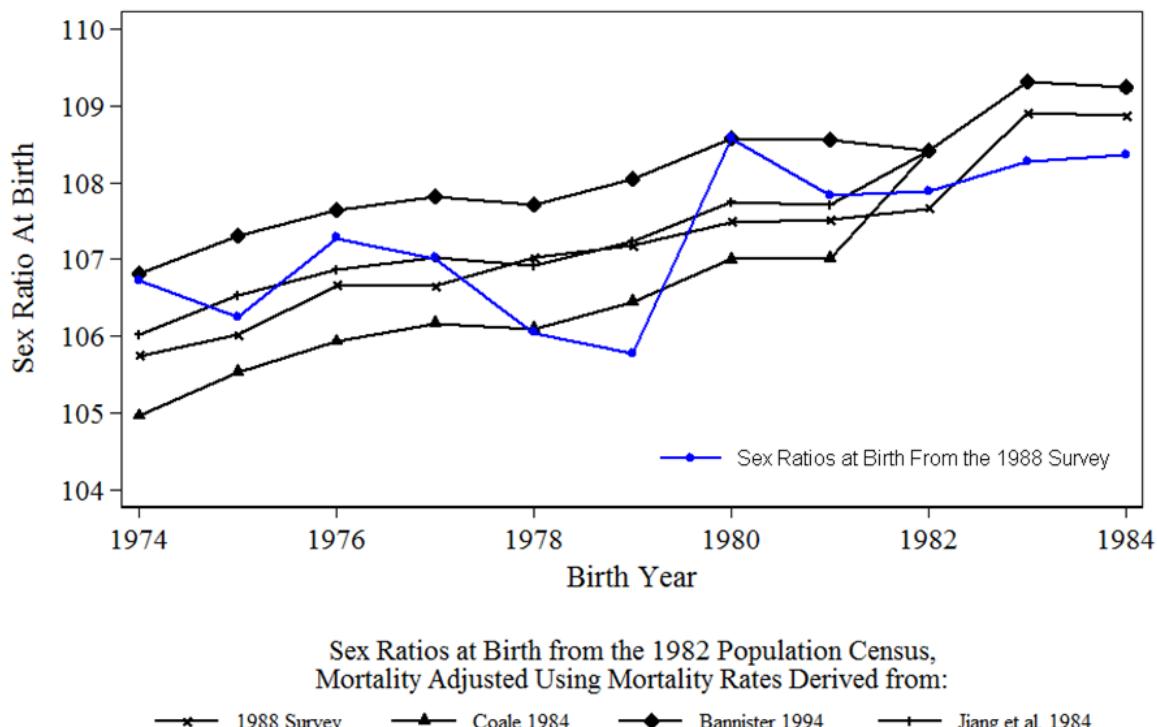


**THE LIMITS AND CONSEQUENCES OF POPULATION POLICY:  
EVIDENCE FROM CHINA'S *WAN XI SHAO* CAMPAIGN**

Kimberly Singer Babiarz, Paul Ma, Grant Miller, and Shige Song

**Appendix Figures and Tables**

**Appendix Figure A1:**  
**Sex Ratios at Birth in the 1988 Fertility Survey and the 1990 Population Census**



Note: Figure A1 shows sex ratios calculated using the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception and the 1% sample of the 1990 population census. Population census data adjusted for age- and sex-specific mortality rates using "reverse survival" using mortality rates derived from four sources. These are: 1) mortality rates calculated using the deaths reported in the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception; 2) life tables presented in Coale (1984), which interpolate between the 1964 and 1982 censuses; 3) life tables published in Bannister (1994), which use China's Cancer Epidemiology Study of deaths between 1973-1975; and 4) life tables based directly on the 1982 population census (Jiang et al., 1984). For all mortality rate adjustments using life tables, we necessarily assume that age- and sex-specific mortality were stable over the period of study.

**Appendix Figure A2:**  
**Sex Ratios at Birth in the 1988 Fertility Survey and the 1982 Population Census**

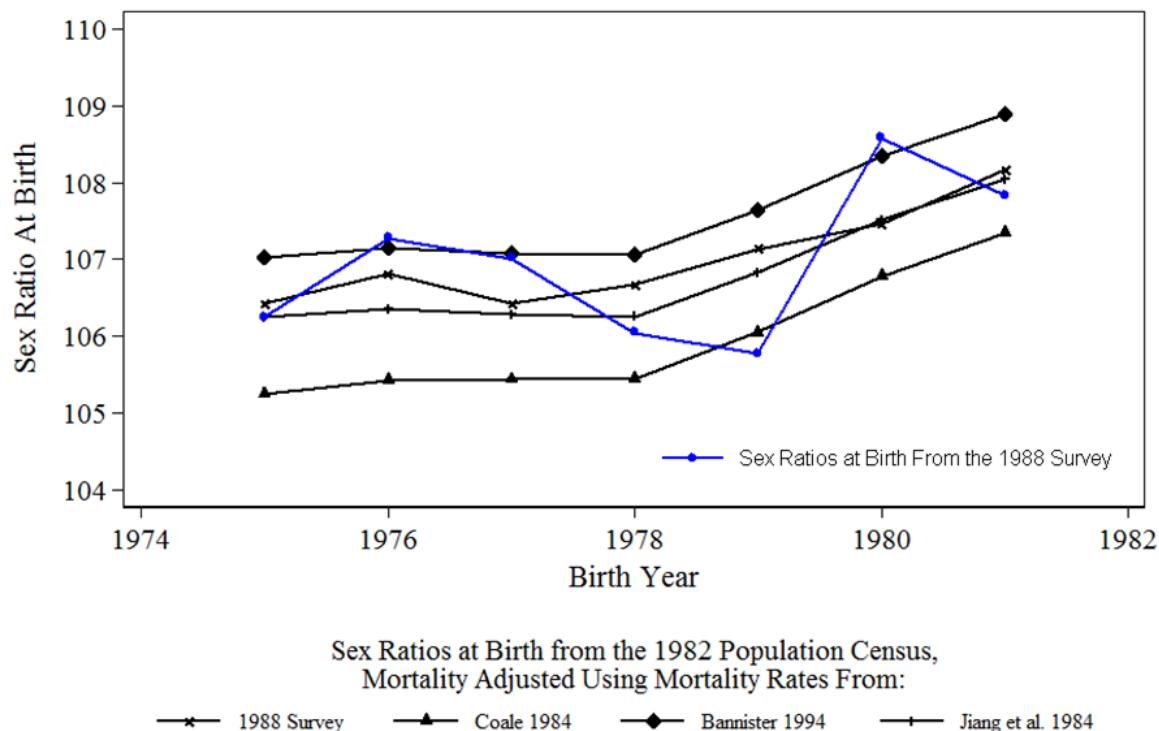
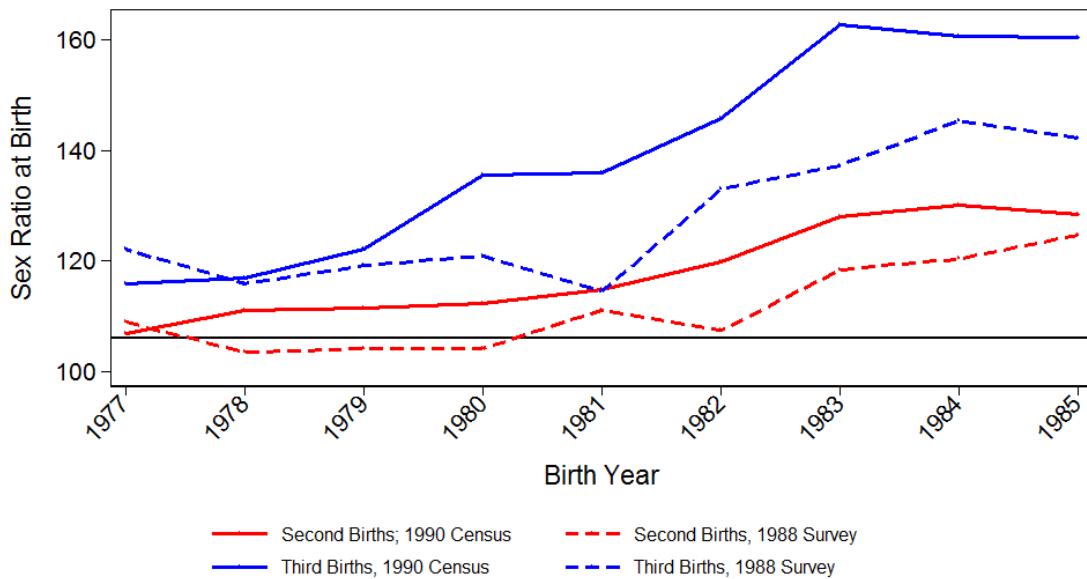


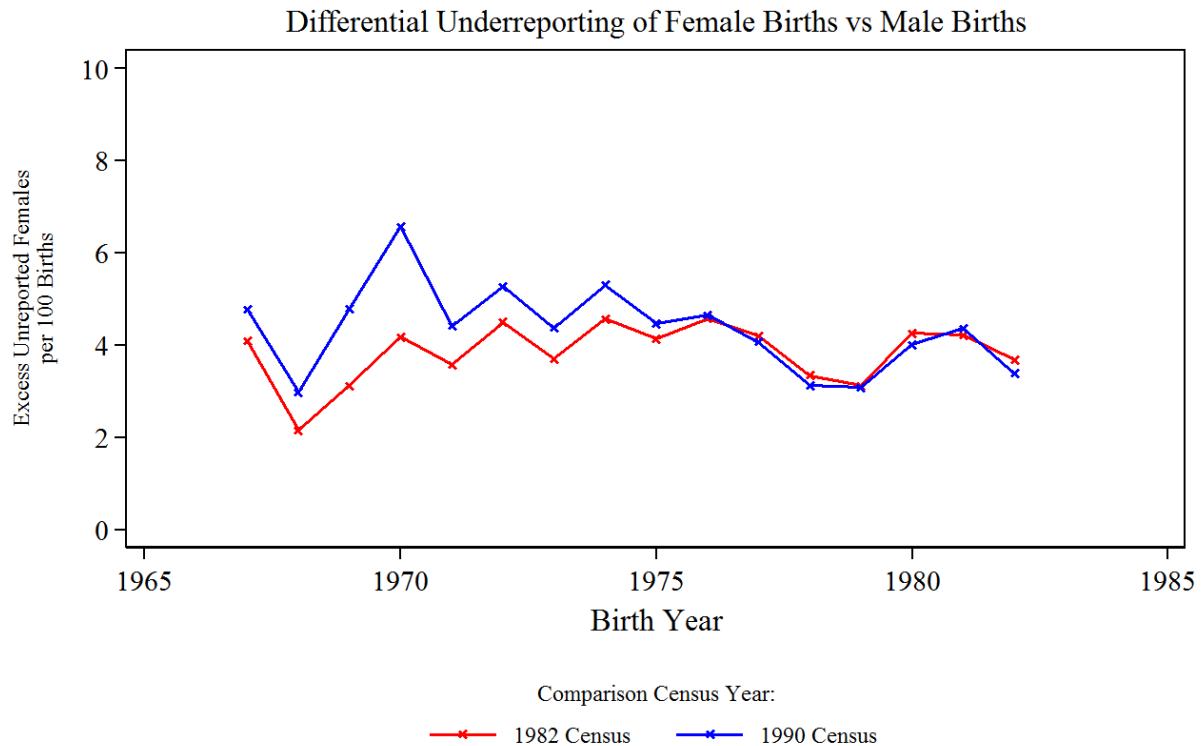
Figure A2 shows sex ratios calculated using the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception and the 1982 population census. Population census data adjusted for age- and sex-specific mortality rates using 'reverse survival' using mortality rates derived from four sources. These are: 1) mortality rates calculated using the deaths reported in the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception; 2) life tables presented in Coale (1984), which interpolate between the 1964 and 1982 censuses; 3) life tables published in Bannister (1994), which use China's Cancer Epidemiology Study of deaths between 1973-1975; and 4) life tables based directly on the 1982 population census (Jiang et al., 1984). For all mortality rate adjustments using life tables, we necessarily assume that age- and sex-specific mortality were stable over the period of study.

**Appendix Figure A3:**  
**Sex Ratios at Birth by Parity in the 1988 Fertility Survey and the 1990 Population Census**  
**among Births With No Older Male Siblings**



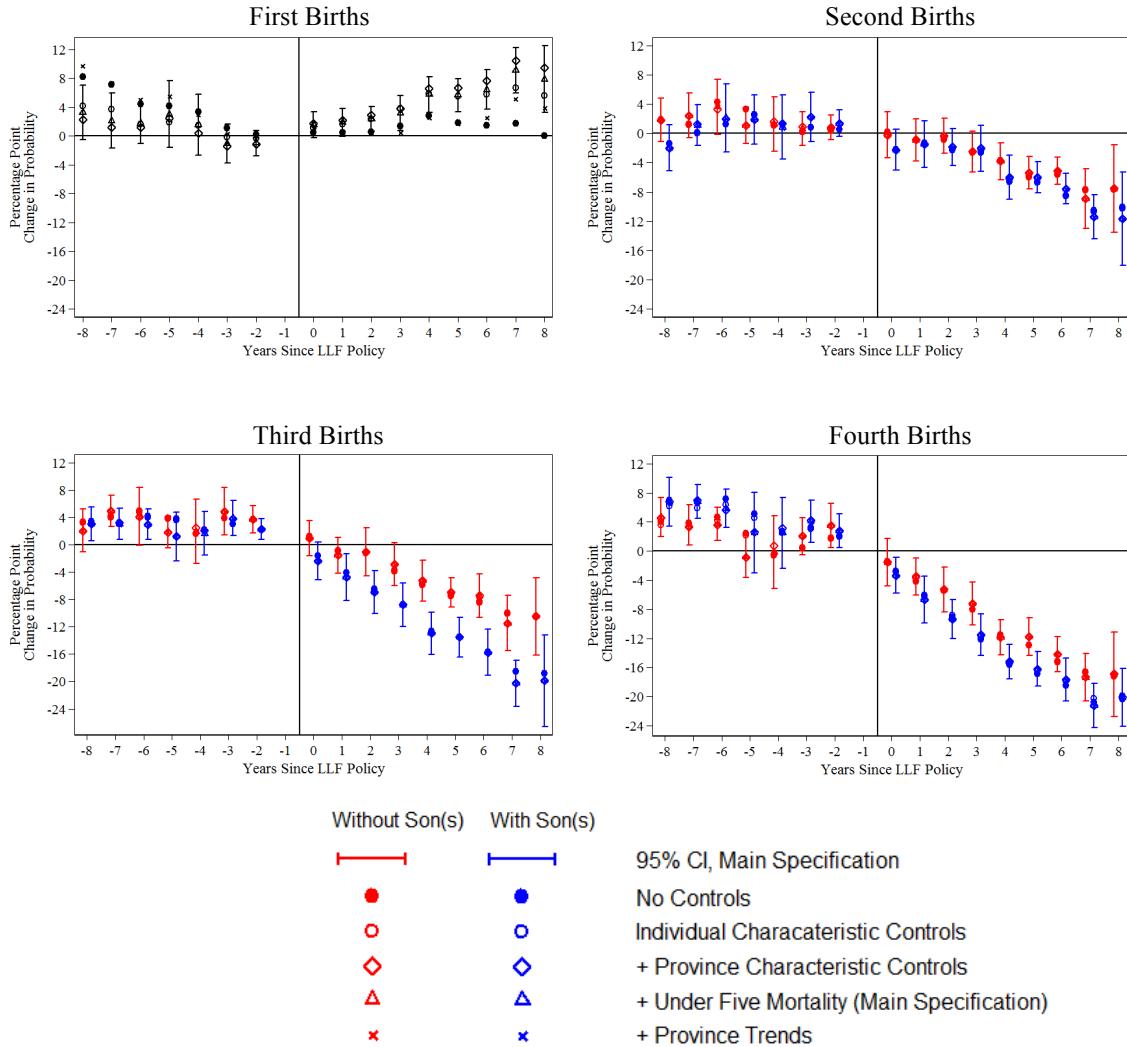
Note: Figure A3 shows parity-specific sex ratios among children born to parents without a surviving male child, calculated using the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception and the 1% sample of the 1990 population census. Population census data adjusted for age- and sex- specific mortality rates using 'reverse survival' using mortality rates derived from the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception.

**Appendix Figure A4:**  
**Differential Underreporting of Female vs. Male Births by Birth Year**



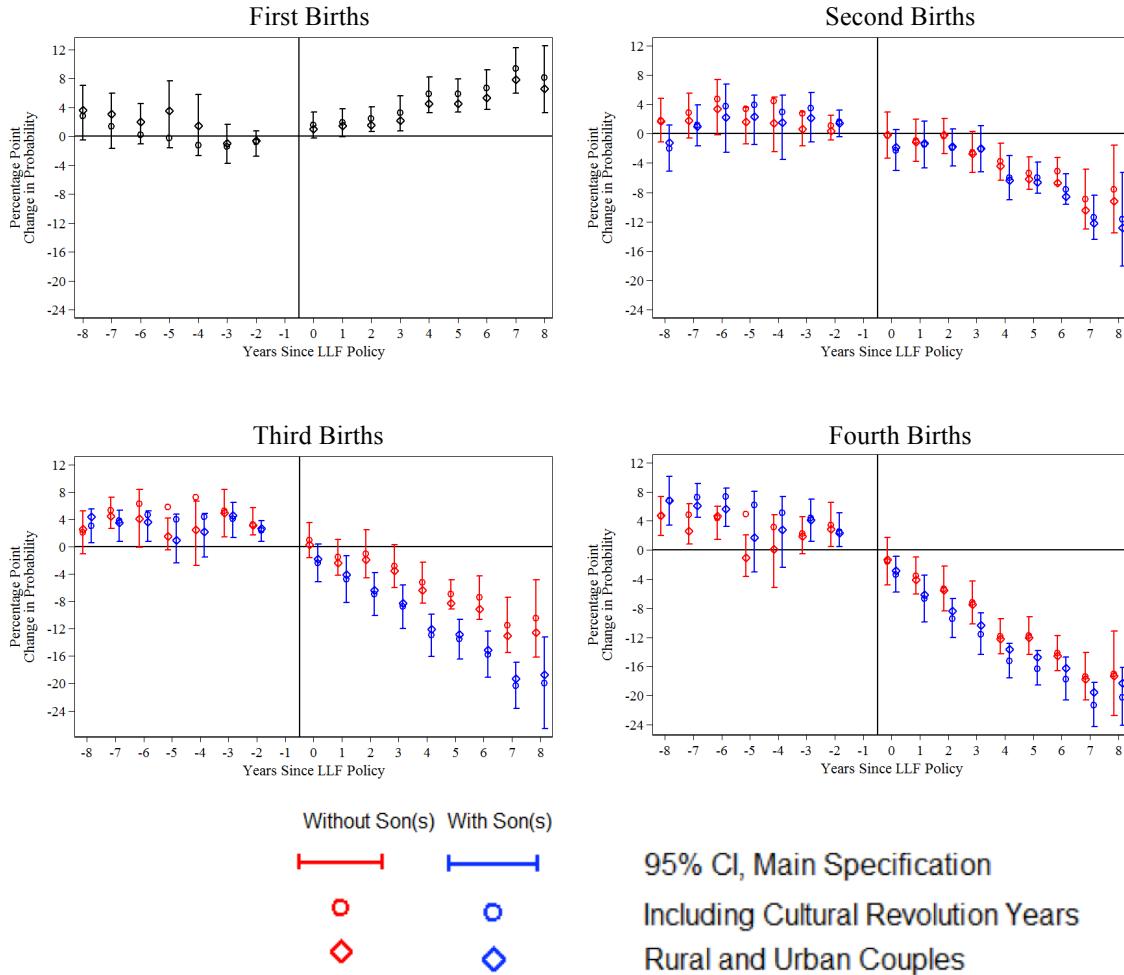
Note: Figure A4 shows differences between estimates of underreporting for female and male births by cohort, comparing the 1988 “Two-per-Thousand” fertility survey with the 1982 and 1990 population censuses. Following Coale (1984), we first calculate age-specific rates at which women report female and male births by year in the 1988 “Two-per-Thousand” fertility survey. Second, we apply these sex-specific birth rates to number of women at each age in each year (interpolating between the 1964, 1980, and 1990 population censuses) to estimate the total number of male and female births in each year. Third, we compare the estimated number of female and male births implied by these calculations to the actual number of individuals in each birth cohort recorded in the 1982 and 1990 population censuses, creating implied underreporting rates in the 1988 “Two-per-Thousand” fertility survey. Finally, we calculate the difference between female and male underreporting rates by year. See the Appendix text for more details. Overall, although there is evidence of some underreporting of female births in the 1988 survey, this rate is generally constant over time.

**Appendix Figure A5:**  
**Robustness of Parity Progression Risk Estimates to Alternate Specifications**



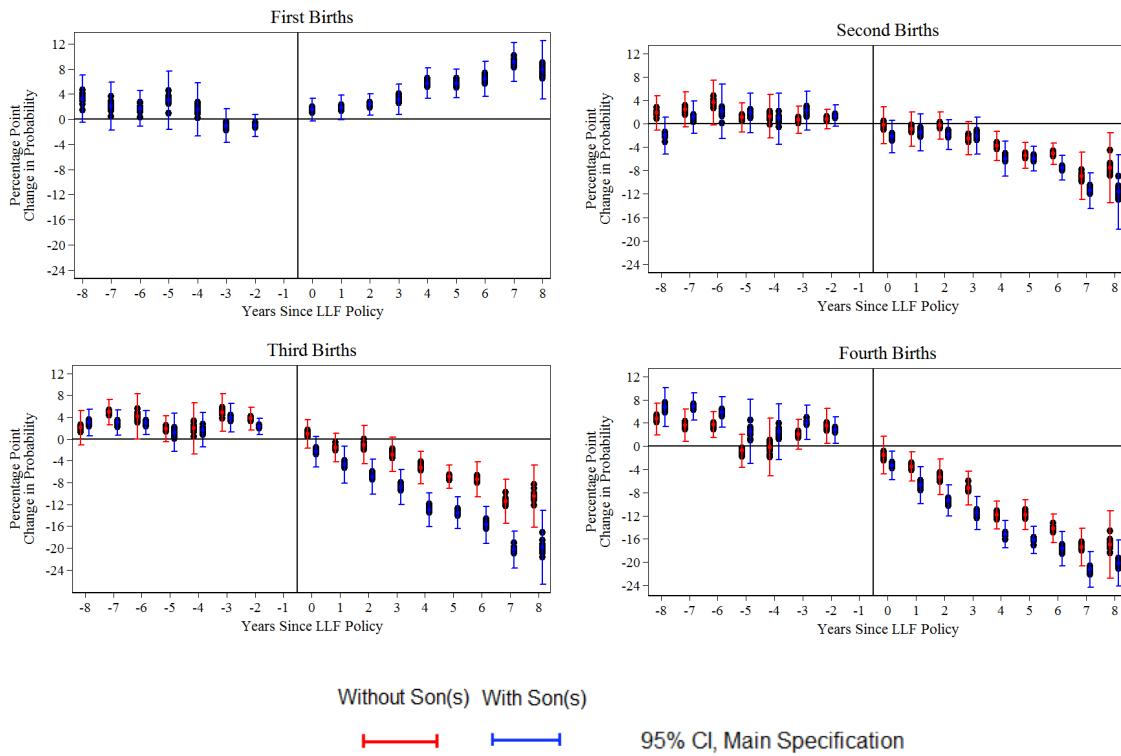
Note: Figure shows 95% confidence intervals for coefficients from Equation (1) and point estimates of coefficients estimated using alternative regression specifications. All specifications include parity indicators, event year indicators, an indicator for existence of a previously born son (and all two- and three-way interactions), as well as calendar year and province fixed effects. Alternate specifications include: 1) no additional control variables; 2) maternal characteristic controls only (indicators for education level, ethnicity, age at marriage); 3) maternal characteristics and provincial economic characteristics (provincial GDP, grain output, agricultural production, and the proportion of population classified as rural); 4) maternal characteristics, provincial economic characteristics, and 5-year under-five mortality rate moving averages; and 5) maternal characteristics, maternal characteristics, provincial economic characteristics, 5-year under-five mortality rate moving averages, and province-specific linear time trends.

**Appendix Figure A6:**  
**Robustness of Parity Progression Risk Estimates to Sample Restrictions**



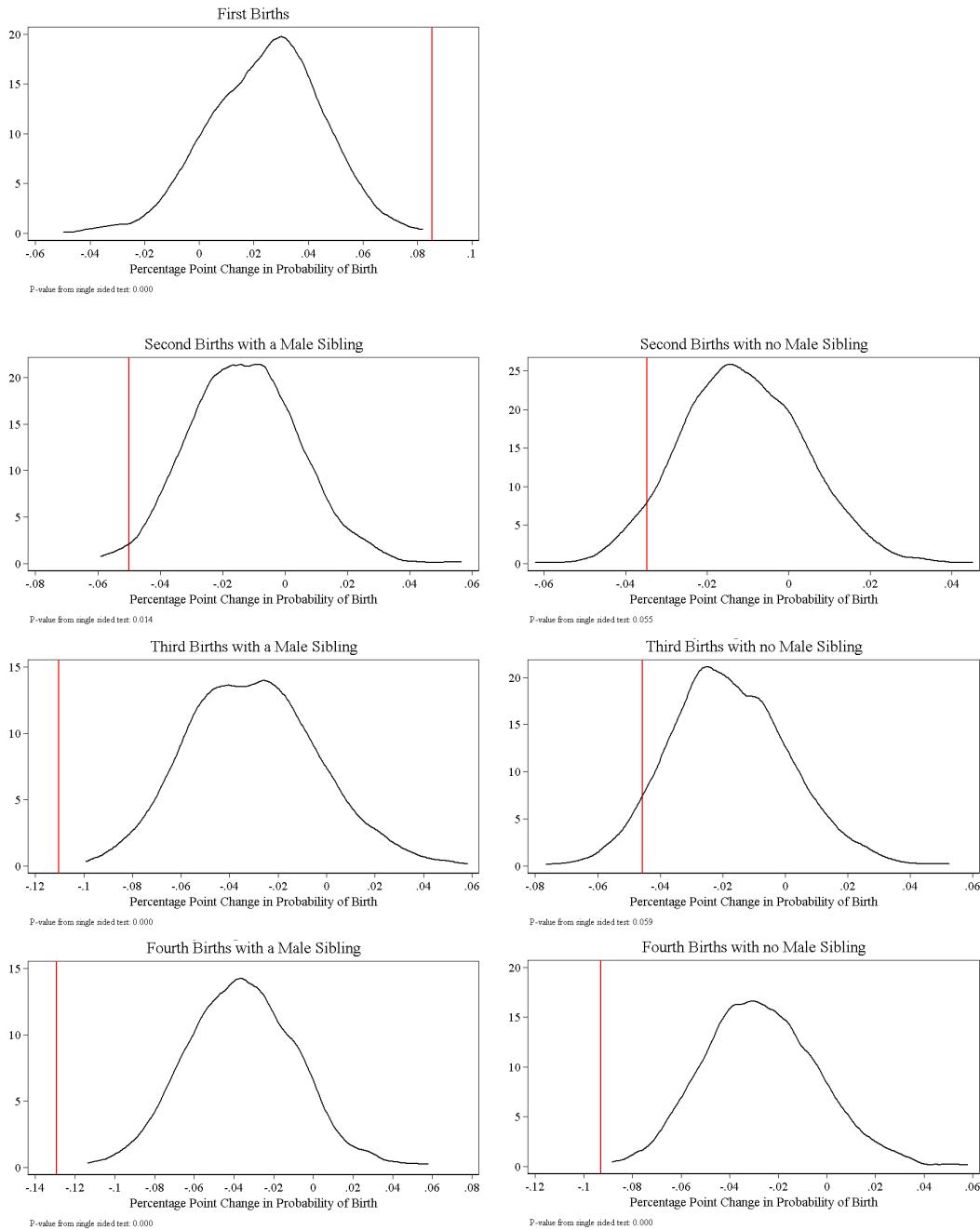
Note: Figure shows 95% confidence intervals for coefficients from Equation (1) estimated using alternative samples. All specifications include parity indicators, event year indicators, an indicator for existence of a previously born son (and all two- and three-way interactions), as well as maternal characteristics, provincial economic characteristics, 5-year under-five mortality rate moving averages, calendar year fixed effects, and province fixed effects. Alternate samples add: 1) mother-year observations from Cultural Revolution Years (1967-1968), and 2) individuals classified as urban residents to our main sample.

**Appendix Figure A7:**  
**“Leave One Out” Robustness Test**



Note: Figure shows 95% confidence intervals for coefficients from Equation (1) estimated using alternative samples, each leaving out one province in turn. All specifications include parity indicators, event year indicators, an indicator for existence of a previously born son (and all two- and three-way interactions), as well as maternal characteristics, provincial economic characteristics, 5-year under-five mortality rate moving averages, calendar year fixed effects, and province fixed effects.

## Appendix Figure A8: Permutation Test; Randomly Assigned Treatment Year



Note: Figure shows the distribution of mean effect size for parity progression risk by parity and sibship sex composition when randomly assigning LLF initiation year in each province. Vertical red lines indicate the mean treatment effect when using the true year of LLF initiation. We estimate a variation of Equation (1) include parity indicators, an indicator for post-LLF initiation, an indicator for existence of a previously born son (and all two- and three-way interactions), as well as maternal characteristics, provincial economic characteristics, 5-year under-five mortality rate moving averages, calendar year fixed effects, and province fixed effects.

**Appendix Table A1:**  
**Birth Planning Program Timing**

Province	Year of LLF Implementation	Details	Source
Anhui	1974	Family planning advising groups were reactivated in 1974.	Anhui Provincial Health Archives (Weishengzhi)
Fujian	1973	In March 1973, the Fujian Provincial Revolutionary Committee adopted the Provincial Interim Family Planning Leading Group's Interim Provisions on Several Issues Concerning the Implementation of Family Planning, requiring increased age of marriage, restricting couples to 2 children, and space births 3 to 5 years apart.	Fujian Provincial Annals of Population, Chapter 10: Family Planning. Fujian Province Local History Compilation Committee. Chronicles Publishing House. Beijing 1998.
Gansu	1971	500,000 brochures printed "Late Marriage for Revolution", "Birth Control Manual" were printed in 1971. 200 birth control technicians were trained, and 500 hospitals across the province began conducting 3-4 kinds of birth control surgeries. An estimated 1.5 million 'contraception tools' were distributed.	Gansu Provincial Health Archives (Weishengzhi)
Guangdong	1970	In May 1970, the newly established Family Planning Leading Group published the "Report on Family Planning Situation", stating that family planning work in most areas stayed in the general call, and the shortcomings of specific action measures required strengthening work. The Provincial Revolutionary Committee also proposed some policy measures to strengthen the control of birth birth. On January 16, 1971, the "Family Planning Plan of 1971-1975 in Guangdong Province" was issued, which advocated a couple to have two children. The two children were separated by 4-5 years. The young men and women were best married after the age of 23."	Population Annals of Guangdong
Guangxi	1971	Start of large-scale birth control surgeries in 1971 with 260,000 birth control surgeries conducted.	Guangxi Provincial Health Archives (Weishengzhi)
Guizhou	1971	In 1971, birth planning committees at all levels returned to work.	Annals of Guizhou, Book of Geography, Part Three: Population
Hebei	1972	Hebei Birth Planning Leadership Group was formed in February, 1972.	Annals of Hebei, Book 12: Population
Heilongjiang	1972	Three birth control technique training sessions held in Harbin and Suihua by Ministry of Health in 1972.	Heilongjiang Provincial Health Archives (Weishengzhi)
Henan	1974	On January 1974, The Henan Provincial CPC approved the "later, longer, fewer" policy which recommended that each couple be restricted to 2 children with 4-5 year spacing between births.	Annals of Henan Province
Hubei	1972	In 1972, 52 medical staff in Wuhan formed formal groups and travelled to rural areas conducting birth control surgeries, conducting 1662 surgeries in the first year.	Hubei Provincial Health Archives (Weishengzhi)
Hunan	1974	All contraception devices and pills made free of charge and 7 million RMB worth of devices and pills were distributed in 1974. Birth control training courses are referenced 1972 and 1974, but no specific date or year given.	Hunan Provincial Health Archives (Weishengzhi)
Inner Mongolia	1979	Birth planning responsibility transferred to Inner Mongolia Autonomous Region General Office in 1979	Annals of Inner Mongolia, Book of Government
Jiangsu	1970	Contraception pills and devices were made free for all people, purchase of birth control pills and devices was centralized to provincial level, and provincial birth planning officials distributed these to counties and towns.	Jiangsu Provincial Health Archives (Weishengzhi)
Jiangxi	1972	Birth control advisory groups were established in each city and birth control clinics in each hospital in 1972.	Jiangxi Provincial Health Archives (Weishengzhi)
Jilin	1971	The family planning program, which had been suspended during cultural revolution, was restored in 1971.	Jilin Provincial Health Archives (Weishengzhi)
Liaoning	1971	Counties and cities set up offices of birth control in 1971, dropping birth rate from 25.9% in 1970 to 24.39% in 1971 and the population growth rate from 21.3% in 1970 to 19.33% in 1971.	Liaoning Provincial Health Archives (Weishengzhi)
Ningxia	1973	Groups of Birth Control Technicians were assigned to rural areas in 1973, distributing contraception pills, conducted birth control surgeries at home, trained a large number of barefoot doctors for birth planning.	Ningxia Provincial Health Archives (Weishengzhi)
Qinghai	1972	Ministry of Health established the Birth Control Office in the Qinghai provincial capital for the purpose of establishing physician training groups in ten hospitals.	Qinghai Provincial Health Archives (Weishengzhi)
Shaanxi	1973	The Family Planning Leading Group was established in 1973.	Annals of Shaanxi Province
Shandong	1972	In 1972, birth control work groups organized and conducted birth control work in different districts as part of renewed emphasis on birth control promotion.	Shandong Provincial Health Archives (Weishengzhi)
Shanghai	1973	Shanghai Birth Planning Leadership Group formed in December 1973	Annals of Shanghai, Book Three: Pouplaiton
Shanxi	1973	The 1973 "Shanxi Birth Control Conference Notes" launched a set of family planning policies, including late marriage. The marriage age was moved to 25 for men and 23 for women.	Shanxi Provincial Health Archives (Weishengzhi)
Sichuan	1971	Sichuan birth planning commission was formed in 1971.	Annals of Sichuan Province, Administration Round-Up, Book 2, Part 5: Birth Planning.
Tianjin	1972	In April, 1972, the Tianjin Birth Planning Committee was reinstated.	A Brief Annal of Tianjin, Part 24: Population and Birth Planning.
Xinjiang	1975	Fairly planning leadership group was established in 1975.	Annals of Xinjiang, Book of Population.
Yunnan	1972	The Yunnan Birth Planning Leadership Group was formed in June 1972.	Annals of Yunnan Province, Population.

**Appendix Table A2:**  
**Sex Ratios at Birth: 1988 "Two-per-Thousand" Survey and the 1990 and 1982 Population Censuses**

Year	1988 "Two-Per-Thousand" Survey	1990 Population Census				
		Not Adjusted for Mortality	1988 Survey	Adjusted for Mortality Using: Coale 1984	Banister 1994	Jiang et al. 1984
1974	106.72	105.24	105.75	104.97	108.07	106.02
1975	106.25	105.74	106.03	105.54	108.67	106.53
1976	107.28	106.19	106.66	105.94	109.11	106.86
1977	107.02	106.49	106.66	106.17	109.37	107.03
1978	106.05	106.45	107.03	106.10	109.29	106.92
1979	105.77	106.84	107.19	106.45	109.64	107.23
1980	108.58	107.43	107.49	107.00	110.19	107.74
1981	107.83	107.37	107.52	107.02	110.19	107.71
1982	107.89	107.77	107.67	108.42	108.42	108.42
1983	108.28	108.69	108.90	109.31	109.31	109.31
1984	108.37	108.64	108.86	109.24	109.24	109.24
1985	110.87	108.65	108.88	109.22	109.22	109.22

Year	1988 "Two-Per-Thousand" Survey	1982 Population Census				
		Not Adjusted for Mortality	1988 Survey	Adjusted for Mortality Using: Coale 1984	Banister 1994	Jiang et al. 1984
1974	106.72	106.12	106.49	99.85	98.67	102.34
1975	106.25	106.18	106.43	105.26	107.03	106.24
1976	107.28	106.31	106.81	105.44	107.14	106.36
1977	107.02	106.27	106.43	105.44	107.08	106.29
1978	106.05	106.19	106.67	105.45	107.06	106.26
1979	105.77	106.71	107.14	106.05	107.64	106.83
1980	108.58	107.35	107.47	106.78	108.35	107.52
1981	107.83	107.83	108.17	107.34	108.89	108.04

Note: Table A2 shows sex ratios of births reported in the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception (Column 1), and sex ratios calculated using the 1990 and 1982 population censuses (Columns 2-6). Column 2 shows unadjusted sex ratios calculated from the censuses. Columns 3-6 show census sex ratios adjusted for sex-and age-specific mortality rates calculated from: 1) 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception; 2) life tables presented in Coale (1984), which interpolate between the 1964 and 1982 censuses; 3) life tables published in Bannister (1994), which use China's Cancer Epidemiology Study of deaths between 1973-1975; and 4) life tables based directly on the 1982 population census (Jiang et al., 1984).

**Appendix Table A3:**  
**Sex Ratios at Birth for Second and Third Parity Births with No Older Male Sibling: 1988 "Two-per-Thousand" Survey and 1990 census**

Year	Second Births with No Older Male Sibling 1990 Population Census			Third Births with No Older Male Sibling 1990 Population Census		
	1988 "Two-Per-Thousand" Survey	Not Adjusted for Mortality	Using "Two-per-Thousand" Survey-Based Mortality	1988 "Two-Per-Thousand" Survey	Not Adjusted for Mortality	Using "Two-per-Thousand" Survey-Based Mortality
1977	107.54	106.82	105.69	120.87	116.00	114.21
1978	106.46	111.11	112.11	114.01	116.94	117.24
1979	102.31	111.41	111.10	115.59	122.17	120.45
1980	102.96	112.26	113.84	123.67	135.63	134.84
1981	108.62	114.92	114.46	121.67	135.93	131.88
1982	108.66	119.92	117.99	139.26	145.91	142.26
1983	120.19	128.13	125.21	140.53	162.85	154.30
1984	123.66	130.11	129.54	158.41	160.76	158.71
1985	127.88	128.52	128.55	145.29	160.54	156.53

Note: Table A3 shows sex ratios of births by birth parity reported in the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception (Columns 1 and 4), and sex ratios calculated using the 1990 and 1982 population censuses (Columns 2-3, and 5-6). Columns 2 and 5 show unadjusted census-based sex ratios, and Columns 3 and 6 show census sex ratios adjusted for age-, parity- and sex-specific mortality rates calculated from the 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception.































$l_x^1 = l_{x-1}^1 - d_x^1$ . The unconditional probability of a first birth is simply equal to the product of the conditional first birth hazard and the proportion of the population at risk:  $d_x^1 = q_x^1 \times l_x^1$ . For subsequent births, the proportion of the population at risk of a parity  $p > 1$  birth begins at  $l_{15}^p = 0$ . As women age, the proportion beginning age  $x$  at risk is determined jointly by the share at risk in the previous year, the rate at which women exited the risk pool in the previous year, and the rate at which women entered the risk pool in the previous year  $l_x^p = l_{x-1}^p - d_{x-1}^p + d_{x-1}^{p-1}$ . The unconditional probability of a parity  $p$  birth at age  $x$  is likewise jointly determined by the relevant birth hazard, the proportion of the population at risk of a parity  $p$  birth at age  $x$ , and the proportion of women newly at risk of a parity  $p$  birth for at least half of the year (or half of those experiencing a parity  $p-1$  birth, assuming a uniform distribution of birth timing):  $d_x^p = q_x^p \times \left( l_x^p + \frac{1}{2} d_x^{p-1} \right)$ . The unconditional probability of a birth can be interpreted as an age- and parity-specific fertility rate. These rates then are used to calculate age-specific fertility rates (summing across parities), parity-specific fertility rates (summing across ages), and total fertility rates for each event year.

**Appendix Table A6:**  
**Tempo-Adjusted Parity-Specific and Total Fertility Rates**

Event Year	Parity Specific Fertility							Tempo-Adjusted Parity Specific Fertility							Total Fertility Rate	
	Parity 1	Parity 2	Parity 3	Parity 4	Parity 5	Parity 6	Parity 7	Parity 1	Parity 2	Parity 3	Parity 4	Parity 5	Parity 6	Parity 7	TFR	TFR'
-5	0.999	0.999	0.991	0.958	0.876	0.736	0.581	0.999	0.999	0.991	0.958	0.876	0.736	0.581	6.141	6.188
-4	1.000	0.999	0.987	0.960	0.873	0.746	0.577	1.000	0.999	0.987	0.960	0.873	0.746	0.577	6.141	6.189
-3	1.000	0.998	0.990	0.961	0.877	0.727	0.537	1.000	0.998	0.990	0.961	0.877	0.727	0.537	6.089	6.137
-2	1.000	0.998	0.987	0.959	0.872	0.717	0.507	1.000	0.998	0.987	0.959	0.872	0.717	0.507	6.040	6.087
-1	1.000	0.998	0.980	0.951	0.866	0.689	0.458	1.000	0.998	0.980	0.951	0.866	0.689	0.458	5.941	5.989
0	1.000	0.996	0.983	0.959	0.881	0.690	0.425	1.000	0.996	0.983	0.959	0.881	0.690	0.425	5.933	5.981
1	1.000	0.993	0.973	0.949	0.858	0.624	0.358	1.048	0.993	0.973	0.949	0.858	0.624	0.358	5.756	5.803
2	1.000	0.992	0.960	0.930	0.829	0.587	0.306	1.047	0.992	0.960	0.930	0.829	0.587	0.306	5.604	5.652
3	1.000	0.988	0.950	0.914	0.820	0.569	0.299	1.048	0.988	0.950	0.914	0.820	0.569	0.299	5.540	5.587
4	1.000	0.988	0.938	0.902	0.822	0.570	0.271	1.048	0.988	0.938	0.902	0.822	0.570	0.271	5.490	5.537
5	1.000	0.983	0.926	0.891	0.806	0.539	0.255	1.048	0.983	0.926	0.891	0.806	0.539	0.255	5.401	5.448
6	1.000	0.980	0.909	0.874	0.781	0.498	0.229	1.048	0.980	0.909	0.874	0.781	0.498	0.229	5.272	5.319
7	1.000	0.981	0.878	0.842	0.766	0.504	0.209	1.048	0.981	0.878	0.842	0.766	0.504	0.209	5.181	5.228
8	1.000	0.966	0.825	0.801	0.727	0.499	0.236	1.048	0.966	0.825	0.801	0.727	0.499	0.236	5.053	5.101
% Decline:	0.00	3.01%	16.03%	16.49%	17.51%	27.76%	44.41%	-4.76%	3.01%	16.03%	16.49%	17.51%	27.76%	44.41%	14.83%	14.71%

Note: Table A6 shows regression-adjusted parity-specific fertility rates for each event year implied by Equation (4) (Columns 1-5; see Appendix Table A5). Columns 6-10 then show parity specific fertility rates adjusted for change in mean age at parity-specific childbearing (Bongaarts and Feeney, 1998). Columns 11 and 12 show the implied Total Fertility Rate (TFR) and tempo-adjusted Total Fertility Rate (TFR'), summing parity-specific fertility rates and tempo-adjusted parity-specific fertility rates, respectively.

**Appendix Table A7:**  
**Marginal Probability that a Reported Child is Male at Birth and at each Age 1 to 5**  
**Among Couples with No Previous Son**

	Sex Ratio at Birth	Sex Ratio at Age 1	Sex Ratio at Age 2	Sex Ratio at Age 3	Sex Ratio at Age 4	Sex Ratio at Age 5
<b>Second Births</b>						
Pre-LLF	0.006 [-0.008 - 0.020]	0.006 [-0.008 - 0.020]	0.006 [-0.009 - 0.020]	0.007 [-0.008 - 0.022]	0.007 [-0.008 - 0.021]	0.007 [-0.008 - 0.020]
Early LLF	0.015** [0.001 - 0.028]	0.016** [0.002 - 0.028]	0.016** [0.002 - 0.028]	0.015** [0.002 - 0.028]	0.015** [0.002 - 0.028]	0.015** [0.002 - 0.028]
Late LLF	-0.002 [-0.034 - 0.027]	-0.003 [-0.035 - 0.024]	-0.004 [-0.039 - 0.023]	-0.005 [-0.038 - 0.022]	-0.005 [-0.037 - 0.023]	-0.005 [-0.038 - 0.022]
<b>Third and Higher Order Births</b>						
Pre-LLF	0.002 [-0.008-0.011]	0.003 [-0.007-0.012]	0.003 [-0.008-0.014]	0.004 [-0.006-0.014]	0.004 [-0.007-0.013]	0.004 [-0.007-0.014]
Early LLF	0.006 [-0.008 - 0.021]	0.008 [-0.007 - 0.022]	0.008 [-0.007 - 0.024]	0.008 [-0.007 - 0.024]	0.007 [-0.007 - 0.024]	0.007 [-0.008 - 0.023]
Late LLF	0.023** [0.003 - 0.043]	0.024** [0.004 - 0.046]	0.024** [0.005 - 0.044]	0.025** [0.005 - 0.043]	0.025** [0.006 - 0.045]	0.025** [0.007 - 0.044]

Note: Table A7 shows the incremental increase in the probability of a male birth (Column 1) or that a child reaching its first through fifth birthday is male (Columns 2-6) among couples with no previous sons (relative to couples of the same parity with at least one previously born son in the same LLF policy period). Ordinary least squares regressions in Equation 10 are stratified by parity and control for maternal characteristics, province-year characteristics, calendar year fixed effects, and provincial fixed effects. 95% confidence intervals are calculated using the pairs-cluster bootstrap method (Cameron et al., 2008). Data: 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception, digitized provincial public health archive records, National Bureau of Statistics of China, and the China Family Panel Survey.

**Appendix Table A8:**  
**Estimated Missing Girls Attributable to Gender Gaps in Effects of Breastfeeding Duration**

	First Births	Second Births		Third and Higher Order Births	
		Son	No Son	Son	No Son
Number of Births	60,204,392	25,265,200	27,103,270	83,992,431	21,766,119
<b>Breastfed Mortality Rate</b>					
Overall Share Breastfed	0.878	0.923	0.918	0.945	0.930
Overall Mortality Rate	0.004	0.004	0.004	0.006	0.006
Breastfed mortality rate	0.327%	0.331%	0.407%	0.581%	0.606%
Non-breastfed mortality rate	0.589%	0.595%	0.733%	1.045%	1.090%
Breastfeeding Mortality Delta	0.262%	0.264%	0.326%	0.464%	0.485%
<b>Gender Gap in Breastfeeding</b>					
Gender Gap in Breastfeeding, Pre LLF Period	0.012	0.002	0.040	0.014	0.055
Sex Composition Strategy Use, Pre LLF Period	0.005	0.013	0.080	0.052	0.136
Gender Gap in Breastfeeding / Sex Composition Strategy Use	2.400	0.154	0.500	0.269	0.404
Sex Composition Strategy Use, Late LLF Period	0.088	0.053	0.257	0.072	0.310
Implied Gender Gap in Breastfeeding, Late LLF Period	0.211	0.008	0.129	0.019	0.125
Reported Gender Gap in Breastfeeding, Late LLF Period	0.006	0.023	0.001	0.038	0.011
<b>Missing Girls Due to Breastfeeding</b>					
Breastfeeding Mortality Delta X Implied Gender Gap in Breastfeeding	0.055%	0.002%	0.042%	0.009%	0.061%
Excess Female Deaths Due to Implied Breastfeeding Gap	33,265	545	11,350	7,562	13,221
Breastfeeding Mortality Delta X Reported Gender Gap in Breastfeeding	0.002%	0.006%	0.000%	0.018%	0.005%
Excess Female Deaths Due to Reported Breastfeeding Gap	945	1,537	88	14,825	1,160

Note: Tables shows estimating calculations for the share of missing girls that may be explained by the gender gap in breastfeeding, following (Jayachandran and Kuziemko 2011). Rows 2-3 show the unadjusted share of children who are breastfed to 12 months  $BF^{12}$ , and the overall infant mortality rate  $IMR$  for children in each parity and sibship sex composition group, calculated from our pre-LLF sample. Rows 4-6 show the breastfed mortality rate  $IMR^{BF} = \frac{IMR}{BF^{12} + OR(1-BF^{12})}$ , the non-breastfed mortality rate  $IMR^{nBF} = OR^{BF} \times IMR^{BF}$ , and the breastfeeding mortality delta  $\Delta IMR^{BF} = IMR^{BF} - IMR^{nBF}$  for children in each group, drawing on the literature for the breastfeeding odds ratio on mortality under 12 months ( $OR^{BF}=1.8$ ) (WHO 2000). Rows 7-11 show the estimation of the gender gap in breastfeeding during the LLF period, accounting for sample selection. Row 12 shows the reported gender gap in breastfeeding during the LLF

period (without accounting for selection). Rows 13-14 show estimates of the mortality rate for infant girls due to the gender gap in breastfeeding

$\widehat{\text{Breastfeeding Mortality}}^{LLF} = \widehat{\text{Breastfeeding Gap}}^{LLF} \times \Delta \text{IMR}^{BF}$ , and estimates of the number of missing girls that could be attributed to the gender gap in breastfeeding, totaling 65,944 missing girls across all parity and sex composition group. Rows 15-16 shows the mortality rate for infant girls due to the reported gender gap in breastfeeding and corresponding missing girls estimates (18,555 missing girls across all parity and sibship sex composition groups).

**Appendix Table A9:**  
**Probability a Birth is Male: Robustness to Eventual Family Size**

	First Births		Second Births		Third and Higher Order Births	
	Preferred Specification	Controlling for Family Size	Preferred Specification	Controlling for Family Size	Preferred Specification	Controlling for Family Size
No Previous Son			0.006 (-0.007 - 0.019)	0.035*** (0.021 - 0.050)	0.002 (-0.007 - 0.011)	0.003 (-0.006 - 0.012)
Early LLF Period	0.006 (-0.015 - 0.027)	0.006 (-0.014 - 0.025)	-0.006 (-0.024 - 0.011)	-0.005 (-0.024 - 0.014)	-0.000 (-0.013 - 0.013)	0.000 (-0.012 - 0.013)
Late LLF Period	0.020* (-0.003 - 0.044)	0.013 (-0.012 - 0.038)	0.021 (-0.012 - 0.055)	0.027 (-0.011 - 0.064)	-0.017* (-0.037 - 0.002)	-0.017* (-0.037 - 0.003)
No Previous Son × Early LLF Period			0.009 (-0.011 - 0.028)	0.011 (-0.008 - 0.030)	0.004 (-0.012 - 0.019)	0.004 (-0.011 - 0.019)
No Previous Son × Late LLF Period			-0.008 (-0.043 - 0.026)	-0.010 (-0.046 - 0.025)	0.021** (0.000 - 0.042)	0.022** (0.001 - 0.043)
Observations	70,615	70,615	64,742	64,742	143,826	143,826
R-squared	0.001	0.028	0.001	0.025	0.000	0.004

Note: Table A9 shows the results of Equation 10 estimated using Ordinary Least Squares Regression, stratified by parity. All specifications control for maternal characteristics, province-year characteristics, calendar year fixed effects, and provincial fixed effects. Columns 2, 4 and 6 also control for the eventual total sibship size. Data: 1988 "Two-Per-Thousand" National Survey of Fertility and Contraception, digitized provincial public health archive records, National Bureau of Statistics of China, and the China Family Panel Survey.