(z_b'^n\right)} > \ln\frac{\lambda\left(z_g'^n + \Delta\mu\right)}{\lambda\left(z_g'^n\right)}$, which implies that famine raises the gender gap in education in gender neutral areas.

(2) Furthermore, we consider the case in areas with son preference. As we already know that the impact of famine on boys' expected heath is smaller than that for girls in areas with son preference. Moreover, the expected health of non-exposed boys is smaller than girls in areas with son preference. Hence, the relationship between $\ln\frac{\lambda\left(z_b'^p+\Delta\mu\right)}{\lambda\left(z_b'^p\right)}$ and $\ln\frac{\lambda\left(z_g'^p+\Delta\mu\right)}{\lambda\left(z_g'^p\right)}$ is ambiguous.

(3) The gender difference (boys versus girls) in the impact of the famine on education between these two areas (gender-neutral minus son preference) can be: (1) less than zero if $\ln\frac{\lambda\left(z_b^{'n}+\Delta\mu\right)}{\lambda\left(z_b^{'n}\right)} - \ln\frac{\lambda\left(z_g^{'n}+\Delta\mu\right)}{\lambda\left(z_g^{'n}\right)} > \ln\frac{\lambda\left(z_b^{'p}+\Delta\mu\right)}{\lambda\left(z_b^{'p}\right)} - \ln\frac{\lambda\left(z_g^{'p}+\Delta\mu\right)}{\lambda\left(z_g^{'p}\right)}$; (2) equal to zero if $n\frac{\lambda\left(z_b^{'n}+\Delta\mu\right)}{\lambda\left(z_b^{'n}\right)} - \ln\frac{\lambda\left(z_g^{'n}+\Delta\mu\right)}{\lambda\left(z_g^{'n}\right)} = \ln\frac{\lambda\left(z_b^{'p}+\Delta\mu\right)}{\lambda\left(z_b^{'p}\right)} - \ln\frac{\lambda\left(z_g^{'p}+\Delta\mu\right)}{\lambda\left(z_g^{'p}\right)}$; (3) greater than zero if $\ln\frac{\lambda\left(z_b^{'n}+\Delta\mu\right)}{\lambda\left(z_b^{'n}\right)} - \ln\frac{\lambda\left(z_g^{'n}+\Delta\mu\right)}{\lambda\left(z_g^{'n}\right)} > \ln\frac{\lambda\left(z_b^{'p}+\Delta\mu\right)}{\lambda\left(z_b^{'p}\right)} - \ln\frac{\lambda\left(z_g^{'p}+\Delta\mu\right)}{\lambda\left(z_g^{'p}\right)}$. And Proposition 3 is proved.

Case of (Standard) Normal Distribution

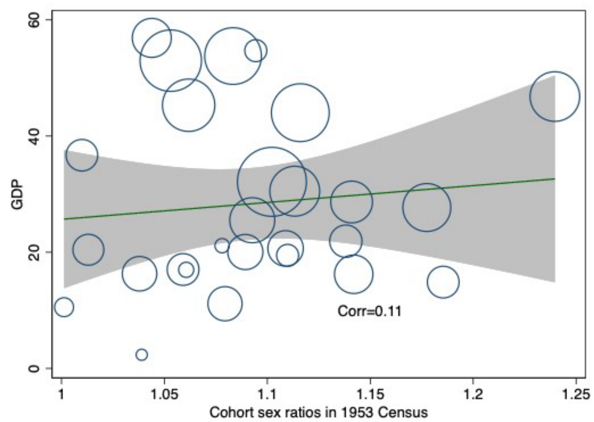
The normal distribution of human health parameters, such as height and weight, is supported by rich literature in economics and biology, and can be easily transformed to the standard normal distribution. We define $\Phi(.)$ as the standard normal cumulative distribution function (CDF). $\Phi'(h_i)> 0$ for any h_i, and $\Phi''(h_i)> 0$ for $h_i < 0$, which satisfies the property of CDF of health in our general form model. Therefore, we can get consistent predictions of survival chances based on the (standard) normal distribution of health.

For the standard normal distribution, the inverse Mills ratio $\gamma(h_i)$ denotes the selection effect. And survivors' health can be written as a function of the inverse Mills ratio. Given that $\gamma'(h_i) > 0$ and $\gamma''(h_i)$, this aligns with the property of survivors' health in our general form model. Consequently, we can get consistent predictions of survivors' health based on the (standard) normal distribution of health. As our predictions on survivors' education mainly depend on their health and the reinforcing behavior related to famine experience, we can get consistent predictions.

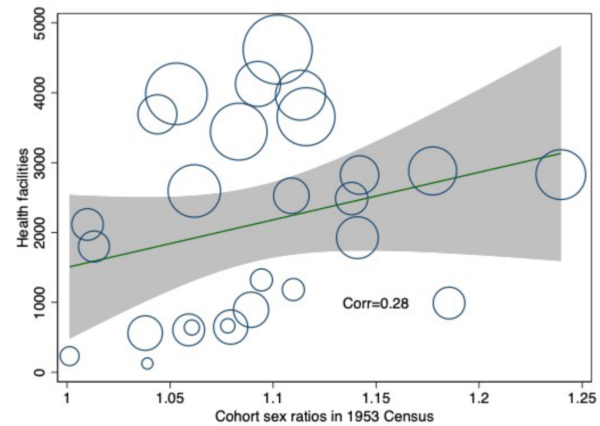
Reference:

Petronis, Arturas. 2010. "Epigenetics as a unifying principle in the aetiology of complex traits and diseases." *Nature* 465 (7299) : 721-727

Panel A: GDP



Panel B: Health Facilities



Panel C: Number of High School Students

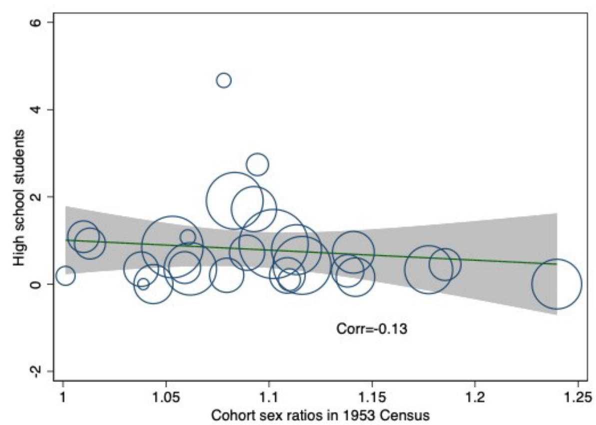


Figure A1: Correlations between Son Preference and Pre-famine Conditions

Notes: The figure plots the correlations between son preference (measured by cohort sex ratios in 1953) and regional conditions in 1954, including GDP, number of health facilities, and number of high school students. Each circle represents a province. Circle size presents the size of population in the 1953 Census.
Data sources: the Comprehensive Statistical Data and Materials on 50 Years of New China.

Panel A: Cohort Sex Ratios

Panel B: Gender Gap in Education

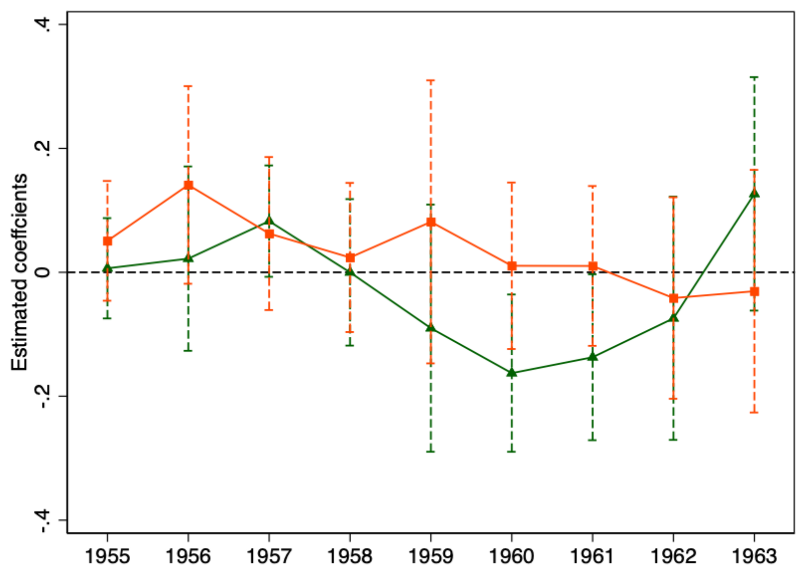


Figure A2: Flexible Estimates for Areas with Different Levels of Famine Severity

Note: The figure presents parameter estimates on birth year fixed effects and regional excess death rate in areas with a high level of famine severity and regions with a low level of famine severity, with 95% confidence intervals reported. We multiply sex ratios by 100. We include controls for pre-famine regional characteristics interacted with birth year fixed effects. Standard errors clustered at the province level are used to construct confidence intervals.

Table A1: Summary Statistics

Var.	Obs	Mean	Std. Dev.	Min	Max
Province birth year and birth month level					
Male-to-female sex ratios	4212	1.05	0.13	0.33	3.00
Gender gap in years of education	4212	1.36	0.92	-1.48	6.84
Famine severity received in utero	4212	3.07	5.89	0.00	34.02
Province level					
Son preference (dummy variable)	27	0.63	0.49	0.00	1.00
GDP per capita in 1954	27	173.60	120.03	66.00	589.00
Number of health institutions in 1954	27	2123.96	1373.06	126.00	4619.00
Number of high school students per 10000 in 1954	27	0.80	1.00	0.00	4.67

Notes: The data on sex ratios and the gender gap in education is from the 2000 China Population Census. The information on province-level year-by-year death rate and pre-famine provincial characteristics are from Comprehensive Statistical Data and Materials on 50 Years of New China which is compiled by the Department of Comprehensive Statistics of the National Bureau of Statistics in China. In addition, information on province-level cohorts sex ratios is calculated from the 1953 China Population Census.

Table A2: Correlation between Pre-famine Regional Covariates and Son Preference

Dependent Var.	(1) Health institutions	(2) Doctors	(3) GDP	(4) Revenue	(5) Expenditure	(6) Population size
Son preference	1722.8238	0.8492	-231.5500	1.4667	1.8899	6957.1234
	(2216.321)	(6.863)	(139.101)	(7.322)	(3.026)	(4568.388)
Observations	27	27	27	27	27	27
R-squared	0.024	0.001	0.100	0.002	0.015	0.085

Notes: Standard errors are reported in parentheses. Dependent variables include the local average number of health institutions, doctors, GDP, government revenue, government expenditure, and population size from 1949 to 1953. ***p<0.01, **p<0.05, *p<0.1.

Data Sources: the Comprehensive Statistical Data and Materials on 50 Years of New China.

Table A3: Inclusion of Pre-famine Controls

Dependent Var.	(1)	(2)	(3)	(4)	(5)
Panel A: Male-to-female Sex Ratios					
Famine	-0.2254*	-0.4881*	-0.1795*	-0.5428*	-0.5583*
	(0.110)	(0.242)	(0.095)	(0.270)	(0.274)
Famine*son preference	0.3157***	0.3177***	0.3244***	0.3343***	0.3367***
	(0.065)	(0.083)	(0.064)	(0.077)	(0.078)
Observations	4212	4212	4212	4212	4212
R-squared	0.069	0.070	0.069	0.070	0.073
Panel B: Gender Gap in Education					
Famine	0.0152**	0.0227**	0.0151***	0.0258**	0.0252**
	(0.006)	(0.009)	(0.004)	(0.010)	(0.009)
Famine*son preference	-0.0143***	-0.0124***	-0.0144***	-0.0128***	-0.0129***
	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
Health care supply	Yes	No	No	Yes	Yes
Economic development	No	Yes	No	Yes	Yes
Population size	No	No	Yes	Yes	Yes
Cohort trends	No	No	No	No	Yes
Observations	4212	4212	4212	4212	4212
R-squared	0.815	0.815	0.815	0.815	0.819

Notes: Panel A reports the estimates for cohort sex ratios, while Panel B reports the estimates for the gender gap in years of education. Local health supply is measured by the average number of health institutions and doctors from 1949 to 1953. Local economic development indicators include average GDP, government revenue, and government expenditure over the same period. Population size denotes the average size of population from 1949 to 1953. We also include province fixed effects and birth year and month fixed effects, provincial GDP per capita, number of health institutions, and number of high school students in 1954 (subtracted from the median values). All models are weighted by population size of each unit. Standard errors are clustered at the province level and reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.

Table A4: Robustness to Other Social Changes

Dependent Var.	Male-to-female Sex Ratios				Gender Gap in Education			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Famine	-0.2085***	-0.1135	-0.2554***	-0.1397	0.0122**	0.0109***	0.0113**	0.0097**
	(0.064)	(0.095)	(0.0870)	(0.0973)	(0.005)	(0.004)	(0.0044)	(0.0040)
Famine*son preference	0.2254***	0.2968***	0.2803***	0.3474***	-0.0134***	-0.0155***	-0.0123***	-0.0144***
	(0.063)	(0.072)	(0.0817)	(0.0638)	(0.004)	(0.004)	(0.0035)	(0.0032)
Famine*war duration	-0.0412**	-0.0270			-0.0007	-0.0005		
	(0.019)	(0.023)			(0.001)	(0.001)		
Famine*cultural revolution			-0.0446***	-0.0401**			-0.0010	-0.0016***
			(0.0150)	(0.0189)			(0.0009)	(0.0005)
Pre-famine controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	4212	4212	4212	4212	4212	4212	4212	4212
R-squared	0.166	0.166	0.166	0.166	0.821	0.823	0.821	0.823

Notes: This table reports the robustness checks including controls for other social changes. We multiply sex ratios (dependent variable) by 100. The unit of observation is at the province birth year and month level. War duration denotes the provincial length of the Chinese Civil War, as collected from Wikipedia. Cultural revolution denotes the normalized provincial number of abnormal death due to the revolution from Walder (2014), based on county gazetteers. Pre-famine regional control variables are provincial GDP per capita, number of health institutions, and number of high school students in 1954 (subtracted from the median values). Province fixed effects and birth year and month fixed effects are controlled for. All models are weighted by the population size of each unit. Standard errors are clustered at the province level and reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.
Data Sources: the 2000 China Population Census and the Comprehensive Statistical Data and Materials on 50 Years of New China.

Table A5: Inclusion of Later Cohorts

Dependent Var.	Male-to-female Sex Ratios		Gender Gap in Education	
	(1)	(2)	(3)	(4)
Famine	-0.2365***	-0.1029	0.0125*	0.0115**
	(0.0822)	(0.1045)	(0.0067)	(0.0054)
Famine*son preference	0.2983***	0.3663***	-0.0140**	-0.0174***
	(0.0785)	(0.0617)	(0.0054)	(0.0056)
Pre-famine controls	No	Yes	No	Yes
Observations	5508	5508	5508	5508
R-squared	0.166	0.167	0.828	0.830

Notes: This table reports the robustness of the estimated impact of intrauterine famine exposure and its interaction with son preference to alternative sample restriction (cohorts born between 1954-and 1970). We multiply sex ratios (dependent variable) by 100. The unit of observation is at the province birth year and month level. Pre-famine regional control variables are provincial GDP per capita, number of health institutions, and number of high school students in 1954 (subtracted from the median values). Province fixed effects and birth year and month fixed effects are controlled for. All models are weighted by population size of each unit. Standard errors are clustered at province level and reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.
Data Sources: the 2000 China Population Census and the Comprehensive Statistical Data and Materials on 50 Years of New China.

Table A6: Robustness to Inclusion of Famine Exposure during Age 0-1

Dependent Var.	Male-to-female Sex Ratios		Gender Gap in Education	
	(1)	(2)	(3)	(4)
Famine	-0.5940***	-0.4120**	0.0214***	0.0159***
	(0.139)	(0.169)	(0.005)	(0.005)
Famine*son preference	0.5138***	0.6326***	-0.0158***	-0.0192***
	(0.122)	(0.097)	(0.004)	(0.004)
Famine (0-1)	0.4743***	0.4109**	-0.0127*	-0.0065
	(0.136)	(0.181)	(0.007)	(0.008)
Famine (0-1)*son preference	-0.3326***	-0.3947***	0.0042	0.0058
	(0.114)	(0.110)	(0.005)	(0.004)
Pre-famine controls	No	Yes	No	Yes
Observations	4212	4212	4212	4212
R-squared	0.168	0.169	0.822	0.824

Notes: This table reports the robustness of our analysis to including famine exposure during age 0-1. We multiply sex ratios (dependent variable) by 100. The unit of observation is at the province birth year and month level. Controls include the interaction terms between pre-famine regional conditions and famine exposures received in utero and during ages 0-1. Pre-famine regional control variables are provincial GDP per capita, number of health institutions, and number of high school students in 1954 (subtracted from the median values). Province fixed effects and birth year and month fixed effects are controlled for. All models are weighted by population size of each unit. Standard errors are clustered at the province level and reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.

Data Sources: the 2000 China Population Census and the Comprehensive Statistical Data and Materials on 50 Years of New China.

Table A7: Inclusion of Health Controls

Dependent Var.	(1)	(2)
	Gender gap in education	
Famine	0.0172***	0.0133***
	(0.003)	(0.004)
Famine*son preference	-0.0158***	-0.0129***
	(0.003)	(0.004)
Gender gap in height		0.0088**
		(0.003)
Observations	3492	3492
R-squared	0.843	0.844

Notes: This table examines the robustness of our findings on the gender gap in years of education by including controls for height. The gender gap in height is calculated at the province birth year level using data from the 2010 China Family Panel Studies (CFPS). Pre-famine regional control variables are provincial GDP per capita, number of health institutions, and number of high school students in 1954 (subtracted from the median values). Province fixed effects and birth year and month fixed effects are controlled for. All models are weighted by population size of each unit. Standard errors are clustered at province level and reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.
Data Sources: the 2000 China Population Census, 2010 China Family Panel Studies (CFPS), and the Comprehensive Statistical Data and Materials on 50 Years of New China.

Table A8: Results of Absolute Changes

	(1)	(2)	(3)	(4)
	Male		Female	
Panel A. Dependent Var.: Adult height				
Famine	0.2285***	0.3271***	-0.0388	-0.0897
	(0.0758)	(0.0859)	(0.1135)	(0.1020)
Famine*son preference	-0.3281***	-0.3048**	0.0102	0.1879**
	(0.0572)	(0.1464)	(0.0954)	(0.0856)
Observations	265	265	265	265
R-squared	0.647	0.654	0.684	0.704
Panel B. Dependent Var.: Years of education				
Famine	-0.0045	-0.0049	-0.0164**	-0.0161*
	(0.0068)	(0.0083)	(0.0059)	(0.0080)
Famine*son preference	0.0037	0.0011	0.0165***	0.0160***
	(0.0059)	(0.0045)	(0.0048)	(0.0036)
Pre-famine controls	No	Yes	No	Yes
Observations	4212	4212	4212	4212
R-squared	0.894	0.895	0.943	0.943

Notes: This table reports the effect of intrauterine famine exposure and its interaction with son preference on the absolute changes in outcome variables for each gender. In Panel A, the dependent variable is adult height, measured at the province birth year level. In Panel B, the dependent variable is years of education, measured at the province birth year and month level. Pre-famine regional control variables are provincial GDP per capita, number of health institutions, and number of high school students in 1954 (subtracted from the median values). All models are weighted by population size of each unit. Standard errors are clustered at province level and reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.
Data Sources: the 2010 China Family Panel Studies (CFPS), the 2000 China Population Census and the Comprehensive Statistical Data and Materials on 50 Years of New China.

Table A9: Associations between Famine Exposure and Family Characteristics

Dependent Var.	Years of Education		Party Membership		Sibship Size		
	Father	*Mother*	*Father*	*Mother*	*Total*	*Male*	*Female*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Famine	0.0488	0.0034	0.0009	0.0007	0.0119	0.0021	0.0098
	(0.0302)	(0.0149)	(0.0014)	(0.0011)	(0.0095)	(0.0085)	(0.0081)
Male	0.0747	0.1087*	-0.0023	0.0021	-0.1470***	-0.1298***	-0.0172
	(0.0803)	(0.0533)	(0.0094)	(0.0032)	(0.0459)	(0.0330)	(0.0375)
Male*famine severity	-0.0138	-0.0041	-0.0020	-0.0000*	-0.0070	-0.0056	-0.0014
	(0.0166)	(0.0079)	(0.0013)	(0.0000)	(0.0078)	(0.0073)	(0.0070)
Observations	5933	6442	7389	7389	7288	7288	7288
R-squared	0.030	0.063	0.014	0.008	0.047	0.028	0.023

Notes: This table reports the results of using intrauterine famine severity to predict family background and sibship size. The data used in this analysis is from the China Family Panel Survey (CFPS) 2010 and Statistical Yearbook released by the National Bureau of Statistics. Pre-famine regional control variables are provincial GDP per capita, number of health institutions, and number of high school students in 1954 (subtracted from the median values). All models are weighted by population size of each unit. All standard errors are clustered at province level. Standard errors are in parentheses. ***p<0.01, **p<0.05, *p<0.1.