A Balancing Act: Population Policy, Son Preference, and Asia’s Missing Daughters

by

Alison Harris Cies
Class of 2011

A thesis submitted to the faculty of Wesleyan University in partial fulfillment of the requirements for the Degree of Bachelor of Arts with Departmental Honors in Government

Middletown, Connecticut April, 2011
## Contents

*Preface and Acknowledgments* ................................................................. *page ii*

*Chapter 1: Patterns of Son Preference* ..................................................1

**Part I: Quantitative Analysis**

*Overview* ........................................................................................................22

*Chapter 2: Empowerment & Son Preference* .............................................24

*Chapter 3: From Policy to Son Preference* ..................................................44

**Part II: Case Studies**

*Overview* ........................................................................................................68

*Chapter 4: Vietnam in Comparative Perspective* .......................................70

*Chapter 5: China in Comparative Perspective* ...........................................98

*Chapter 6: South Korea in Comparative Perspective* .............................120

**Part III: Conclusion**

*Chapter 7: Son Preference in the Twenty-first Century* .........................142

*Appendix* ........................................................................................................155

*Works Cited* ..................................................................................................160
The goal of this thesis is to provide both a quantitative and qualitative assessment of the causes and consequences of son preference. The analysis focuses on the three cases studies of Vietnam, China, and South Korea, in addition to examining cross-national data from 192 countries and cross-provincial data from Vietnam’s 63 provinces in 2009. Contrary to the prevailing theories of son preference, which focus on the extent of girls and women’s empowerment and on the role of cultural factors in sanctioning and sustaining gender biases, this thesis finds that empowerment and culture are insufficient explanations for the emergence and persistence of son preference. Rather, this thesis finds that the enforcement of an antinatal policy in an environment of low fertility and infant mortality generated—and has sustained—a strong bias in favor of sons. It also finds that the expansion of the private economy into areas where government services had formerly played a role inadvertently facilitated pre-natal son preference. By employing new techniques and new data, the findings of this thesis shed light on dimensions of the phenomenon that have been overlooked in the literature on son preference.

I first became interested in this topic during my sophomore year, when one of the units of Professor Jim McGuire’s course, Political Economy of Developing Countries, looked into the striking gender imbalances that had emerged in the last century in a number of countries worldwide, including China, South Korea, and India. I was surprised—and intrigued—by the apparent disregard for women and daughters in these societies. The course also introduced me to the work of Amartya Sen and Elisabeth J. Croll. It was not until I took Professor McGuire’s upper-division seminar on East Asian and Latin American Development during the spring of my junior year, however, that I began to notice trends in my own research on post-1986 development in Vietnam that reflected an emerging preference for sons over daughters in Vietnamese society. This was an unusual trend considering that a strong bias in favor of sons had largely been absent in Vietnam prior to the implementation of its 1986 market reforms. My curiosity led me to investigate these trends in not only Vietnam, but in other Asian countries that had experienced varying trends in son preference. My research culminated in this thesis, which tells an important story of the relationship between politics, population policy, and son preference. It’s a story that demonstrates the challenges of state birth planning and the difficulties of maintaining control over both the outcomes and the consequences of such measures. Preserving the vitality of a country’s population, I find, is a balancing act.

I could not have accomplished this thesis without the guidance and support of Professor Mike Nelson. Your encouragement and willingness to read multiple drafts of my thesis facilitated—and in many ways enabled—the production of this work. I am truly grateful for the time and energy you dedicated to this endeavor.

The quantitative work in this thesis could not have carried out without the advice and guidance of Professor Lisa Dierker, Professor Manolis Kaparakis, and Professor Jennifer Rose. The knowledge that I gained from QAC 201 as a student and as your teaching assistant gave me the confidence to take on a quantitative thesis. I can’t thank the three of you enough for the time you took to answer my questions,
read drafts of my work, and to teach me new statistical software packages. Most of all, thank you for finding me a spare room in Allbritton!

I owe a debt of gratitude to my academic advisor and mentor, Peter Rutland. It just so happens that you have been my advisor since the first day I stepped foot on campus. Your support over the past four years has made the difference in my college career. As for your steadfast guidance, I also have the absence of a nearby cliff to thank…

Of course, my interest in this topic would not have been generated without the phenomenal courses I took with Professor Jim McGuire during my sophomore and junior years. It was in your course that I first had the opportunity to study patterns of development in East Asia, and that I first realized how much I enjoyed the research and writing process in long form. Thank you for challenging me and for pushing my writing beyond what I thought I was capable of doing at the time.

I am also grateful for the editorial support provided by my thesis mentor, Emily Iversen. Your critical eye and insightful feedback on this project were much appreciated.

Lastly, to my parents, I can’t thank you enough for your support and encouragement. This project would not have happened without it. And to my grandma Mimi, whose strength of spirit and zest for life continues to amaze me. On the occasion of your 98th birthday, I dedicate this project to you.
Chapter 1: Patterns of Son Preference

“It is no exaggeration to call this gendercide. Women are missing in their millions—aborted, killed, neglected to death. In 1990 an Indian economist, Amartya Sen, put the number at 100 million; the toll is higher now.”

- The Economist, March 6, 2010.

In 1990, Amartya Sen published his seminal piece “More Than 100 Million Women Are Missing,” in which he examined the growing discrepancy in the ratio of males to females in Asian and African societies. A common misconception, he noted, is that females constitute the majority of the world’s population—they do not. Although females suffer little discrimination in basic nutrition and healthcare in Europe and North America, which enables them to enjoy a longer lifespan because of the biological advantages they have over males in resisting disease, females in other regions of the world are less fortunate. In most of Asia and North Africa, the failure to give females healthcare, food, and social services comparable to males increases their susceptibility to malnutrition and disease, resulting in a lower female rate of survival than would have been the case had they received care equal to that of males.\(^1\) This gender bias results in an unusual proportion of women going “missing” in societies. Sen’s estimates yielded more than 100 million “missing women” worldwide. Similar estimates made by Ansley Coale (1991) placed the figure closer to 60 million “missing females.”

Since these numbers were published, a considerable amount of research has been generated on the extent of female inequality and neglect in societies worldwide.\(^2\)

---

1 Sen 1990.  
One important finding emerging from this research is that the gender discrimination identified by Sen and Coale is not limited to Asia and North Africa; rather, this unequal treatment of females and males also exists in the Caucasus and in certain regions of Eastern Europe. Secondly, an overwhelming consensus among researchers studying the phenomenon of missing women today is that these gender imbalances stem from the excess mortality of girls, not of women.\(^3\) The preferential status and treatment of sons over daughters in these societies has meant that females are increasingly at risk before birth, at birth, and in infancy and childhood.\(^4\) Researchers also recognize that in many of these societies, the development of and widespread access to pre-natal sex identification and abortion services have put females before birth at greatest risk.\(^5\) The outcome of these preferential attitudes, beliefs, and behaviors is a growing disequilibrium in the proportion of males to females in many societies worldwide.

### 1.1. Central Question

Despite the upsurge in research on these trends in recent years, scholars have yet to reach a consensus on the causal mechanisms generating and sustaining son preference. The goal of this thesis is to provide both a quantitative and qualitative assessment of patterns of birth and survival, as well as to test competing hypotheses for son preference. Using Vietnam, China, and South Korea as case studies, this thesis aims to address: what explains the emergence and persistence of son preference in some countries and not in others? What can be done to reverse this phenomenon?

---

\(^3\) Croll 2001; Das Gupta et al. 2002; Hesketh and Xing 2006; Scharping 2003.

\(^4\) Croll 2001.

\(^5\) Croll 2001.
Contrary to the prevailing theories of son preference, which focus on the extent of girls and women’s empowerment and on the role of cultural factors in sanctioning and sustaining gender biases, this thesis finds that empowerment and culture are insufficient explanations for over-time and provincial level patterns of son preference. Rather, this thesis finds that the following three core factors have contributed to the development of a strong bias in favor of sons: (1) the introduction and stringent enforcement of an anti-natal population policy, which limited the number of children a woman could bear in an effort to reduce population growth; (2) the rapid reduction of fertility and infant mortality, which either coincided with or came on the heels of the implementation of an anti-natal policy; and (3) the expansion of the private economy into areas where government services had formerly played a role, which placed greater pressure on household resources and inadvertently facilitated pre-natal son preference.

By employing new techniques and new data, the findings of this project suggest that an all too often overlooked dimension of the phenomenon of son preference—the enforcement of an anti-natal population policy—is an important factor in driving it. This is especially apparent at the provincial level, where this project finds evidence in all three cases of considerable urban-rural differences in son preference, with urban areas—the target of anti-natal policies—uniformly exhibiting the highest sex ratios at birth. Reducing this strong bias in favor of sons, it appears, requires a willingness on the part of governments to re-evaluate the efficacy of anti-natal policies. The consequences of such policies, which simultaneously promote

---

6 In this analysis, “rapid” refers to the steepest average annual percent decline in fertility and infant mortality from 1960-2009. See Table 4.1, 5.1, and 6.1 in Part II for data on each of the project’s cases.
individual responsibility and sanction government control, are to the detriment of the world’s daughters. The project’s findings not only have important implications for East Asia, but for other regions and societies marked by a strong preference for sons. The generalizability of these findings will be discussed more fully in Chapter 7.

1.2. Significance

In general, recent studies of son preference have been ineffective at determining which factors or combination of factors most influence the development of a strong bias in favor of sons. Nearly all analyses exhibit at least one of the following flaws that I attempt to avoid in my own assessment of son preference.

First, many studies fail to conduct a quantitative analysis of data measuring societal discrimination against women and girls. Instead, they rely exclusively on qualitative approaches. Granted, these methods are beneficial for capturing beliefs and values within a particular population or subpopulation, as well as for tracing the causal mechanisms contributing to a particular outcome of interest. However, they fail to fully capture trends between particular variables or the extent to which an apparent association is, in fact, statistically significant. In this study, I combine a quantitative analysis with a comparative, case-study approach. By prioritizing a quantitative analysis of the data, but also combining it with qualitative methods, this study attempts to capture a range of factors that could account for son preference.

Secondly, in those studies of son preference that employ a quantitative analysis, many fail to: (1) use gender-disaggregated statistics; (2) test their findings at both the national and provincial levels; or (3) use data more recent than 2005 to

7 Croll 2001; Chung and Das Gupta 2007; Das Gupta et al. 2002; Johansson et al. 1998; Sen 1999.
capture trends over the past decade.Granted, limitations in the availability and quality of this data may make it difficult to account for all of these factors when examining a particular region or country. Barring limitation, however, most if not all of these factors should be considered in a quantitative assessment of son preference because they capture nuances in the data that would otherwise be missed. In this study, gender-disaggregated statistics are used in conjunction with a national and provincial-level analysis of son preference. Whenever possible, the most recent data available are used when carrying out the analysis.

Thirdly, in those studies of son preference that employ a quantitative analysis, none that I have come across in my research have employed the technique of path analysis to analyze the causal mechanisms contributing to son preference. Path analysis presents a statement of an explicit theory about relationships between variables, rather than simply testing a set of data for any linear relationship. Because it allows for the examination of the causal processes underlying the observed relationship, as well as for the estimation of the relative importance of alternative paths of influence, path analysis is considered to be superior to multiple regression analysis. This study tests for associations between hypothesized relationships using path analysis in conjunction with multiple regression analysis. As such, this study utilizes new techniques and presents both a qualitative and quantitative assessment of son preference, which enables the project to avoid many of the pitfalls that other scholars have fallen into when conducting their research.

---

9 Olobatuyi 2006: 11.
10 Olobatuyi 2006: 11.
1.3. Implications

The growing disequilibrium in the proportion of males to females in many societies worldwide is one of the world’s most overlooked phenomena. This disequilibrium, however, is not to be taken lightly—evidence suggests that it will complicate social and economic development in these societies for decades to come. Understanding how this distortion emerged and why it persists is key to changing it.

In Asia in particular, which possesses some of the world’s most severe imbalances in gender, the consequences of son preference for stability, security, and development are manifold. In 1999, the Chinese Academy of Social Science in Beijing calculated that one in six Chinese men was unlikely to find a wife, and that the number of surplus Chinese males had reached 111 million.\(^{11}\) Given that the proportion of male to female births in China has since increased, these numbers are likely to be even higher.

Several scholars suggest that the disequilibrium in the ratio of male to female births may threaten demographic stability, particularly once the surplus male population reaches adulthood, which could jeopardize progress on human development.\(^{12}\) Other scholars suggest that a shortfall in women may lead to greater violence in societies where marriage is regarded as virtually universal and one’s social status largely depends on being married and having children.\(^{13}\) Gender is a well-established individual-level correlate of crime, particularly of violent crime, with the perpetrators most often being young, unmarried males.\(^{14}\) A number of studies

---

\(^{11}\) Hudson and den Boer 2004: 262.
\(^{12}\) UNFPA 2009b: 3.
\(^{13}\) Hesketh and Xing 2006: 13273.
\(^{14}\) Hesketh and Xing 2006: 13273.
have already found strong correlations between high rates of violence in Chinese provinces with highly masculine sex ratios at birth.\textsuperscript{15}

Hudson and den Boer (2004) open their book-length analysis of the security implications of Asia’s surplus male population by writing, “scarcity, whether natural or man-made, is the chief catalyst for both social competition and social conflict.”\textsuperscript{16} They predict that nations with highly masculine sex ratios will be predisposed to see some utility in interstate conflict. Conflict, they write, is often an effective mechanism by which governments can send their surplus male populations—who are especially attracted to issues involving national pride and martial prowess—away from the mainland, possibly never to return.\textsuperscript{17} They posit that with nearly forty percent of the world’s population living in China and India, this disequilibrium could trigger large-scale domestic and international violence and impact regional and global security. Asia’s surplus male population is a volatile force that illuminates the gravity of a phenomenon left unchecked.

1.4. The Male-to-Female Sex Ratio at Birth as a Measure of Son Preference

Over the past two decades, a substantial amount of research has been generated on the apparent gender imbalances found in many societies worldwide, including the extent to which these imbalances reflect son preference, defined as the preferential status and treatment of sons over daughters within family and society. This disequilibrium has been linked to five factors: female infanticide, female

\textsuperscript{15} Miller 2001: 1092.
\textsuperscript{16} Hudson and den Boer 2004: 1.
\textsuperscript{17} Hudson and den Boer 2004: 263.
neglect, an undercount of infant girls, Hepatitis B, and the sex-selective abortion of female fetuses.

A number of scholars have suggested that a primary cause of the excessive mortality of girls is female infanticide—the practice of killing a female infant at or immediately following birth.\textsuperscript{18} Female infanticide is not without high legal costs, though; in the modern legal systems of many countries, infanticide is tried as murder. Research also suggests that female mortality in infants and children from the age of one year is widespread due to female neglect and shortfalls in the supply of nutrition and healthcare, which increases their susceptibility to disease.\textsuperscript{19} In India, for example, it is common practice for parents to overlook their sick daughter, but to take their sick son immediately to the doctor for treatment.\textsuperscript{20} More recently, however, scholars have noted that female infanticide and neglect are declining in many parts of the world, supplanted by newer methods of sex selection. As such, they are insufficient explanations for the growing disequilibrium in the proportion of males to females.

A number of scholars have also suggested that the undercount or under-registration of infant girls accounts for 43 percent to 75 percent of “missing girls,” particularly in places with one- or two-child policies, such as China.\textsuperscript{21} These girls, however, should re-appear as ten-year-olds in the subsequent census, which does not happen.\textsuperscript{22} Another factor at work is that many diseases affect males and females differently. Studies indicate that women infected with the Hepatitis B virus give birth to boys at a rate higher than the biological norm. Emily Oster (2005) examined the

\textsuperscript{18} Croll 2001; Sen 1999
\textsuperscript{19} Croll 2001; Das Gupta et al. 2002; Sen 1999
\textsuperscript{20} Croll 2001.
\textsuperscript{21} Zeng et al. 1993.
\textsuperscript{22} Banister 2004.
sex ratios at birth of children born to women with Hepatitis B and estimated that two-thirds of the missing females in China could be explained by the virus. However, subsequent studies looking at the sex ratio at birth have found that it varies by birth order, with a greater proportion of boys being born to women who already have one daughter and a lesser proportion of boys being born to women who already have one son. If Hepatitis B was a valid explanation for the higher proportion of male births, then those with the virus should bear sons at a higher rate than the biological norm—regardless of parity. Furthermore, fluctuations in the extent of female mortality over the twentieth century do not appear to correspond to biological changes.

Since the late 1970s, the use of ultrasound technology to selectively abort female fetuses has become widespread in societies exhibiting a preference for sons. In many Asian countries, particularly those in East Asia, sex-selective abortion has supplanted infanticide and neglect as the primary method for guaranteeing a son. Researchers generally agree that pre-natal sex selection accounts for most of the disequilibrium in the proportion of males to females found in societies today, and for most if not all of the disequilibrium found in East Asian countries since the late 1970s. As such, any study of son preference should account for the primary means by which it is manifested in society—before birth.

The two most common ways of measuring the proportion of males to females in a population are the “population sex ratio” and the “sex ratio at birth.” The population sex ratio refers to the total number of males for every 100 females in the population. This ratio encompasses the sex ratio at birth, differential mortality rates

---

23 Das Gupta 2005.
between the sexes at different ages, and losses and gains through migration. The population sex ratio normally lies between 97.9 and 100.3.\footnote{26}

Because of the predominance of sex-selective abortion, researchers today rely almost exclusively on the male-to-female sex ratio at birth, which is defined as the number of live male births for every 100 live female births, to measure gender bias. In the absence of manipulation, the sex ratio at birth is consistent across the human population, ranging from 105 to 107 male births for every 100 female births, with 105.9 used as a baseline figure.\footnote{27} This slight excess of males occurs because males are biologically more likely than females to survive inside the womb, whereas outside of the womb males are more susceptible to disease than females. The higher mortality rate for males also reflects their tendency to engage in risky behaviors and violence.\footnote{28}

The general consensus in the literature is that the male-to-female sex ratio at birth most accurately estimates the degree to which son preference influences the family building process because it focuses solely on pre-natal gender biases and excludes survival-related factors that later distort the male-to-female sex ratio in the population. In China, for example, the reported sex ratio at birth increased from 108.5 in 1982 to 116.9 in 2000, whereas the population sex ratio increased from 106.3 in 1982 to 106.7 in 2000.\footnote{29} Although both measures are abnormally high, the population sex ratio fails to fully capture the change in son preference from 1982 to 2000. The project’s findings have important implications for reversing these trends, which, as Figure 1.1 illustrates, have emerged worldwide.

\footnote{26}{Hardy 2002.}
\footnote{27}{Hardy 2002.}
\footnote{28}{Hesketh and Xing 2006.}
\footnote{29}{China NBS 1982, 1990, 2000.}
1.5. Rival Explanations for Son Preference

Despite the upsurge in research on son preference in recent years, scholars have yet to reach a consensus on the factors generating and sustaining it. The following four rival explanations for son preference attempt to account for the emergence and persistence of a strong bias in favor of sons in many societies worldwide. This project will test each of them.

Women’s Empowerment. Amartya Sen and others argue that son preference results from the low status and treatment of women in society. The preferential treatment of males over females can be weakened by empowering women, namely by expanding women’s access to and opportunities for education and employment, in addition to reducing fertility and infant mortality. The wellbeing of women is strongly influenced by their ability to earn an independent income and be educated participants.
in decisions within and outside the family.\textsuperscript{30} Women’s education strengthens women’s empowerment by allowing them to leave the home and to become more informed, particularly of issues related to health. Considerable evidence shows that improvements in women’s education and literacy tend to reduce the mortality rates of children.\textsuperscript{31} Women’s agency, influenced by education and employment, can also influence public discussion on a variety of topics, including fertility rates. Evidence shows that fertility tends to decline with the enhancement of women’s status and power.\textsuperscript{32} What all of these factors—education, employment, fertility, and survival—have in common is their positive contribution to women’s empowerment.\textsuperscript{33} Improvements in the status of women will reduce the preferential treatment of sons over daughters in society.

\textit{Girls’ Empowerment}. Elisabeth J. Croll and others argue that discrimination against girls has worsened over the past three decades and occurs across a wide range of socioeconomic contexts in East Asia.\textsuperscript{34} Although scholars posited that the degree of son preference could be directly linked to women’s status, new opportunities for female education and employment, coupled with reductions in fertility, have not been met with a reduction in son preference.\textsuperscript{35} Although some factors may improve the wellbeing of women, they fail to reduce society’s marginalization and discrimination of young girls.\textsuperscript{36} Any strategy to improve the status of females should first focus on

\textsuperscript{30} Sen 1999: 191  
\textsuperscript{31} Sen 1999: 197.  
\textsuperscript{32} Sen 1999: 198.  
\textsuperscript{33} Sen 1999: 191.  
\textsuperscript{34} Croll 2001: 230.  
\textsuperscript{35} Croll 2001: 231.  
\textsuperscript{36} Croll 2001: 239.
improving the self-esteem and empowerment of daughters.\textsuperscript{37} This shift also requires a broadening of the agenda; rather than focusing on improving girls’ access to and opportunities for schooling, strategies should also encompass the reduction of gender disparities in health and survival. These changes will reduce son preference.

\textbf{Culture.} A number of scholars argue that cultural norms and factors sanction and sustain son preference. Many societies, particularly those in Asia, have traditionally been patrilineal, meaning that the main productive assets are passed on through the male line.\textsuperscript{38} Although it is through the father that children acquire a social identity, only sons remain in the family’s lineage. Hence, when a daughter marries she is expected to leave her home and be absorbed into her husband’s lineage. In order to rise in status and autonomy within her husband’s family in old age, she must have the support of sons.\textsuperscript{39} Sons perform certain roles and activities in these societies that daughters are perceived to not be able to undertake (i.e., the rituals of ancestor worship in Asian societies).\textsuperscript{40} In addition, the kinship systems of many societies depict sons as the providers of support in one’s old age, which serves as an economic incentive for bearing sons.\textsuperscript{41} These scholars suggest that son preference will diminish with rising socioeconomic development, industrialization, and urbanization. These scholars tend to associate son preference with traditional customs and beliefs that structure the social organization of underdeveloped, largely agrarian societies. As such, rural life is assumed to be associated with a greater pressure to conform to traditional views on the need to bear sons, whereas urban life is assumed to reduce

\textsuperscript{37} Croll 2001: 239.
\textsuperscript{38} Croll 2001; Chung and Das Gupta 2007; Das Gupta et al. 2002.
\textsuperscript{39} Croll 2001; Chung and Das Gupta 2007; Das Gupta et al. 2002.
\textsuperscript{40} Croll 2001; Chung and Das Gupta 2007; Das Gupta et al. 2002.
\textsuperscript{41} Croll 2001; Chung and Das Gupta 2007; Das Gupta et al. 2002.
these pressures. This transformation occurs in urban areas as lineage is replaced by new opportunities to earn a living independent of one’s position in the family, through jobs acquired on the basis of one’s skills and qualifications. Because the organization of urban life differs greatly from that of rural life, these scholars assume that socioeconomic development, industrialization, and urbanization will reduce parents’ preferential status and treatment of sons.

**Anti-natal policy.** A number of scholars and researchers have mentioned the role of anti-natal policy in generating son preference, but only in passing. The introduction of stringent birth control policies has been found to exacerbate the differential value attached to sons and daughters, particularly before birth. In a country with a strong preference for male children, a policy that restricts family size can be particularly detrimental for girls. Even in countries where coercion is not part of official policy, the government’s insistence on meeting family planning targets often results in a variety of pressure tactics that come close to force. Some scholars who have studied patterns of birth and survival in China note that the country’s high sex ratios at birth tend to correspond to those years when the government more stringently enforced the one-child policy. In these countries, policies that limited family size were enacted during periods of high but stable fertility rates. Following their implementation, countries experienced significant declines in fertility and infant mortality—and, in many cases, the emergence of a strong bias in favor of sons.

Women’s empowerment may not have resulted from this demographic change.

---

42 Chung and Das Gupta 2007: 5.
44 Sen 1999: 223.
46 Banister 2004; Burgess and Zhuang 2002; Croll 2001; Das Gupta 2009; Hesketh and Xing 2006.
because the government required—rather than women desired—fewer children.

Research points to “a strong connection between sex ratio and birth control policy.”

This project examines these four rival hypotheses using quantitative and qualitative methods to better discern the causal mechanisms generating and sustaining son preference. To date, little if any quantitative analysis of these hypotheses has been carried out in the literature on son preference. The project employs new techniques and new data to test these rival hypotheses at the national and provincial levels. In doing so, this study yields several surprising findings, namely that son preference does not appear to be associated with the extent to which girls and women are empowered in a society, and that cultural factors are insufficient for explaining patterns of son preference over-time and at the provincial level. Both findings go against the prevailing literature on son preference. Secondly, this project finds strong quantitative and qualitative evidence of a relationship between the enforcement of an anti-natal policy and son preference, which indicates that scholars may have dismissed the role of policy too readily in their research.

The findings of this project demonstrate that son preference is more than just a consequence of culture or the level of female empowerment—it is an outcome of human intervention that has, in many ways, been fostered by the state through programs of fertility control. The project produces an important narrative that fills gaps in the literature on son preference.

---

47 Scharping 2003: 291.
1.6. Research Design and Case Study Selection

This project uses a “nested analysis,” which combines large-N quantitative analyses of many societies with small-N studies of a few societies.\textsuperscript{48} Large-N analyses allow for a more thorough assessment of associations between the independent and dependent variables than do individual case studies or small-N analyses. Case studies and small-N analyses are valuable, however, for their ability to identify causal mechanisms behind empirical associations. In addition, case-specific data are often more reliable than cross-national data and therefore can be used to further explore the hypotheses evaluated in the large-N analysis.\textsuperscript{49} Case studies also work to identify variables that may have been overlooked in the large-N analysis. As such, in a nested analysis, small-N studies can be used to either test or expand on models that had been evaluated using large-N analyses.

In this project, a number of hypotheses are first tested in a large-N analysis of 192 countries in 2009. Next, a large-N analysis of cross-province data is employed to further test the hypotheses evaluated in the cross-national analysis of son preference. Cross-province data from Vietnam is used here because it represents the full range of variation on both the independent and dependent variables, which aids in external validity. This data was also selected for the relatively large number of provinces—63 in 2009. Next, a large-N analysis involving the same cross-province data set from Vietnam is used to identify and test other variables in an effort to construct a more persuasive explanation of son preference. Lastly, small-N case studies are employed to: (1) evaluate the models that had been tested in the large-N cross-national and

\textsuperscript{48} Lieberman 2005.
\textsuperscript{49} Snyder 2001.
cross-provincial analyses; and (2) identify causal mechanisms behind empirical associations in the large-N analyses, as well as to identify additional variables to build a more persuasive explanation.

In this project, the deliberate selection of cases was used to ensure the availability and quality of the data used, as well as to select for cases that illustrate the full range of variation in son preference. Asia was determined to be a worthwhile region to study for a project examining the emergence and persistence of son preference. Much of the research generated on female inequality and neglect in the years since Amartya Sen’s estimations of “missing women” has focused on Asia. Although Asian countries have experienced some of the fastest demographic transitions in the developing world, discrimination against females has persisted.

Rather than examining Asia as a whole, I chose to focus my study of son preference on East Asia because: (1) it contains some of the world’s most severe imbalances in the proportion of males to females at birth; (2) societal beliefs, values, and preferences within East Asia have largely been shaped by a Confucian culture that highly values sons, and this Confucian culture is largely absent from societies outside of East Asia; and (3) ultrasound technology and sex-selective abortion have largely supplanted female infanticide and neglect as the main method by which son preference is manifested—a trend that is less pronounced in several

51 Belanger 2003; Goodkind 1995a; Hesketh and Xing 2006; Schettino and Gabriele 1998.
countries on the continent, such as India\textsuperscript{54}—which enables the sex ratio at birth to more accurately capture the extent of son preference.

Cross-national and sub-national comparisons are presented for three East Asian countries: Vietnam,\textsuperscript{55} China, and South Korea. I employ the method of \textit{structured focused comparison} to systematically compare these three historical cases. This method enables the study to analyze the phenomenon of son preference in ways that draw explanations of each case into a broader, more complex theory.\textsuperscript{56} I selected cases from East Asia in an effort to control for a number of alternative explanatory variables, including the role of culture type (all are Confucian), and to focus on other distinguishing variables that do vary among the countries, such as policy. These cases were selected using a \textit{diverse case method}, which requires the selection of a set of cases, at minimum two, which represent the full range of values characterizing the relationship between the independent and dependent variables.\textsuperscript{57} For continuous variables, this method requires choosing cases representing both extreme values and a mean or median. This range of variation is likely to enhance the representativeness of the sample of cases chosen.\textsuperscript{58}

Vietnam, China, and South Korea were selected for the project’s case studies because their corresponding trends on the dependent variable—the sex ratio at birth—vary at the national and provincial levels, which is beneficial for testing rival

\begin{flushright}
\textsuperscript{54} Neglect, which remains widespread in India, cannot be captured by the sex ratio at birth. Using the “sex ratio at age 0 to 4” are not accurate measures of son preference either because boys are less likely than girls to survive outside of the womb, but not at a uniform, measurable rate.
\textsuperscript{55} Although geographically, Vietnam is part of Southeast Asia, the historical occupation of Vietnam by China strongly influenced its culture. Vietnam is considered to be part of East Asia because of the predominance of Confucianism in the region (see Belanger et al. 2003), in addition to its pattern of economic development, which mirrored that of other East Asian countries including South Korea.
\textsuperscript{56} George and Bennett 2004: 67.
\textsuperscript{57} Seawright and Gerring 2008: 300.
\textsuperscript{58} Seawright and Gerring 2008: 301.
\end{flushright}
hypotheses. The predominant view among social scientists is that a good hypothesis should hold for cases that vary on the dependent variable. As Figure 1.2 illustrates, Vietnam’s overall sex ratio at birth had been fairly normal until the late 1990s, and by 2009 it had climbed to 110.5. Conversely, China’s sex ratio at birth has been steadily climbing over the past three decades, reaching 119.5 in 2009. South Korea, however, had one of the highest sex ratios at birth in the world until the mid-1990s, after which it began to decline. By 2009, South Korea’s sex ratio at birth had reached 106.4—well within the natural rate.

**Figure 1.2: Sex Ratio at Birth, 1979-2009**

![Graph showing sex ratio at birth for Vietnam, China, and South Korea from 1979 to 2009.]


1.7. Thesis Layout

Part I of this project presents the study’s quantitative work. It is understood to be confirmatory (or hypothesis testing) because it focuses on a particular relationship

---

60 CIA 2010.  
61 CIA 2010.
between the independent and dependent variables\textsuperscript{62}—the extent to which girls’ empowerment, women’s empowerment, and anti-natal policy explain son preference. Chapter 2 tests competing hypotheses for the relationship between girls’ empowerment, women’s empowerment, and son preference using multiple regression analyses involving 192 countries in 2009 and Vietnam’s 63 provinces in 2009. Contrary to the prevailing literature on son preference, the chapter finds that neither women’s empowerment nor girls’ empowerment appears to reduce son preference. Chapter 3 examines the causal mechanisms linking anti-natal policy to son preference using the technique of path analysis. It employs cross-province data from Vietnam in 2009. The findings of this analysis suggest that son preference corresponds to the enforcement of an anti-natal policy. As such, Part I advances the hypothesis that the enforcement of an anti-natal policy is an important explanatory factor in the development of son preference.

In Part II, Chapters 4-6 present case studies of three countries that reconstruct the causal processes by which girls’ empowerment, women’s empowerment, anti-natal policy, and cultural factors influenced or failed to influence the pattern of son preference in each case from the mid-twentieth century to 2009. The case studies also examine the extent to which socioeconomic and demographic factors and access to sex-selective technology encouraged or discouraged pre-natal son preference. Part II finds that in each of the cases, the stringent enforcement of an anti-natal policy in an environment of low fertility and low infant mortality, coupled with the expansion of the private economy into areas where government services had formerly played a role, generated a strong bias in favor of sons. Part II also finds that this bias in favor of sons.

\textsuperscript{62} Seawright and Gerring 2008: 300.
of sons was especially intense in urban areas, despite the widespread access to pre-natal sex identification and abortion services in both urban and rural areas (the availability of which coincided with or immediately followed the introduction of the anti-natal policies). This finding goes against the theory that cultural factors, which are believed to sanction and sustain son preference, will decline with industrialization and urbanization. Instead, this finding suggests that anti-natal policies—which, in all three cases, specifically targeted urban areas—played an important role in generating a strong bias in favor of sons. The case studies also find that girls and women’s empowerment improved over the course of the twentieth and twenty-first centuries, despite a worsening of son preference. The findings in Part II support those of Part I. Overall, the project demonstrates that the enforcement of an anti-natal policy, coupled with demographic and economic factors, were key to son preference’s development.

The outcomes to be explained in this project include the level of son preference that each country attained in 2009 and the change in son preference that each country experienced from the mid-twentieth century to 2009. Subnational as well as cross-national comparisons are used to identify the factors generating and sustaining son preference during this period.

The approach taken in this project better captures the range of factors that may account for the disequilibrium in the proportion of male to female births seen in certain regions and societies over time. This type of assessment is largely missing from the literature, yet understanding the causal mechanisms influencing the discrimination of women and girls in society would be extremely useful to governments and NGOs working to reverse the “missing women” phenomenon.
Part I: Quantitative Analysis

The rapid reduction of fertility and family size represent two of the most significant demographic changes to have taken place within Asia over the course of the twentieth century. Yet, the increasing masculinity of the region’s sex ratios at birth calls into question the factors underlying this development and what role, if any, they have played in generating and sustaining this preferential treatment of sons. Drawing on cross-sectional data from 2009, Part I asks: does the empowerment of women and/or girls reduce the preference for sons? To what extent does the enforcement of an anti-natal policy influence son preference?

Chapter 2 quantitatively tests the rival hypotheses of Amartya Sen and Elisabeth J. Croll. Amartya Sen posits that improvements in measures of women’s empowerment will lead to a reduction in son preference. Conversely, Elisabeth J. Croll argues that the status and treatment of women has no effect on son preference; rather, the focus should be on girls. She posits that improvements in measures of girls’ empowerment will lead to a reduction in son preference.

Chapter 2 finds, however, that neither women’s empowerment nor girls’ empowerment appears to influence son preference. As such, Chapter 3 develops and quantitatively tests an alternative explanation: that anti-natal policy better explains the development of a strong bias in favor of sons. Drawing on 2009 provincial-level data from Vietnam, Chapter 3 finds that in provinces with low fertility and low mortality in which an anti-natal policy is strictly enforced, families increasingly resort to pre-natal sex selection and abortion to guarantee a son.

---

Based on these findings, it appears that son preference corresponds to the degree of enforcement of an anti-natal policy, rather than to the level of girls or women’s empowerment. As such, Part I concludes by suggesting that anti-natal policy is an important explanatory factor in the emergence and persistence of son preference. These findings and the causal mechanisms driving them are further explored in the case studies of Vietnam, China, and South Korea in Part II.
This project aims to test competing hypotheses for the emergence and persistence of son preference in certain regions and societies. This chapter specifically examines the extent to which improvements in measures of female empowerment (i.e., girls’ empowerment and women’s empowerment) reduces the preferential treatment of males over females—a theory first articulated by Amartya Sen in his seminal piece “More than 100 Million Women Are Missing” and later critiqued and reformulated by Elisabeth J. Croll in her article “Amartya Sen’s 100 Million Missing Women.” Despite the compelling nature of these theories, little if any quantitative work has been done to test the validity of their claims—research that is especially important to conduct now that most, if not all, countries have significantly improved on measures of girls and women’s empowerment. Drawing on national and provincial-level data from 2009, this chapter aims to address: does the empowerment of women and/or girls reduce the preference for sons?

In this project, empowerment refers to change from a condition of disempowerment, as well as the idea of human agency and choice. Sen (1999) refers to empowerment as affecting one’s own well being. Batliwala (1994) emphasizes how much influence people have over actions that matter to their welfare. The concepts of human agency and entitlement also often appear in definitions of empowerment. In sum, empowerment is “the expansion in people’s ability to make strategic life choices in a context where this ability was previously denied to them.”

---

64 Sen 1999.
Contrary to the hypotheses of Sen and Croll, this chapter finds that: (1) the majority of the relationships between the variables in the cross-national and cross-province models do not support Sen’s hypothesis that women’s empowerment will reduce son preference; and (2) the results for each model do not support Croll’s hypothesis that girls’ empowerment will reduce son preference. These findings call into question the predominant perception of son preference in the literature, which depicts it as an outcome of the level of female empowerment in a society.

In this chapter, I first present and test Sen’s theory of women’s empowerment and its relationship to female discrimination and survival. I then present and test Croll’s theory of girls’ empowerment and son preference. The chapter concludes by offering implications of the findings and how they frame the subsequent chapters.

2.1. Theory and Hypothesis: Amartya Sen’s Theory of Women’s Empowerment

Despite the relatively higher rates of survival for females—which relate to the biological advantages that females have over males in resisting disease—women are missing in the millions worldwide. This discrepancy, which is particularly acute in East Asia, largely stems from women’s unequal sharing in health care, nutrition, and other services. The longstanding belief that males are the providers of economic security and support for their parents in old age—which stems from the social standing and economic power of men—has been cited as a crucial factor for maintaining the preferential treatment of males over females in many East Asian societies. This anti-female bias is further exacerbated by the relative dominance of men within the family, particularly over intra-household distributions of resources.

---

Yet, this bias can be weakened, according to Sen (1990, 1999), through the empowerment of women, namely by expanding women’s access to and opportunities for education and employment, in addition to reducing fertility and infant mortality. Women’s empowerment, Sen argues, will improve the status and survival of girls.

According to Sen, the perception of which individuals are engaged in work that is productive and of how much an individual is contributing to a family’s prosperity strongly influences the relative respect and regard for women’s wellbeing. As such, the division of a family’s benefits is likely to be more favorable to women if they earn an outside income and their work is recognized as being productive. The social respect that is associated with being a “breadwinner” may also improve the status and standing of women within the family, and working outside of the home provides the experience of the outside world, which may serve an educational purpose, as well.

According to Sen, women’s education strengthens women’s empowerment by allowing them to leave the home and to become more informed, particularly of issues related to health. Considerable evidence has shown that improvements in women’s education and literacy tend to reduce the mortality rates of children; in fact, education and literacy have been found to unambiguously reduce under-five mortality. Literacy has been found to have a very strong ameliorating effect on the extent of female disadvantage. As such, the survival rates of females should improve as

---

68 Sen 1990.
69 Sen 1999: 197
70 Sen 1999: 197
progress is made on women’s empowerment. Women’s empowerment, influenced by education and employment, can also influence public discussion on a variety of topics, including fertility rates. According to Sen, evidence has shown that fertility tends to decline with the enhancement of women’s status and power. Therefore, low fertility serves as an indicator of greater female empowerment.

In recent years, empirical work has demonstrated that the wellbeing of women is strongly influenced by their ability to earn an independent income and to be educated participants in decisions within and outside the family. What all of these factors—education, employment, fertility, and survival—have in common is their positive contribution to empowerment and to reducing the preferential treatment of males over females. Improvements in measures of women’s empowerment, Sen argues, will reduce the preferential treatment of sons. As such, relatively high levels of women’s empowerment should be associated with low son preference, which gives us the study’s first hypothesis:

**H1: Women’s empowerment will lower son preference.**

Much of the research following the publication of Sen’s work, however, has relied on incomplete data or has failed to meaningfully engage in a quantitative analysis to test whether these associations are, in fact, statistically significant. Although women’s empowerment influences the intra-family division of food, health care, and other provisions, which may serve to improve the status of daughters, Sen does admit that these trends have not always held. Sen (1990) notes that the

---

71 Sen 1999: 191
72 Sen 1999: 198
73 Sen 1999: 191
74 Sen 1999: 191
75 Croll 2001; Das Gupta et al. 2002; Das Gupta 2009.
proportion of women in China’s population significantly declined following the 1979 economic and social reforms, which suggests that attempts to improve the social status of women, such as by providing greater access to and opportunities for schooling, may not have been met with a reduction in the preferential treatment of males over females in particular East Asian societies. Examining this phenomenon is key to understanding the emergence and persistence of son preference.

2.2 Methods

**Data:** The cross-national analysis of Sen’s hypothesis draws on data from the 192 U.N.-recognized countries in 2009 (see Table A1 in the Appendix). In this analysis, data for the dependent variable—the sex ratio at birth—comes from the CIA World Factbook 2010. The CIA has obtained and compiled this data from censuses, surveys, and assessments conducted in countries worldwide. As such, the quality of this data depends on the accuracy of the methods and protocols used in each country. Data for the independent variables comes from The World Bank’s World Development Indicators 2010. World Bank data is derived from the statistical systems of member countries, and therefore the quality of this data depends on how well these national systems perform. The World Bank does, however, employ standards to ensure that the data is accurate and of the highest possible quality.

The cross-province analysis of Sen’s hypothesis draws on data from Vietnam’s 63 provinces in 2009 (see Table A2 in the Appendix). Data for the independent and dependent variables comes from Vietnam’s 2009 Population and Housing Census, which is conducted once every ten years by the General Statistics
Office of Vietnam. This is the fourth population census and third housing census conducted since reunification, and the third census for which the United Nations Population Fund (UNFPA) provided technical and financial assistance. The census sample survey size was 15 percent of the country’s total population. Verification and post-enumeration were used to ensure the accuracy of the census results. In addition, 95% confidence intervals were used when estimating the sex ratio at birth, which at the national level was determined to lie in the interval from 109.5 to 111.6 males per 100 females. As such, the data is considered to be of good quality.

Variables: Amartya Sen (1990, 1999) posits that improvements in female employment and education, combined with reductions in fertility and infant mortality, will reduce the preferential treatment of males over females and increase female’s prospects for survival. Based on Sen’s work, this study will employ the following variables to measure women’s empowerment:

**Infant Mortality Rate.** Women’s empowerment within a family can influence the intra-family division of food, health care, and other provisions, which can significantly reduce mortality, especially among girls. The infant mortality rate is one of the most widely accepted indicators of society-wide hunger. The infant mortality rate measures the number of deaths per one thousand live births among children under the age of one year old. Infant mortality has also proven to be a reliable indicator not only of the health of infants, but also of such phenomenon as nutrition quality, the health of children and mothers, medical conditions, sanitary

---

76 Sen 1999: 193
conditions within households, and the social status and rights of women and girls.\textsuperscript{78} Research indicates that social improvements resulting in a reduction of infant deaths simultaneously reduce child and adult deaths, as well.\textsuperscript{79} As such, the infant mortality rate serves as a crucial measure of women’s empowerment.\textsuperscript{80}

\textit{Fertility Rate.} Scholars posit that a reduction in fertility contributes to the greater freedom of women to seek employment outside of the home, which adds to their economic independence (Sen 1999). Because economic independence empowers women, Sen posits that a decline in fertility will reduce the preferential treatment of males over females. The total fertility rate measures the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates.\textsuperscript{81} Research has found that about five years after a country’s infant mortality rate declines to 50 or below, women begin spacing out their births. The fertility rate then drops as families realize that they no longer need to have so many children to ensure that they will be supported in old age.\textsuperscript{82} In other countries, however, declines in the total fertility rate are the direct result of policies limiting the number of children that a woman can bear.

\textit{Female Labor Force Participation Rate.} Employment empowers women by allowing them to leave the home and to become more independent of their husbands’

\textsuperscript{78} Zweifel and Navia 2000: 103.  
\textsuperscript{79} Zweifel and Navia 2000: 103.  
\textsuperscript{80} It is important to note that IMR was selected over other measures, such as female life expectancy, because in countries with inadequate vital registration, life expectancy figures are commonly derived from IMR using life tables. IMR is a more accurate measure of empowerment in this analysis because the quality of the data for life expectancy varies in the countries and provinces studied. Secondly, female life expectancy is not employed as a measure of women’s empowerment in this analysis because of the high degree of multicollinearity with IMR, which is an important component of life expectancy. Low multicollinearity is necessary for conducting a multiple regression analysis.  
\textsuperscript{81} World Bank 2010.  
\textsuperscript{82} Zweifel and Navia 2000: 103.
resources. It also enables women to have a better deal in intra-household distributions, since they, too, are contributing to their household’s income. Research suggests that gainful employment (i.e., working outside of the home for a wage), as opposed to unpaid or unhonored housework, can substantially enhance the deal that women get. The labor force participation rate represents the proportion of the female population ages 15 and older that is economically active. This includes all women who supply labor for the production of goods and services during a specified period of time. The female labor force participation rate is calculated by dividing the total female population ages 15 and older by the total number of females aged 15 and older who are employed.

**Female Adult Literacy Rate.** Education, according to Sen, greatly contributes to improving the wellbeing and agency of women. Education enables women to become active participants in decisions within and outside of the family. It also serves to improve the survival disadvantages that females face compared to males. In this analysis, education is measured by the female adult literacy rate, which represents the percentage of the female population ages 15 and above who can, with understanding, read and write a short, simple statement on their everyday life.

**Methodology:** Amartya Sen’s hypothesis for the relationship between women’s empowerment and son preference is tested at the national level (model 1) and provincial level (model 2). Because Sen does not specify a causal pathway or any
other way in which the four independent variables could be connected, this study employs the technique of multiple regression analysis. Each model tests for multicollinearity and heteroscedasticity, and adjusts for robust standard errors. Only those variables that Sen makes explicit in his work are included in the analyses, which are testing a model, rather than exploring or building one, at the national and provincial levels.\textsuperscript{90} Both models employ the “sex ratio at birth deviation” as the dependent variable, which accounts for deviations above the baseline figure of 105.9.\textsuperscript{91} Testing Sen’s hypothesis quantitatively allows this study to account for Croll’s hypothesis that women’s empowerment does not affect the status of daughters. Croll (2001) refutes and redefines Sen’s hypothesis, but she offers no quantitative work to support her claims.

2.3. Results and Discussion

The results of the regression analyses for the relationship between women’s empowerment and son preference are presented in Table 2.1. When examining the association between women’s empowerment (as measured by infant mortality, fertility, female labor force participation, and women’s literacy) and son preference (as measured by the male-to-female sex ratio at birth), a multiple regression analysis revealed that among 138 countries in 2009, female labor force participation and women’s literacy were not significantly associated with son preference (p=0.151; \textsuperscript{90} Control variables are not used in this analysis because of the lack of statistically significant associations between the primary variables being tested. Furthermore, this analysis is not exploratory, it is hypothesis testing. As such, only those variables that Sen makes most explicit in his work are employed in this analysis. \textsuperscript{91} Because I am most interested in deviations above the baseline figure, I subtract each observation’s ratio from 105.9. Deviations below the baseline are recoded as 0.}
p=0.858). Although the fertility rate was found to be significantly associated with son preference (p=0.011), it went against the relationship hypothesized by Sen. However, higher infant mortality was found to be significantly associated with higher son preference (p=0.098), which does, in fact, support Sen’s hypothesis. Despite this result for infant mortality, three out of the four variables measuring women’s empowerment do not support Sen’s hypothesis. Furthermore, the model produced an adjusted R-square of 0.096, which indicates that the model accounts for less than 10 percent of the variance on the dependent variable.

When examining the association between women’s empowerment and son preference, a multiple regression analysis revealed that among Vietnam’s 63 provinces in 2009, none of the variables measuring women’s empowerment (infant mortality, fertility, female labor force participation, and women’s literacy) were significantly associated with son preference (adjusted R-square=0.186). These results do not support Sen’s hypothesis that women’s empowerment will reduce son preference.

Overall, the majority of the relationships between the variables in each model do not support Sen’s hypothesis that women’s empowerment will reduce son preference. Qualitative research carried out over the past decade does not support Sen’s hypothesis either. The preferential treatment of sons over daughters has continued to take place both in societies where the status of women is high in terms of education and employment, as well as in societies where the majority of women are illiterate or restricted to the household.\textsuperscript{92} Although a number of scholars hypothesized that the degree of son preference could be directly linked to women’s status,

\textsuperscript{92} Croll 2001: 231.
researchers today have found that new opportunities for female education and employment, coupled with reductions in fertility, have not been met with a reduction in son preference. The findings of my study fail to support Sen’s hypothesis that women’s empowerment will lead to a reduction in son preference.

\textit{Table 2.1: Results of the Multiple Regression Analysis}

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Coefficient</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(SE)</td>
<td>(SE)</td>
</tr>
<tr>
<td>Supports H1?</td>
<td>Supports H1?</td>
<td></td>
</tr>
<tr>
<td>Fertility rate</td>
<td>-0.488***</td>
<td>0.424</td>
</tr>
<tr>
<td></td>
<td>(0.189)</td>
<td>(1.836)</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td>0.378*</td>
<td>-4.609</td>
</tr>
<tr>
<td></td>
<td>(0.227)</td>
<td>(2.788)</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Labor force participation</td>
<td>0.009</td>
<td>0.103</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.914)</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Literacy rate (women)</td>
<td>0.305</td>
<td>0.086</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.052)</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>N° cases</td>
<td>138</td>
<td>63</td>
</tr>
<tr>
<td>Prob&gt;F</td>
<td>0.0057</td>
<td>0.0006</td>
</tr>
<tr>
<td>R²</td>
<td>0.0964</td>
<td>0.1859</td>
</tr>
</tbody>
</table>

*Universe: At national-level, 192 U.N.-recognized nations in 2009. At provincial-level, 63 provinces in Vietnam in 2009. Significance: *p<0.1, **p<0.05, ***p<0.01. Robust standard errors are reported in parentheses. Natural log transformation applied to infant mortality.*

This analysis has a number of limitations, notably that it only captures those variables of women’s empowerment that Amartya Sen made most explicit in his work; he certainly discussed others, such as inheritance rights. This simplification of Sen’s theory for quantitative purposes leaves open the possibility that women’s empowerment will lead to a reduction in son preference.

\textsuperscript{93} Croll 2001: 231.
empowerment—or the lack thereof—operates in other ways to influence son preference. The case studies in Part II attempt to address this shortcoming. Secondly, because of the absence of sufficient panel data for the dependent and independent variables, this analysis cannot test the relationship between women’s empowerment and son preference over time. As such, this analysis only captures relationships for the levels reached on women’s empowerment and son preference, rather than for the progress achieved—which leaves open the possibility that women’s empowerment does influence son preference. A discussion of over-time trends is incorporated into the case studies in Part II to address this shortcoming. Lastly, this study employs the adult literacy rate to measure women’s education, whereas other studies have employed indicators such as mean years of schooling or the level of educational attainment. Those studies employing the latter have found a significant relationship between greater education and greater son preference. Although this relationship does not support Sen’s hypothesis, it is important to note that this analysis may not be capturing these trends in women’s education. Part II addresses this shortcoming.

2.4. Theory and Hypothesis: Croll’s Theory of Girls’ Empowerment

Discrimination against girls is increasing and occurs across a wide range of socioeconomic contexts in East Asia, including the rich and poor, urban and rural areas, and even among societies with high and low fertility rates.⁹⁴ Although some factors may improve the wellbeing of women, they fail to reduce society’s marginalization and discrimination of young girls.⁹⁵ Any strategy to improve the

---

⁹⁵ Croll 2001: 239.
status of females, Croll argues, should first focus on improving the self-esteem and empowerment of daughters.

This shift also requires a broadening of the agenda; rather than focusing on improving girls’ access to and opportunities for schooling, strategies should also encompass the reduction of gender disparities in nutrition, health, and survival. Research shows that in general, daughters are less likely to be taken to the hospital than sons, and fewer family resources are spent on girls’ illnesses compared to boys. Girls are also more likely to receive a smaller proportion of food and be more undernourished than their brothers. These factors must be taken into consideration when assessing the relative empowerment of females, particularly of girls, within a society.

Females are especially at risk before birth, at birth, and towards the end of the first year of life, although the increasing use of sex-selective abortion has put females before birth at greatest risk. Pre-natal sex identification and abortion are widespread among the educated and less educated, rich and poor, and in urban and rural areas. Consequently, Croll argues, “an increasing proportion of Asia’s daughters do not survive pregnancy, birth, or girlhood…their lives are doubly jeopardized by the co-existence of age-old means of discrimination plus new technologies.” Hence, Sen’s “missing women” and Coale’s “missing females” should be referred to as “missing daughters.”

---

\(^{96}\) Croll 2001: 235.  
\(^{97}\) Croll 2001: 228.  
\(^{98}\) Croll 2001: 228.  
\(^{100}\) Croll 2001: 230.
Research into the trends and causes of son preference should focus on the survival and development of young girls and daughters in Asia’s populations—not of women—because the empowerment of women does not necessarily lessen the discrimination of daughters. This shift to daughter discrimination and son preference, Croll argues, is a necessary modification to Sen’s work. This gives us the study’s second hypothesis:

\[ H_2: \text{Girls’ empowerment will lower son preference.} \]

Much of the research following the publication of Croll’s work, however, has relied on incomplete data or has failed to meaningfully engage in a quantitative analysis to test whether these associations are, in fact, statistically significant.\(^{101}\)

2.5. Methods

**Data:** The cross-national analysis of Croll’s hypothesis draws on data from the 192 U.N.-recognized countries in 2009 (see Table A1 in the Appendix). Data for the dependent variable (the sex ratio at birth) comes from the CIA World Factbook 2010. The CIA has obtained and compiled this data from censuses, surveys, and assessments conducted in countries worldwide. As such, the quality of this data depends on the accuracy of the methods and protocols used in each country. Data for the independent variables comes from The World Bank’s World Development Indicators 2010, which obtains its data from the statistical systems of member countries. The World Bank does, however, employ standards to ensure that the data is accurate and of the highest possible quality. The cross-province analysis of Croll’s hypothesis draws on data from Vietnam’s 63 provinces in 2009 (see Table A2 in the

\(^{101}\) Das Gupta et al. 2002; Das Gupta 2009.
Appendix). Data for the independent and dependent variables comes from Vietnam’s 2009 Population and Housing Census, which is conducted once every ten years by the General Statistics Office of Vietnam. The census sample survey size was 15 percent of the country’s total population. Verification and post-enumeration were used to ensure the accuracy of the census results. In addition, 95% confidence intervals were used for estimating several of the indicators, including the sex ratio at birth. As such, the data is considered to be of good quality.

Variables: Although a rise in women’s education and employment, coupled with a reduction in fertility, may improve the relative position of women, these factors fail to have an effect on the relative position of daughters because girls have separate needs from their mothers.\(^{102}\) Given the literature on empowerment, this study will employ the following variables to measure girls’ empowerment:

**Infant Mortality Rate.** According to Croll, it has been very difficult to broaden the development agenda to include subjects other than girls’ education, namely girls’ survival. Research shows that daughters are less likely to be taken to the hospital than sons, and fewer family resources are spent on girls’ illnesses compared to boys. Girls are also more likely to receive a smaller proportion of food and be more undernourished than their brothers.\(^{103}\) The infant mortality rate is one of the most widely accepted indicators of society-wide hunger.\(^{104}\) It has also proven to be a reliable indicator of nutrition quality and medical and sanitary conditions.\(^{105}\) As such, the infant mortality rate will be used in this analysis of girls’ empowerment. The

\(^{102}\) Croll 2001.
\(^{103}\) Croll 2001: 235.
\(^{104}\) Zweifel and Navia 2000: 102.
\(^{105}\) Zweifel and Navia 2000: 103.
infant mortality rate measures the number of deaths per one thousand live births among children under the age of one year old.

**Female Youth Literacy Rate.** According to Croll, researchers and policymakers began to focus on the needs and interests of children, particularly on improving their access to and opportunities for education, beginning in the 1990s. Although girls’ education is sometimes referred to as “the gender jewel in the policy crown,” the needs of girls are often overshadowed by statistics that are rarely gendered to reveal disparities. The absence of gender-disaggregated statistics has obscured and limited awareness of the disadvantages that girls face. As such, this analysis of girls’ empowerment will utilize one of the most accessible and widely used gender-disaggregated statistics—the female youth literacy rate. This rate represents the percentage of the female population ages 15 to 24 that can, with understanding, read and write a short, simple statement on their everyday life. This indicator is only available for the national level, large-N analysis.

**Net Primary Enrollment Ratio (Girls).** In an effort to test Croll’s hypothesis for girls’ empowerment in a cross-province analysis, this analysis employs the net primary enrollment ratio for girls, which is a gender-disaggregated measure of education that is available at both the national and provincial levels. The net primary enrollment ratio is the ratio of the number of girls of official school age (as defined by the national education system) who are enrolled in primary school to the total

---

106 Razavi 1999: 430.
107 Croll 2001: 240.
population of girls of official school age.\textsuperscript{110} Primary education provides children with basic reading, mathematics, and writing skills along with an elementary understanding of subjects such as history, geography, and science.\textsuperscript{111}

\textbf{Methodology:} Elisabeth J. Croll’s hypothesis for the relationship between girls’ empowerment and son preference is tested at the national level (model 3) and provincial level (model 4). Because Croll does not specify a causal pathway or any other way in which the four independent variables could be connected, this study employs the technique of multiple regression analysis. Each model tests for multicollinearity and heteroscedasticity and adjusts for robust standard errors. The “sex ratio at birth deviation” is employed as the dependent variable, which accounts for deviations above the baseline figure of 105.9.\textsuperscript{112} This study tests a model, rather than explores or builds one, at the national and provincial levels.\textsuperscript{113}

\textbf{2.6. Results and Discussion}

The results of the regression analyses for the relationship between girls’ empowerment and son preference are presented in Table 2.2. When examining the association between girls’ empowerment (as measured by infant mortality, girls’ literacy, and girls’ primary enrollment rate) and son preference (as measured by the male-to-female sex ratio at birth), a multiple regression analysis revealed that among 140 countries in 2009, none of the variables measuring girls’ empowerment were

\textsuperscript{110} World Bank 2010.
\textsuperscript{111} World Bank 2010.
\textsuperscript{112} Because I am most interested in deviations above the baseline figure, I subtract each observation’s ratio from 105.9. Deviations below the baseline figure are then recoded as 0.
\textsuperscript{113} Control variables are not used in this analysis because of the lack of statistically significant associations between the primary variables being tested. Furthermore, this analysis is not exploratory, it is hypothesis testing. As such, only those variables that Croll makes most explicit in her work are employed in this analysis.
significantly associated with son preference. These results do not support Croll’s hypothesis that girls’ empowerment will reduce son preference. Furthermore, the model produced an adjusted R-square of 0.027, which indicates that the model accounts for less than 3 percent of the variance on the dependent variable.

When examining the association between girls’ empowerment and son preference, a multiple regression analysis revealed that among Vietnam’s 63 provinces in 2009, both of the variables measuring girls’ empowerment (infant mortality and girls’ primary enrollment rate) were significantly associated with son preference (p=0.060; p=0.061; adjusted R-square=0.170). Both associations, however, were the inverse of the relationship hypothesized by Croll. These results do not support Croll’s hypothesis that girls’ empowerment will reduce son preference.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Coefficient (SE)</th>
<th>Supports H2?</th>
<th>Coefficient (SE)</th>
<th>Supports H2?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant mortality rate</td>
<td>0.036 (0.099)</td>
<td>No</td>
<td>-2.991* (1.558)</td>
<td>No</td>
</tr>
<tr>
<td>Literacy rate (girls)</td>
<td>0.001 (0.007)</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary enrollment rate (girls)</td>
<td>0.015 (0.014)</td>
<td>No</td>
<td>0.198* (0.104)</td>
<td>No</td>
</tr>
<tr>
<td>N° cases</td>
<td>140</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob&gt;F</td>
<td>0.0491</td>
<td>0.0001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.0266</td>
<td>0.1698</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2.2: Results of the Multiple Regression Analysis**

Universe: At national-level, 192 U.N.-recognized nations in 2009. At provincial-level, 63 provinces in Vietnam in 2009. Significance: *p<0.1, **p<0.05, ***p<0.01. Robust standard errors are reported in parentheses. Natural log transformation applied to infant mortality.
Overall, the results for each model do not support Croll’s hypothesis that girls’ empowerment will reduce son preference. Qualitative research carried out over the past decade does not support Croll’s hypothesis either. The emphasis on girls’ education in national and international campaigns aimed at combating gendered discrimination and hastening economic development actually works to the detriment of girls by excluding other factors (i.e., health) that more directly influence their status and treatment. Although new opportunities for girls’ education have arisen from these national and international campaigns, research suggests that these campaigns are limited in their scope and less than effective in targeting the main forms of discrimination. Secondly, in many countries, infant mortality decline has been accompanied by a continuation or worsening of son preference.\textsuperscript{114} According to Miller (2001), modernization is closely linked with lowered fertility and mortality rates and higher use of sex selective abortion.\textsuperscript{115} The findings of my study do not support Croll’s hypothesis that girls’ empowerment will reduce son preference.

This analysis has a number of limitations, notably that despite Elisabeth J. Croll’s call for gender-disaggregated statistics, particularly for indicators that focus on the health and survival of children, very few exist today. As such, this analysis employed the infant mortality rate—which is a very strong measure of overall nutrition, survival, and health conditions within a society from which one can infer the treatment and status of females—even though the infant mortality rate is not disaggregated by gender. The absence of gender-disaggregated statistics (except for those capturing girls’ education) limited the extent to which this project could

\textsuperscript{114} Banister 2004; Burgess and Zhuang 2002; Croll 2001; Das Gupta 2009; Hesketh and Xing 2006.
\textsuperscript{115} Miller 2001: 1087.
rigorously test Croll’s hypothesis. This simplification of Croll’s theory for quantitative purposes leaves open the possibility that girls’ empowerment—or the lack thereof—operates in other ways to influence son preference. Secondly, the absence of sufficient panel data for the dependent and independent variables prevented this analysis from testing the relationship between girls’ empowerment and son preference over time. As such, this analysis only captures relationships for the levels reached on girls’ empowerment and son preference, rather than for the progress achieved—which leaves open the possibility that girls’ empowerment does, in fact, influence son preference. The case studies in Part II attempt to address these shortcomings of the quantitative analysis.

2.7. Conclusion

This chapter examined the extent to which improvements in measures of female empowerment (i.e., girls’ empowerment and women’s empowerment) reduces the preferential treatment of males over females—a theory first articulated by Amartya Sen (1990) and later critiqued and reformulated by Elisabeth J. Croll (2001). Although both scholars posit that the low birth and survival rates of females found in many societies reflects the low level of empowerment in those societies, this analysis finds that the empowerment of women and/or girls does not reduce the preference for sons. These findings beg the question: if not female empowerment, then what? The following chapter aims to answer this question by constructing a causal chain that treats anti-natal policies—policies that limit the number of children a woman can bear over her lifetime—as the primary driver of son preference.
Chapter 3: From Policy to Son Preference

This project attempts to account for son preference in East Asia, which both qualitative and quantitative research has found to be a striking and persistent feature of the region.\textsuperscript{116} Recent studies have found that son preference, instead of declining in East Asia, has increased despite greater socioeconomic development\textsuperscript{117}—a finding corroborated by Chapter 2. The findings of the preceding chapter also revealed that, contrary to the prevailing body of literature on son preference, girls’ empowerment and women’s empowerment do not appear to reduce son preference. These findings raise important questions about and call for a further analysis of those factors underlying the development of a strong bias in favor of sons. For one, why has son preference worsened despite improvements in measures of female empowerment? Moreover, what do these patterns tell us about the relationship between birth and survival? Based on the findings of Chapter 2, this part of the quantitative analysis asks: what explains the emergence and persistence of son preference, if not female empowerment?

This project takes aim at the scope and approach of the prevailing scholarship on son preference. Rather than focusing on the socioeconomic characteristics of mothers and daughters (i.e., women’s literacy rate, girls’ literacy rate, women’s labor force participation rate) and the ways in which these characteristics influence son preference—which a number of scholars find have no bearing on the preferential status and treatment of sons\textsuperscript{118}—this chapter seeks to shift the focus of the debate to

\textsuperscript{116} Croll 2000: 7.
\textsuperscript{117} Croll 2000: 7.
\textsuperscript{118} Goodkind 1996; Hesketh and Xing 2006; Miller 2001; Pham et al. 2008; Scharping 2003.
those factors that matter most to the status and survival of females before birth: fertility, mortality, and policy. This chapter develops an alternative explanation for son preference by examining the extent to which anti-natal policies—policies that limit the number of children a woman can bear over her lifetime—influence patterns of birth and survival. These factors, I find, better account for imbalances in the sex ratio at birth and, ultimately, for Sen’s “missing women” and Croll’s “missing girls.” I contend that Sen and Croll’s theories of empowerment overlook the ways in which patterns of birth and survival are causally connected, as well as fail to consider factors that drive these patterns, namely anti-natal policy.

This chapter employs cross-province data from Vietnam. Using path analysis to develop and test alternative hypotheses for the emergence and persistence of son preference, this chapter finds that: (1) son preference, as measured by the male-to-female sex ratio at birth, is greater among provinces in which an anti-natal policy is more rigorously enforced; and (2) this relationship between anti-natal policy and son preference is mediated by the province’s fertility and infant mortality rates. Provinces in which Vietnam’s one-or-two child policy is more rigorously enforced exhibit lower fertility and infant mortality rates and greater son preference (as evidenced by highly masculine sex ratios at birth).

These findings demonstrate that families residing in areas targeted by the strict enforcement of Vietnam’s one-or-two child policy increasingly resort to pre-natal sex selection and abortion to guarantee a son within the mandated family size. Notably, among these families, fertility is restricted and infant mortality is low. As such, the composition of one’s offspring must be determined before birth; these
parents cannot rely on the death of a female infant to make room for a son, or on having a large family to ensure the desired composition of their offspring. To guarantee at least one son within Vietnam’s one-or-two child rule, these parents resort to sex selective abortion, as evidenced by highly masculine sex ratios at birth in these provinces. The findings of this chapter suggest that regardless of how empowered girls and women may be, the enforcement of a policy that limits fertility will generate a strong bias in favor of sons. These findings and the causal mechanisms driving them will be further explored in the case studies of Vietnam, China, and South Korea in Part II.

In this chapter, I first present the theory behind the project’s causal chain. I then discuss the methodology to be used, define and measure the variables in the causal chain, and construct the project’s path diagram. After presenting the results of the path analysis, the chapter concludes by offering a discussion of its findings and of how they frame the subsequent chapters.

3.1. Theory Behind the Causal Chain

Much attention has been given to investigating factors that might reduce son preference and hasten fertility decline. These have included raising the literacy and educational levels of mothers, increasing female employment and economic autonomy, and reducing the reliance on sons’ economic support for parents in old age. Researchers, however, have largely overlooked the role of anti-natal policy in generating and sustaining son preference, in part because of the limited availability and accessibility of data. This study aims to fill this gap. In this section, I present the
theory behind the study’s causal chain, which seeks to shift the predominant approach to son preference to those factors that matter most to the status and survival of females before birth—anti-natal policy, fertility, and infant mortality.

Much of the literature on son preference has focused on the extent to which education hastens a decline in son preference. According to Croll (2000), any reference to the unequal treatment of women and/or girls in a particular society almost always turns to female education, which is represented as the panacea for not only discrimination, but for poverty eradication. Although education appears to contribute to reductions in fertility and infant mortality, much of the research today finds little or no evidence of a relationship in East Asia between increased education among women and girls and reduced son preference.\textsuperscript{119} In fact, researchers have found a linear relationship between a high number of years of schooling and a rising proportion of missing girls.\textsuperscript{120} In China’s 1990 census, the sex ratios at birth were 112.5 for mothers with some primary schooling, 114.2 for those who had completed primary school, and 116.2 for middle school graduates.\textsuperscript{121} This suggests that better educated women are more likely to use sex selective technology—a disconnection that stems partly from the perception of education in many East Asian societies, in which females are encouraged to obtain an education because it is believed to enhance their marriage prospects.\textsuperscript{122}

Although these findings should not prompt the discontinuation of programs that focus on the expansion of education for females, they do indicate that education-

\textsuperscript{119} Roces 2000; Scharping 2003.
\textsuperscript{120} Scharping 2003: 294.
\textsuperscript{121} Croll 2001: 231.
\textsuperscript{122} Croll 2000: 16.
oriented strategies do more to benefit those who are already wanted by their families, rather than to help tomorrow’s young girls. Until strategies that are designed to improve the status and treatment of females begin to focus on health- and survival-related issues, such as fertility and infant mortality, research suggests that they are likely to be limited in their effectiveness.123

Economic indicators of development have also been investigated in the literature in an effort to explain the emergence and persistence of son preference in East Asia. A number of researchers have looked to the income-related characteristics of parents and mothers, the economic value of children, the types of familial support, and the reduction of economic risk to explain son preference. The scope and approach of this research was based on prior experience in Europe, which suggested that son preference would decline with economic development. This research encouraged the expansion of female employment in an effort to enhance women’s economic independence, as well as the growth of social security and employment benefits to reduce familial risks and spread sources of support.124

Yet, more recent research demonstrates that son preference remains an observable characteristic not only among women who remain secluded in the household, but among those who actively participate in the labor force.125 The absence of a direct correlation between a rise in women’s employment and a reduction in son preference challenges the notion that gender bias declines with development.126 In fact, these changes have been met with an unexpected

123 Croll 2000; Roces 2000; Scharping 2003.
continuation or exacerbation of son preference. More recent studies reveal that extreme forms of daughter discrimination resulting in death have persisted and even increased despite improving socioeconomic and demographic trends.\(^{127}\) As such, these indicators of girls and women’s empowerment do not capture trends in son preference and therefore should not be employed in an analysis of this phenomenon.

Scholars have noted that much of the decline in fertility in East Asian can be attributed to the enforcement of anti-natal policies in the region—policies limiting the number of children a woman can bear over her lifetime. The decline in fertility in East Asia has drawn attention to the role of political interventions, in the form of state-led population policies, in effecting the region’s demographic transition. Faced with dense populations and high projected rates of population growth, several East Asian governments adopted the view that population growth would hinder economic development unless measures were taken to reduce fertility. Beginning in the 1960s, many governments opted to intervene directly by creating state-led national birth control programs. These programs advocated or insisted upon a limit to family size, and they promoted the use of contraceptive technologies by making birth control widely available and, in some cases, compulsory.\(^{128}\) These national birth control programs encouraged IUD insertion and sterilization, which made the delivery of these services better organized and more easily controlled by the government.

Despite the state’s emphasis on propaganda, education, and economic incentives for reducing family size, birth control relied—and still does—on forceful

---

\(^{127}\) Croll 2000: 11.

administrative measures.\textsuperscript{129} Authoritarian governments saw family planning as one more development activity to which to apply their talents and resources.\textsuperscript{130} In Korea in the 1960s, “the government approached the contraceptive program much like a military campaign, with detailed targets and monitoring of performance.”\textsuperscript{131} It was common, particularly in Communist countries, for official interference to extend beyond contraceptive choice to actual fertility outcome. Forced sterilizations and fines for violators were common. Yet, research notes that the potential clients of family planning programs were not likely to see the state’s actions as any more objectionable than the many other intrusions into daily life.\textsuperscript{132}

One characteristic of these programs is that they have relied on abortion, particularly in the failure or absence of contraception. Even Croll (2000) admits that once the one-child policy was widely implemented in China, parents could no longer bear children until they had their desired number of sons; rather, they increasingly traded daughters for sons via sex-selective abortion.\textsuperscript{133} Although many countries have implemented policies forbidding the use of these technologies, namely ultrasound B machines, for sex identification, their use for this purpose is difficult to police. Furthermore, the lack of funding for local health services in countries such as China has encouraged this misuse because fees levied for sex identification—among the most profitable of services—can be used to finance an otherwise underfunded system.\textsuperscript{134}

\begin{flushleft}
\textsuperscript{129} Scharping 2003: 80. \\
\textsuperscript{130} McNicoll 2006: 10. \\
\textsuperscript{131} Mason et al. 1980: 390. \\
\textsuperscript{132} McNicoll 2006: 10. \\
\textsuperscript{133} Croll 2000: 36. \\
\textsuperscript{134} Croll 2000: 36. 
\end{flushleft}
According to Miller (2001), modernization is closely linked with lowered fertility rates and higher use of sex selective abortion.\(^{135}\) It is important to note, however, that these patterns of discrimination are not contingent on the availability of new technologies; rather, the use of ultrasound technology for sex-selective abortion is a means, rather than a cause, of discrimination.\(^{136}\) Yet, given the widespread use of these technologies combined with anti-natal policies, daughters are increasingly at risk. This implies that even though women may be educated and participate in the labor force, daughters still cannot substitute for sons. These trends have given rise to a new trade-off between sons and daughters, as opposed to one between size and composition, as it was in the past.\(^{137}\)

Although the relationship between anti-natal policy and son preference surfaces in the literature, in most instances it is mentioned only in passing. Sen (1990), for example, brings up China’s one-child policy in an effort to explain why the relative survival prospects of females deteriorated in the wake of the country’s 1979 market reforms. He notes how the survival prospects of female children clearly have been unfavorably affected by China’s compulsory measures to control the size of the family.\(^{138}\) Croll (2001), too, mentions the role of anti-natal policy in her work. She finds that “the most observable rise [in the sex ratios at birth in China and Korea] was in second-order births because of the one- and two-child policies.”\(^{139}\) Yet, neither scholar offers any further discussion of this relationship or conducts any additional research into these trends.

---

\(^{135}\) Miller 2001: 1087.

\(^{136}\) Croll 2000: 16.

\(^{137}\) Croll 2000: 16.

\(^{138}\) Sen 1990.

\(^{139}\) Croll 2001: 229.
Despite the apparent influence of anti-natal policies on health and survival, most scholars have overlooked the role of anti-natal policy in the development of son preference. One reason is that much of the research on son preference to date has found inconclusive evidence for predicting sex ratios at birth from social, economic, or political characteristics.\textsuperscript{140} When research has specifically examined the link between policy and son preference, scholars have refuted it because of the seemingly irregular nature of the relationship, especially at the provincial level.\textsuperscript{141} After Scharping (2003) examined provincial-level data in China, for example, he found that the different kinds of policies for having a second child did not function as an underlying cause of the resulting sex ratios at birth.\textsuperscript{142}

Yet, anti-natal policy may be causally connected to son preference, particularly through its influence on fertility. Rapid fertility decline, coupled with low mortality, has the tendency to exacerbate son preference when met with anti-natal policies. In China, the one-child policy “reinforced anew the age-old secondary status of daughters…as the sex of the single child became a very important issue.”\textsuperscript{143} As such, this project treats anti-natal policy as the primary independent variable in a pathway linking it to the project’s outcome of interest—son preference.

3.2. Hypotheses of the Causal Chain

The literature suggests that the introduction of stringent birth control policies in East Asia exacerbated the differential value attached to males and females. In

\begin{flushleft}
\textsuperscript{140} Scharping 2003: 294. \\
\textsuperscript{141} Scharping 2003: 294. \\
\textsuperscript{142} Scharping 2003: 294. \\
\textsuperscript{143} Croll 2000: 22. 
\end{flushleft}
China, for example, one of the most immediate and public consequences of the one-child policy was the increase in violence against daughters and mothers.\textsuperscript{144} According to Sen (1999), “the acceptability of coercion in matters of family decisions raises very deep questions about the status and significance of reproductive rights.”\textsuperscript{145}

In a country with a strong preference for male children, a policy that restricts family size can be particularly detrimental for girls.\textsuperscript{146} Even in countries where coercion is not part of official policy, the government’s insistence on meeting family planning targets often results in a variety of pressure tactics that come close to force, including verbal threats, making sterilization a condition of eligibility for anti-poverty programs and certain kinds of health care services, and denying maternity benefits to mothers with more than two children.\textsuperscript{147} Some scholars who have studied patterns of birth and survival in China note that the country’s high sex ratios at birth tend to correspond to those years when the government more stringently enforced the one-child policy.\textsuperscript{148} Some researchers have even gone so far as to assert “a strong connection between sex ratio and birth control policy.”\textsuperscript{149} This gives us the following hypothesis:

**H\textsubscript{3}: The enforcement of an anti-natal policy will increase son preference.**

Although the role of anti-natal policy in generating preference has been advanced by some scholars as an explanation for the number of missing girls, others note how “the link to anti-natal policies remains a sensitive issue.”\textsuperscript{150} Many scholars

\textsuperscript{144} Croll 2000: 165.
\textsuperscript{145} Sen 1999: 211.
\textsuperscript{146} Sen 1999: 220.
\textsuperscript{147} Sen 1999: 223.
\textsuperscript{148} Edwards 2000; Scharping 2003.
\textsuperscript{149} Scharping 2003: 291.
\textsuperscript{150} Scharping 2003: 288.
have found inconclusive evidence for predicting sex ratios at birth from social, 
economic, or political characteristics, such as fertility or differences in birth control 
policies.¹⁵¹ Yet, from this literature emerges the possibility of an indirect relationship 
between anti-natal policy and son preference.

The decline in fertility in East Asia has drawn attention to the role of political 
interventions, in the form of state-led population policies, in effecting the region’s 
demographic transition. In these countries, policies that limited family size were 
enacted during periods of high but stable fertility rates. Following their 
implementation, countries experienced significant declines in fertility and infant 
mortality. Contrary to earlier theories promoted by scholars such as Amartya Sen, this 
decline in fertility and infant mortality has been accompanied by a continuation or 
worsening of son preference.¹⁵² In these Asian societies, the impetus for the decline 
appears to have been coercion, not choice. The greater economic independence and 
empowerment of females may not have followed from this demographic change 
because the government required—rather than women desired—fewer children. In the 
absence of choice, daughter discrimination, particularly before birth, may have 
worsened. This gives us the following hypothesis:

\[ H_4: \text{The enforcement of an anti-natal policy will increase son preference indirectly} \]
\[ \text{through the intervening variables of fertility and infant mortality.} \]

This part of the project examines the role of anti-natal policy in the 
development of a strong bias in favor of sons. It demonstrates through the use of path 
analysis that scholars may have rejected the role of policy too readily in their 
research.

¹⁵² Banister 2004; Burgess and Zhuang 2002; Croll 2001; Das Gupta 2009; Hesketh and Xing 2006.
3.3. Methods

**Data:** This analysis draws on data from Vietnam’s 63 provinces in 2009. Data for the independent and dependent variables comes from Vietnam’s 2009 Population and Housing Census, which is conducted once every ten years by the General Statistics Office of Vietnam. This is the fourth population census and third housing census implemented in Vietnam since reunification, and the third census for which the United Nations Population Fund (UNFPA) provided technical and financial assistance. The census sample survey size was 15 percent of the country’s total population. Verification and post-enumeration were used to ensure the accuracy of the census results. In addition, 95% confidence intervals were used for estimating several indicators, including the sex ratio at birth. The national sex ratio at birth, for example, was determined to lie in the interval from 109.5 to 111.6 males per 100 females. As such, the data from the 2009 census is considered to be of good quality.

**Variables:** The project’s causal chain treats anti-natal policy as the primary independent variable in a pathway that links fertility and mortality to the project’s outcome of interest—son preference. The following variables are used in this analysis:

*Policy.* The variable policy captures the degree of enforcement of an anti-natal policy—policies that restrict the number of children a woman can bear over her lifetime. Scholars agree that the introduction and rigorous enforcement of birth control policies in East Asia exacerbated the differential value attached to sons and daughters. Prior to the introduction of anti-natal policies, birth control had not been considered a viable option until after the birth of a son. Following the implementation
and enforcement of these policies, though, the restrictions on family size magnified
son preference to such an extent that it was common for parents to perceive the birth
of a daughter as a lost opportunity for a son.\(^{153}\) Consequently, parents increasingly
traded daughters for sons via sex selection.\(^{154}\) These trends suggest that in the absence
of choice, daughter discrimination—particularly before birth—may worsen.

In this analysis, the variable *policy* represents the degree of enforcement of an
anti-natal policy. Due to limitations in the availability and accessibility of data
capturing the enforcement of anti-natal policy, this analysis employs a proxy for
enforcement—the percentage of the population having three or more children. This
measure captures the percentage of the population in each of Vietnam’s provinces
violating the one-or-two child rule, which reflects the degree of enforcement of the
country’s population policy.

**Fertility.** East Asia’s rapid fertility decline that began in the mid-twentieth
century demonstrates the importance of political interventions, in the form of state-led
population policies, in hastening demographic change. The literature suggests that,
contrary to earlier theories promoted by scholars such as Amartya Sen, fertility
decline does not necessarily lead to a reduction in son preference. In fact, fertility
decline has been accompanied by a continuation or worsening of son preference.\(^{155}\)
These patterns suggest that policy and fertility may be causally linked to the male-to-
female sex ratio at birth.

This analysis measures *fertility* using the total fertility rate, which captures the
number of children that would be born to a woman if she were to live to the end of

\(^{153}\) Croll 2000: 77.
\(^{154}\) Croll 2000: 36.
\(^{155}\) Banister 2004; Burgess and Zhuang 2002; Croll 2001; Das Gupta 2009; Hesketh and Xing 2006.
her childbearing years and bear children in accordance with current age-specific fertility rates.\textsuperscript{156} Research has found that about five years after a country’s infant mortality rate declines to 50 or below, families begin spacing out their births. The fertility rate then drops as families realize that they no longer need to have so many children to ensure that they will be supported in old age.\textsuperscript{157} In other countries, however, declines in the total fertility rate are the result of coercion—not choice. In many East Asian countries, fertility decline was driven by the enforcement of antinatal policies. As such, this analysis treats fertility as the consequence of policy.

\textit{Infant Mortality}. Scholars such as Croll (2000) have noted that it has been very difficult to broaden the development agenda to include subjects other than girls’ education, namely survival. Furthermore, Sen (1999) wrote that, “demands for a one-child family can lead to the neglect—or worse—of infants, thereby increasing the infant mortality rate.”\textsuperscript{158} As such, it is important to test these claims by including a measure of survival in the study’s path analysis. This study employs the infant mortality rate, which measures the number of deaths per one thousand live births among children under the age of one year old.\textsuperscript{159} The infant mortality rate is one of the most widely accepted indicators of society-wide hunger.\textsuperscript{160} It has also been proven to be a reliable indicator not only of the health of infants but also of such phenomena as nutrition quality, the health of children and mothers, medical

\begin{itemize}
\item \textsuperscript{156} World Bank 2010.
\item \textsuperscript{157} Zweifel and Navia 2000: 103.
\item \textsuperscript{158} Sen 1999: 220.
\item \textsuperscript{159} It is important to note that infant mortality (IMR) was selected over other measures, such as female life expectancy, because in countries with inadequate vital registration, life expectancy figures are commonly derived from IMR using life tables. Life expectancy also shows a high degree of multicollinearity with IMR, which is an important component of life expectancy. Low multicollinearity is necessary for conducting this type of analysis.
\item \textsuperscript{160} Zweifel and Navia 2000: 102.
\end{itemize}
conditions, sanitary conditions within households, and the social status and rights of women and girls.\textsuperscript{161} Research indicates that social improvements resulting in a reduction of infant deaths simultaneously reduce child and adult deaths, as well.\textsuperscript{162}

**Methodology:** This part of the quantitative analysis examines the causal mechanisms contributing to the emergence and persistence of son preference. As Croll (2000) writes, “having advocated the benefits for the qualitative approach to development over many decades, I now find myself in the unexpected position of emphasizing the importance of a quantitative approach to provide a context for ethnographic observations.”\textsuperscript{163} Many scholars concede that statistical data is often most convincing in persuading decision-makers where it is important and necessary to allocate resources. As such, this project takes a quantitative approach to constructing and analyzing the causal mechanisms leading to son preference.

This part of the analysis employs the technique of path analysis to test for the direct and indirect effects of the enforcement of an anti-natal policy on the dependent variable of son preference using AMOS in the statistical software package SPSS. Path analysis is a variation of multiple regression analysis. It consists of a family of models that depicts the influence of a set of variables on one another.\textsuperscript{164} Path analysis provides estimates of the magnitude and significance of hypothesized causal connections among sets of variables displayed through the use of path diagrams.\textsuperscript{165} It also presents the statement of an explicit theory about relationships between

\textsuperscript{161} Zweifel and Navia 2000: 103.  
\textsuperscript{162} Zweifel and Navia 2000: 103.  
\textsuperscript{163} Croll 2000: 184.  
\textsuperscript{164} Stage et al. 2004: 5.  
\textsuperscript{165} Stage et al. 2004: 5.
variables, rather than simply testing a set of data for any linear relationship.\textsuperscript{166} Because it allows for the examination of the causal processes underlying the observed relationship, as well as for the estimation of the relative importance of alternative paths of influence, path analysis is considered to be superior to multiple regression analysis.\textsuperscript{167} Yet, it is important to remember that path analysis “is not a means to accurately demonstrate causality between variables. It is a method for tracing the implications of a set of causal assumptions that the researcher is willing to impose on a system of relationships.”\textsuperscript{168}

Figure 3.1 illustrates the many pathways connecting the endogenous and exogenous variables, or, more precisely, the direct and indirect paths of each variable on the primary outcome of interest—son preference.\textsuperscript{169} One advantage of using cross-province data in this analysis is that it allows the study to hold constant other factors that may influence son preference, such as regime type.

\textit{Figure 3.1: Path Diagram Linking Anti-Natal Policy to Son Preference}

\textsuperscript{166} Olobatuyi 2006: 11.  
\textsuperscript{167} Olobatuyi 2006: 11.  
\textsuperscript{168} Stage et al. 2004: 7.  
\textsuperscript{169} In a path analysis diagram, a single-headed arrow points from cause to effect. The independent variables are called exogenous variables. The dependent variables are called endogenous variables. A path coefficient indicates the direct effect of one variable on another variable. There are two types of path coefficients: standardized and unstandardized. Standardized path coefficients (also called \textit{beta coefficients}) are estimated from correlations. Standardized coefficients, which are sample specific, allow for comparisons among the relative importance of different variables tested.
Taken together, this causal chain is used to assess the extent to which the enforcement of an anti-natal policy influences son preference. The approach taken in this chapter, combined with the preceding chapter’s examination of girls and women’s empowerment, better captures the range of factors that may account for the disequilibrium in the proportion of male to female births seen in certain regions and societies.

3.4. Results and Discussion

This part of the analysis examines the causal mechanisms linking patterns of fertility and survival to son preference at the provincial level in Vietnam. Regression coefficients were estimated for each endogenous (dependent) variable in the path diagram in relation to other exogenous (independent) variables. One benefit of using the technique of path analysis is that it allows for the direct and indirect effects of variables in the path diagram to be estimated simultaneously with several independent and dependent variables. A direct effect occurs when an independent variable affects a dependent variable. An indirect effect occurs when an independent variable affects a dependent variable through a mediating variable.

Figure 3.2 presents the results of the analysis.\textsuperscript{170} Only those pathways that are statistically significant are shown. The standardized path coefficients (\textit{beta}

\textsuperscript{170} Because there are as many parameter estimates as unique elements in the covariance matrix (degrees of freedom=0 and chi-square=0), this analysis is testing a saturated model. Although this is common with observed variable path models, a saturated model does not allow us test for goodness-of-fit (i.e., how well the model fits the information from the correlation matrices). However, because we are most interested in determining the associations between the variables in the model, examining the coefficient of determination (\(R^2\)) is a better way of assessing fit in this case because it will provide an idea of how much of the variability in the dependent variable is explained by the model. As such, I report the \(R^2\) in addition to the standardized direct, indirect, and total effects (beta coefficients).
coefficients) depicted in Figure 3.2 represent the model estimated direct effects. Larger values indicate stronger direct effects. The sign of the coefficient represents the direction of the relationship between the two variables. If the sign is negative, it indicates that if the independent variable in the relationship goes up by one unit, the dependent variable will decline by a unit equal to its beta coefficient.

Figure 3.2: Results for the Path Diagram

```
<table>
<thead>
<tr>
<th>Policy</th>
<th>Fertility</th>
<th>Infant Mortality</th>
<th>Son Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.86</td>
<td>0.33</td>
<td>-0.35</td>
</tr>
<tr>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R² = 0.744</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R² = 0.648</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R² = 0.165</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

The causal chain is used to assess: (1) the extent to which the enforcement of an anti-natal policy influences patterns of birth and survival in Vietnam, and (2) the extent to which these patterns correlate with changes in the degree of son preference in Vietnam. As Figure 3.2 and Table 3.1 illustrate, the study’s path analysis produced statistically significant direct effects for policy on fertility (p=0.0001), policy on infant mortality (p=0.002), fertility on infant mortality (p=0.034), and infant mortality on the sex ratio at birth (p=0.087). In other words, the results show that at the provincial level in Vietnam, when the proportion of the population violating the one-or-two child policy increases by one percent (reflecting less stringent enforcement of the anti-natal policy), the fertility rate increases by 0.86 and the infant mortality rate increases by 0.50. The results also show that when the fertility rate goes up by one,
the infant mortality rate increases by 0.33. Furthermore, the results show that when the infant mortality rate increases by one, son preference (as measured by the male-to-female sex ratio at birth) decreases by 0.35. These findings, which go against the prevailing literature, will be discussed momentarily.

The R-square value for each of the endogenous variables in the path diagram indicates that roughly 74 percent of the variance in fertility can be explained by anti-natal policy, and about 65 percent of the variance in infant mortality can be explained by both policy and fertility. About 17 percent of the variance in son preference can be explained by fertility, infant mortality, and policy. Yet, because the direct effect of anti-natal policy on son preference is not statistically significant (p=0.325), the analysis of direct effects does not support Hypothesis 3 that the enforcement of an anti-natal policy will increase son preference. In other words, the analysis finds that the degree of enforcement of an anti-natal policy cannot directly predict the degree of son preference (as measured by the male-to-female sex ratio at birth).

Table 3.1: Standardized Direct Effects

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(SE)</td>
</tr>
<tr>
<td>Fertility ← Policy</td>
<td>0.863***</td>
</tr>
<tr>
<td></td>
<td>(.003)</td>
</tr>
<tr>
<td>IMR ← Policy</td>
<td>0.504***</td>
</tr>
<tr>
<td></td>
<td>(.007)</td>
</tr>
<tr>
<td>IMR ← Fertility</td>
<td>0.329**</td>
</tr>
<tr>
<td></td>
<td>(.155)</td>
</tr>
<tr>
<td>SRB ← Fertility</td>
<td>0.211</td>
</tr>
<tr>
<td></td>
<td>(2.95)</td>
</tr>
<tr>
<td>SRB ← IMR</td>
<td>-0.348*</td>
</tr>
<tr>
<td></td>
<td>(2.37)</td>
</tr>
<tr>
<td>SRB ← Policy</td>
<td>-0.254</td>
</tr>
<tr>
<td></td>
<td>(.148)</td>
</tr>
</tbody>
</table>

Key: IMR=Infant Mortality Rate; SRB=Sex Ratio at Birth. Significance: *p<0.1, **p<0.05, ***p<0.01. Universe: 63 provinces in Vietnam in 2009. Natural log transformation applied to infant mortality.
A direct effect that is not statistically significant indicates that the effect of the main independent variable on the main dependent variable is too small to be significant after accounting for the indirect effect. As such, the analysis finds that the indirect effect of anti-natal policy on son preference is statistically significant. The indirect pathway in Figure 3.2 shows how policy indirectly affects son preference through the intervening variables of fertility and infant mortality. As Table 3.2 illustrates, the indirect effect of policy on son preference produced a beta coefficient of -.092. In other words, as the proportion of women violating Vietnam’s one-or-two child policy increases by one percent (indicating less stringent enforcement of the anti-natal policy), the sex ratio at birth declines by .092. These findings suggest that the stricter enforcement of an anti-natal policy generates a stronger bias in favor of sons. The results of this analysis support Hypothesis 4 that the enforcement of an anti-natal policy will increase son preference indirectly through the intervening variables of fertility and infant mortality. Table 3.3 presents the path diagram’s standardized total effects, which accounts for the direct and indirect effects of each exogenous variable on each endogenous variable.

<table>
<thead>
<tr>
<th>Table 3.2: Standardized Indirect Effects (Beta Coefficients)</th>
<th>Table 3.3: Standardized Total Effects (Beta Coefficients)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Policy</td>
</tr>
<tr>
<td>Fertility</td>
<td>.000</td>
</tr>
<tr>
<td>IMR</td>
<td>.284</td>
</tr>
<tr>
<td>SRB</td>
<td>-.092</td>
</tr>
<tr>
<td></td>
<td>Policy</td>
</tr>
<tr>
<td>Fertility</td>
<td>.863</td>
</tr>
<tr>
<td>IMR</td>
<td>.787</td>
</tr>
<tr>
<td>SRB</td>
<td>-.346</td>
</tr>
</tbody>
</table>

Overall, this analysis produces several surprising findings. First, the results show that at the provincial level in Vietnam, when the proportion of the population violating the one-or-two child policy increases (reflecting less stringent enforcement of the anti-natal policy), the fertility rate increases and the infant mortality rate increases. Although the direct relationship between policy and fertility is not surprising (as previously discussed, the stricter enforcement of a policy limiting fertility should be associated with a lower fertility rate), the relationship between policy and infant mortality challenges the hypotheses of many scholars, including Sen and Croll, who posited that restrictions on family size would lead to higher infant mortality—not lower. Yet, given the analysis’s finding of a relationship between higher infant mortality and lower son preference—which, too, challenges the assumptions of Sen and Croll, among other scholars—these results indicate that parents may be substituting pre-natal for post-natal discrimination (i.e., resorting to pre-natal sex selection instead of post-natal neglect of female infants). This potential substitution effect is discussed in Chapter 7.

Secondly, by employing new techniques and new data, this project uncovers evidence of a relationship between the enforcement of an anti-natal policy and increased son preference—an important finding that provides support for a dimension of the phenomenon that is largely missing in the literature. Although the relationship is not direct (in other words, the enforcement of an anti-natal policy cannot directly predict the sex ratio at birth), the finding of an indirect relationship (one that works through the intervening variables of fertility and infant mortality) demonstrates that

171 Croll 2001; Sen 1999.
172 Croll 2001; Sen 1999.
anti-natal policy is, in fact, a relevant and important explanatory factor in the development of a strong bias in favor of sons. The findings of this chapter, as Part II aims to demonstrate, apply to other countries besides Vietnam that are confronting widespread pre-natal son preference. It appears from this analysis that an all too often overlooked dimension of son preference is an important factor in driving it.

This analysis has a number of limitations, notably that the variable *policy* captures the proportion of women in each province having three or more children, which is used as a proxy for measuring the degree of enforcement of Vietnam’s one-or-two child policy. As such, this variable may not fully describe the relationship between the enforcement of an anti-natal policy and son preference. Secondly, the path diagram only captures one small piece of a complex causal relationship, as evidenced by the fact that it accounts for 17 percent of the variance on the dependent variable (son preference). This simplification of the causal chain for quantitative purposes leaves open the possibility that anti-natal policy operates in other ways—if at all—to influence son preference. Thirdly, the absence of sufficient panel data for the dependent and independent variables prevented this analysis from testing the relationship between policy and son preference over time. As such, this analysis only captures relationships for the levels reached, rather than for the progress achieved, which leaves open the possibility that anti-natal policy does not influence son preference over time. The case studies in Part II address these shortcomings of the quantitative analysis.
3.5. Conclusion

The goal of this chapter has been to refocus the scope and approach of the prevailing literature on son preference to those factors that matter most to the status and treatment of females before birth: anti-natal policy, fertility, and infant mortality. This chapter employed the technique of path analysis to develop and test hypotheses for the role of anti-natal policy in the development of a strong bias in favor of sons. Several surprising findings emerge from this chapter’s analysis of cross-province data from Vietnam: (1) son preference, as measured by the male-to-female sex ratio at birth, is greater among provinces in which an anti-natal policy is more rigorously enforced; and (2) this relationship between anti-natal policy and son preference is mediated by the province’s fertility and infant mortality rates. Provinces in which Vietnam’s one-or-two child policy is more rigorously enforced exhibit lower fertility and infant mortality rates and greater son preference (as evidenced by highly masculine sex ratios at birth).

These findings demonstrate that families residing in areas targeted by the strict enforcement of Vietnam’s one-or-two child policy increasingly resort to pre-natal sex selection and abortion to guarantee a son within the mandated family size. Notably, among these families, fertility is restricted and infant mortality is low (when parents have fewer children, greater resources can be devoted to each child, which increases the survival rate of children). The reduction in fertility and infant mortality in an environment of limited family size, however, inhibits parents from bearing children until they produce their desired family composition—which usually includes at least one son. As such, the composition of one’s offspring must be determined
before birth. The widespread use of sex selective abortion among families residing in areas targeted by the anti-natal policy is evidenced by highly masculine sex ratios at birth in these provinces.

The findings of this chapter suggest that regardless of how empowered girls and women may be, the enforcement of a policy that limits fertility will generate a strong bias in favor of sons. As such, this chapter advances the hypothesis that anti-natal policy is an important explanatory factor in development of a strong bias in favor of sons. These findings and the causal mechanisms driving them are further explored in the case studies of Vietnam, China, and South Korea in Part II.
The preceding two chapters drew on 2009 national and provincial-level data to test rival hypotheses for the emergence and persistence of son preference in certain regions and societies. Chapter 2 found that girls and women’s empowerment did not appear to influence son preference at the national or provincial levels in accordance with the hypothesized relationships set out by Elisabeth J. Croll and Amartya Sen. As such, Chapter 3 sought to shift the scope and approach of the prevailing literature on son preference to those factors that matter most to the status and treatment of females before birth: anti-natal policy, fertility, and mortality. Using provincial-level data from Vietnam, Chapter 3 found that provinces in which the country’s one-or-two child policy had been more rigorously enforced exhibited lower fertility and infant mortality rates and greater son preference (as evidenced by highly masculine sex ratios at birth). These findings suggest that families residing in areas targeted by the strict enforcement of Vietnam’s one-or-two child policy tend to resort to pre-natal sex selection and abortion to guarantee a son within the mandated family size. Based on the findings of Chapter 2 and Chapter 3, Part I advanced the hypothesis that anti-natal policy is an important explanatory factor in the development of son preference.

Yet, by relying on cross-sectional data, Part I neglects to consider trends in the independent and dependent variables over time, as well as patterns of birth and survival in other countries where highly masculine sex ratios at birth have emerged. Given these findings, Part II asks: in what ways and why has the degree of son preference in Vietnam, China, and South Korea changed since the mid-twentieth century, and to what extent has anti-natal policy influenced these trends?
Part II aims to: (1) examine the status and treatment of females in Vietnam, China, and South Korea before and after the implementation of anti-natal policies; (2) investigate the extent to which the findings of Part I support trends in these countries from 1960 to 2009; and (3) demonstrate how these findings support or refute the main theoretical explanations for son preference discussed in this project: women’s empowerment, girls’ empowerment, culture, and anti-natal policy.

Part II sheds light on important causal mechanisms contributing to the emergence and persistence of son preference in certain countries and not in others. What explains the development of a strong bias in favor of sons? Part II points to three core factors: (1) the introduction and stringent enforcement of an anti-natal policy; (2) the rapid reduction of fertility and infant mortality,\textsuperscript{173} which either coincided with or came on the heels of the government’s implementation of an anti-natal policy; and (3) the expansion of the private economy into areas where government services had formerly played a role, which placed greater pressure on household resources and facilitated pre-natal son preference.

Overall, the findings of Part II demonstrate the importance of political interventions, specifically state-led population policies, in generating and sustaining son preference. In each of the three case studies, evidence suggests that son preference corresponds to the degree of enforcement of the anti-natal policy, both over-time and at the provincial level, rather than to cultural factors or to the level of empowerment. These findings lend support to the hypothesis advanced in Part I.

\textsuperscript{173} In this analysis, “rapid” refers to the steepest average annual percent decline in fertility and infant mortality from 1960-2009. See Tables 4.1, 5.1, and 6.1 for data on each of the project’s cases.
Chapter 4: Vietnam in Comparative Perspective

This chapter compares national and provincial-level trends in Vietnam to the findings and conclusions reached in Part I. The preceding part found that the enforcement of an anti-natal policy better explains the development of son preference than does girls or women’s empowerment. Yet, by relying on cross-sectional data, it neglected to consider trends in the independent and dependent variables over time, as well as those features of Vietnam’s development that have influenced current patterns of birth and survival. Given the findings in Part I, this chapter asks: in what ways and why has the degree of son preference in Vietnam changed since independence in 1945, and to what extent has anti-natal policy influenced these trends?

This chapter aims to: (1) examine the status and treatment of females in Vietnam before and after the implementation of the 1988 “one-or-two” child policy; (2) examine the extent to which the findings of Part I support trends in Vietnam from 1960 to 2009; and (3) demonstrate how the findings of this chapter support or refute the main theoretical explanations for son preference discussed in this project: women’s empowerment, girls’ empowerment, culture, and anti-natal policy.

This chapter yields a few key findings. Prior to the 1990s, all evidence suggests that a strong bias in favor of sons was largely absent from Vietnam and male-to-female sex ratios at birth were relatively stable and close to natural rates. By 2009, however, Vietnam possessed a sex ratio at birth of 110.5.\textsuperscript{174} Why did this change? This chapter points to three core factors: (1) the introduction and stringent enforcement of the 1988 one-or-two child policy; (2) the subsequent decline in

\textsuperscript{174} Vietnam GSO 2009.
fertility and infant mortality; and (3) the introduction of the 1986 market reforms, which ushered in a return of household responsibility and dismantled the state-led health care system.

The emergence of a strong bias in favor of sons, this chapter finds, occurred after a period of remarkably fast fertility and infant mortality decline, which came on the heels of the 1986 doi moi market reforms and the 1988 one-or-two child policy. The return of household responsibility and the enforcement of a one-or-two child rule presented families with a dilemma: whether to invest their limited resources in raising sons versus raising daughters. Following Vietnam’s demographic transition in the 1990s, which created an environment of very low fertility and mortality (see Table 4.1), families increasingly resorted to pre-natal sex selection to guarantee a son within the one-or-two child rule. This was inadvertently facilitated by the lack of funding for local health services following the market reforms, which encouraged practitioners to offer sex selective abortions—among the easiest and most profitable of services.

Table 4.1: Patterns of Birth, Survival, and Female Empowerment in Vietnam, 1960-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Sex Ratio at Birth, males per 100 females</th>
<th>Fertility Rate, births per woman</th>
<th>Fertility Rate, mean annual % decline over previous 5 years</th>
<th>Infant Mortality Rate, per 1,000 live births</th>
<th>Infant Mortality Rate, mean annual % decline over previous 5 years</th>
<th>Mean Years of Schooling, females 15-19</th>
<th>Mean Years of Schooling, females 15+</th>
<th>Female Labor Force Participation Rate, % female population ages 15+</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>—</td>
<td>7.0</td>
<td>—</td>
<td>59.0</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1965</td>
<td>—</td>
<td>7.3</td>
<td>+1.1</td>
<td>54.0</td>
<td>1.8</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1970</td>
<td>—</td>
<td>7.0</td>
<td>0.8</td>
<td>49.0</td>
<td>1.9</td>
<td>4.6</td>
<td>2.5</td>
<td>74.2</td>
</tr>
<tr>
<td>1975</td>
<td>—</td>
<td>6.4</td>
<td>2.0</td>
<td>49.0</td>
<td>0.0</td>
<td>4.9</td>
<td>3.1</td>
<td>—</td>
</tr>
<tr>
<td>1980</td>
<td>104.2</td>
<td>5.2</td>
<td>4.1</td>
<td>44.6</td>
<td>1.9</td>
<td>5.3</td>
<td>3.6</td>
<td>74.2</td>
</tr>
<tr>
<td>1985</td>
<td>107.1</td>
<td>4.2</td>
<td>4.0</td>
<td>40.6</td>
<td>1.9</td>
<td>5.5</td>
<td>4.1</td>
<td>73.9</td>
</tr>
<tr>
<td>1990</td>
<td>106.9</td>
<td>3.7</td>
<td>2.6</td>
<td>39.1</td>
<td>0.8</td>
<td>5.9</td>
<td>4.5</td>
<td>73.7</td>
</tr>
<tr>
<td>1995</td>
<td>108</td>
<td>2.9</td>
<td>4.9</td>
<td>32.6</td>
<td>3.6</td>
<td>5.9</td>
<td>4.8</td>
<td>73.3</td>
</tr>
<tr>
<td>2000</td>
<td>107.7</td>
<td>2.3</td>
<td>4.1</td>
<td>23.6</td>
<td>6.3</td>
<td>6.6</td>
<td>5.3</td>
<td>69.5</td>
</tr>
<tr>
<td>2005</td>
<td>106</td>
<td>2.2</td>
<td>1.5</td>
<td>21.3</td>
<td>2.0</td>
<td>6.8</td>
<td>5.6</td>
<td>68.5</td>
</tr>
<tr>
<td>2009</td>
<td>110.5</td>
<td>2.1</td>
<td>1.1</td>
<td>19.5</td>
<td>2.2</td>
<td>7.3</td>
<td>6.0</td>
<td>68.2</td>
</tr>
</tbody>
</table>

This chapter finds that the development of a strong bias in favor of sons in Vietnam appears to correspond to the degree of enforcement of the one-or-two child policy, both over-time and at the provincial level, rather than to cultural factors or to the level of girls or women’s empowerment. Table 4.1 illustrates several of these trends. These findings lend support to the hypothesis advanced in Part I that the enforcement of an anti-natal policy is an important explanatory factor in the development of son preference. This chapter traces these trends beginning with Vietnam’s independence in 1945.


From the time Vietnam gained independence in 1945 to the implementation of major reforms in the late 1980s, all evidence suggests that the country was not marked by a strong bias in favor of sons. What explains these trends? This section points to: the introduction of a commune system of production, which removed individual control over household resources and gave women greater influence in the family; the formation of a state-led health system, which focused on preventive health and control of communicable diseases; and the introduction of a relatively non-coercive family planning program that focused more on encouraging smaller family size than on meeting specific fertility targets. These factors ultimately eased concerns about whether to invest family resources in raising boys versus raising girls, which curbed son preference.

Vietnam was colonized by the French until 1945. Following significant increases in taxes at the turn of the twentieth century—which were felt particularly
among those in the poorer regions of Central and Northern Vietnam where the
greatest proportion of small landowners were located—the Communist ideology of a
more equitable distribution of land began to take hold. These ideas planted the seeds
for Vietnam’s independence from French rule in 1945 and the formation of a
communist state, first in the North and later in the South following reunification in
1975.

After Vietnam’s independence from the French and its subsequent division
into two parts, a major land reform was carried out in the Northern region. Initially,
land and ownership rights were distributed to farmers, but as Communist ideology
 gained strength, the state began to collectivize the land. By the mid-1960s, 90 percent
of peasant households in the North were working on collectivized farmland. Land
institutions in the South were driven by political conflict during this period. The
reunification of North and South Vietnam in 1975 integrated two different economic
and political systems. As a result of the communist North’s victory, the capitalist
South was turned into a centrally planned state run on communist principles. A
Soviet-style socialist economy was established nationwide.

Women’s roles within the family in the North and South were transformed
after reunification as collective units replaced family-based production. Because
women’s income was perceived to be essential to the family under the commune
system of production, men no longer treated women as expendable. As wage earners,
women gained influence in the family decision-making process. The perception of
women further changed as the Vietnamese Communist Party (VCP) targeted the

175 Do and Iyer 2008: 534.
country’s patriarchal social and kinship systems—an outcome of Confucian ideals stemming from the fifteenth century—\textsuperscript{177}—that were seen as an obstacle to the building of a modern socialist society.\textsuperscript{178} Under the leadership of Ho Chi Minh, it declared that men and women were equally responsible for taking part in the construction of a new society. Women’s virtues as loyal, hardworking wives and mothers were praised, and men were criticized for resisting gender equality and their wives’ participation in public life. The Constitution of 1946 affirmed that “women have the same political, economic, social, and family rights as men. For equal work, they have the right to equal pay. The State protects the rights of women and children. The State protects marriage and the family.”\textsuperscript{179} The 1959 Law on Marriage and the Family gave women the right to choose their own marriage partners, guaranteed widows’ rights to children and property, and affirmed that housework was equivalent to productive labor.\textsuperscript{180}

Subsequent government campaigns promoted the expansion of opportunities for females, particularly in work outside of the home and in education.\textsuperscript{181} By 1979, Vietnam’s female youth literacy rate was 94 percent, compared to a male youth literacy rate of 96 percent.\textsuperscript{182} In fact, Vietnam possessed one of the highest levels of equality in the distribution of educational attainment in the developing world prior to the introduction of its 1986 market reforms.\textsuperscript{183} The escalation of war in Vietnam from 1965 to 1973 expanded employment opportunities for women and pushed them into positions of authority for the first time. Unlike many other countries that saw women

\begin{footnotesize}
\begin{enumerate}
\item[177] Ungar 2000: 293.
\item[179] Ungar 2000: 294.
\item[180] Ungar 2000: 294.
\item[182] World Bank 2010.
\item[183] Hirosato and Kitamura 2009: 141.
\end{enumerate}
\end{footnotesize}
involved in wartime mobilization, the gains made by Vietnamese women, particularly in low-level jobs, continued after the war.\footnote{Ungar 2000: 294.} As Table 4.1 illustrates, the female labor force participation rate reached 74.2 percent by 1980.\footnote{World Bank 2010.} Women made up 70 to 80 percent of agricultural labor and over 46 percent of industrial labor in state enterprises.\footnote{Ungar 2000: 296.}

Despite this progress, women tended to be confined to low paying jobs and gender inequality persisted in other areas (such as in political participation). Following reunification in 1975, greater emphasis was placed on the responsibilities of motherhood. As Trung Ma Hoa, head of the Women’s Union and central committee member of the VCP, stated at the time, “A woman’s reproductive function is still seen as a national asset.”\footnote{Ungar 2000: 302.} Nevertheless, the commune system of production did eliminate individual control over household resources, which reduced the dilemma families may have faced of choosing whether to invest their resources in raising sons versus raising daughters. Although female infanticide and neglect did occur in Vietnam during this period, in part because sons have traditionally been valued over daughters in Vietnamese society, it was quite limited. The absence of a strong bias in favor of sons is reflected in the country’s sex ratios at birth, which remained well within the natural rate of 105 to 107 through the late 1980s, and in the slightly better survival probabilities for girl infants compared to boy infants according to data from Vietnam’s 1979 and 1989 censuses.\footnote{Vietnam GSO Census from 1979 and 1989, in Goodkind 1995b: 351.}
This socialist development strategy pursued by the VCP also included the expansion of an extensive public health system that specialized in preventive health services (prevention was emphasized in traditional Vietnamese medicine\(^{189}\)) and the control of communicable diseases. Despite scarce resources, the system’s focus on community involvement and mass campaigns effectively delivered primary health care to the country’s villages. Beginning in 1945, thousands of health workers were given basic training and sent to villages to deliver babies, administer vaccinations, and promote the use of mosquito nets.\(^{190}\) In the 1960s, the government established more permanent health centers to deliver health education, maternal and infant care, and vaccinations to local communities.\(^{191}\) As Table 4.1 illustrates, these initiatives jumpstarted the country’s infant mortality (per 1,000 live births) decline, which fell from 59 in 1960 to 40.6 in 1985.\(^{192}\) They also contributed to relatively good health conditions among both men and women prior to 1986.\(^{193}\)

The health of women and children also benefitted from other campaigns, notably family planning. In an effort to reduce population growth, the government of North Vietnam developed a family planning policy in the early 1960s that encouraged families to have no more than two or three children. This policy was implemented in the south, as well, following reunification. In conjunction with efforts to improve maternal and child health and spread contraception, the policy was remarkably effective: fertility fell from 7 births per woman in 1960 to 4.2 births per woman in

\(^{189}\) Bryant 1998: 248.  
\(^{190}\) Bryant 1998: 246.  
\(^{191}\) Bryant 1998: 247.  
\(^{192}\) World Bank 2010.  
\(^{193}\) Gabriele 2006: 262.
This initiative, however, did not target fertility to the same degree as the 1988 one-or-two child policy. Parents, for example, faced few consequences if they continued to bear upwards of three children. Hence, by increasing the population’s awareness of the drawbacks of large family size, rather than coercing the population to take certain measures to limit fertility, the state made notable—but far less drastic—progress on reducing fertility. Son preference remained low during this period partly for this reason.

4.2. Vietnam’s 1986 Market Reforms and the Emergence of Son Preference

Beginning in the 1970s, Vietnam’s economy began to decline, and a series of military conflicts with China in the late 1970s resulted in a mass exodus of the ethnic Chinese who had supported South Vietnam’s economy. The country’s continued population growth and limited agricultural productivity only worsened the situation. Nearly 75 percent of Vietnamese were living in poverty in the mid-1980s. This situation prompted the government to introduce the market-conforming doi moi reforms in 1986. Despite the country’s subsequent economic boom and rapid socioeconomic development, a strong bias in favor of sons had emerged in Vietnam by the end of the twentieth century. What accounts for this change? This section points to the return to household responsibility following the 1986 market reforms, which created an environment of economic uncertainty that heightened concerns for bearing sons. The emergence of a preferential status and treatment of sons during this period may also reflect a resurgence of traditional values. However, this section finds

---

194 World Bank 2010.
that cultural explanations are insufficient for accounting for over-time trends and provincial-level patterns of son preference in Vietnam. This section also finds that female employment and education actually improved during this period of increasing son preference, which lends little support to the theories of female empowerment.

Vietnam’s leaders began to look to Communist China during the mid-1980s in an effort to jumpstart the economy and boost productivity. China had introduced a series of reforms in 1979 that opened the country to international trade and foreign direct investment, and shifted the country from a command economy to a market-driven economy. It appeared that China’s policies were producing rapid economic growth and poverty reduction. Vietnam’s leaders recognized that a planning model based on state ownership was no longer economically viable. Based on China’s experiences, they saw that sustainable growth in a market economy must derive from outward orientation, investment in the people, and macroeconomic stability; that market economies can succeed in a society under authoritarian control; that equitable growth is feasible; and that the transition to a market economy does not necessarily produce greater poverty. Vietnam’s leaders drew on the Chinese model to shape policies in almost every domain. The state’s embrace of market liberalization, which began with the 1986 doi moi reforms, opened up the economy to private domestic and foreign investment, lifted restrictions on private-sector trade and transportation, abolished the collective land system, and increased the security of land tenure, among other changes.

197 Klump 2007: 123.
The introduction of a series of land reforms and agricultural policies following the implementation of *doi moi* in 1986 largely contributed to Vietnam’s economic boom in the 1990s, as well as to its reduction in income poverty. In Vietnam, the agricultural sector accounted for between 20 percent and 46 percent of GDP during the 1985 to 2005 period (at the time of transition, it accounted for about 38 percent of GDP) and two-thirds of the workforce on average engaged in agricultural activities.\footnote{Do and Iyer 2008: 532.}

Resolution 10 of the 1988 Land Law abolished the collective land system by transferring control and cash-flow rights from the collective farms to individual households.\footnote{Do and Iyer 2008: 536.} Although land remained in the hands of the state, rights to the land were assigned to individual households for a period of 10 to 15 years, output markets were privatized, and investment decisions were decentralized and left to households.\footnote{Do and Iyer 2008: 536.} To achieve greater efficiency and productivity, the government introduced the 1993 Land Law, which increased the lease term to 20 years for annual crop land and 50 years for perennial crop land. The law also allowed land-use rights to be inherited, transferred, exchanged, leased, and mortgaged through the provision of Land Use Certificates (LUCs). Nearly 11 million certificates had been issued to rural households by 2000, making it one of the largest rural titling programs in the developing world.\footnote{Do and Iyer 2008: 532.}

The *doi moi* reforms also radically changed the country’s financial and industrial sectors by opening up the economy to private domestic and foreign investment. *Doi moi* recognized that the capitalist sector should receive the same

\footnote{Do and Iyer 2008: 532.}
legal rights as public enterprises. The number of privately registered companies in Vietnam expanded from 5,000 in 1992 to more than 40,000 by 1999. To increase private sector production and distribution, the government created a legal framework for the operation of private businesses, including those capitalized by Foreign Direct Investment (FDI). The 1987 Law on Foreign Investment enabled Vietnam to attract a large volume of capital, which played an important role in effecting the country’s rapid economic growth in the 1990s. By 1995, FDI had increased to almost a third of total annual investment. The country also shifted its trade policy to focus on export promotion, or “outward orientation,” followed by import substitution industrialization. A strong relation exists between outward-looking policies and economic growth. Export-oriented policies are generally associated with more efficient economies, with higher rates of investment, and with the more effective use of resources.

As a result of these reforms, annual growth in Gross Domestic Product (GDP) per capita averaged 4.9 percent from 1985 to 2007, and 7.2 percent from 2005 to 2007. Although Vietnam also witnessed a dramatic fall in poverty—the income poverty rate declined from 58.1 percent in 1993 to 19.5 percent in 2004—the shift from a commune system of production to a household system of production created an environment of economic uncertainty. For example, approximately 58 percent of the population in coastal districts during this period relied on “climate dependent”

---

204 Schaumburg-Muller 2005: 356.
206 Adams and Davis 1994: 12.
208 Schaumburg-Muller 2005: 358
sources of income, namely agriculture, fishing, and aquaculture, which are most vulnerable to natural disasters.\textsuperscript{210} The poor—the majority of whom were employed in these areas—tended to have little diversity in their income sources and to possess fewer reserves to absorb shocks.\textsuperscript{211} Because natural calamities occurred mainly in rural areas and because approximately 80 percent of the poor worked in agriculture, individuals in rural areas who escaped poverty ran the risk of becoming poor again.

Secondly, the “growth pole” model of development adopted by the government in the early 1990s encouraged development in only a few major urban areas. By 2005, 83 percent of FDI projects were located in two areas of Vietnam—Ho Chi Minh City and its immediate vicinity and the Hanoi-Haiphong-Quang Ninh triangle.\textsuperscript{212} The majority of the country’s poor, however, were concentrated in rural areas, where they were employed in agricultural activities. In 2004, poverty stood at 25.5 percent of households in the central coast region, compared to 5 percent of households in the region around Ho Chi Minh City.\textsuperscript{213} Most scholars recognize that urban-rural disparities widened in Vietnam following the \textit{doi moi} reforms.\textsuperscript{214}

This environment of economic uncertainty heightened families’ concerns about bearing sons.\textsuperscript{215} Despite the government’s issuance of the 1986 Marriage and Family Law, which stipulated that sons and daughters have the same rights and duties in the family, including equal rights to inherit from their parents, under these circumstances boys came to be seen as a form of economic and social security.\textsuperscript{216}

\begin{footnotesize}
\begin{enumerate}
\item Chaudhry and Ruysschaert 2007: 4.
\item Adger 1999: 253.
\item Beresford 2008: 236.
\item Chaudhry and Ruysschaert 2007: 4.
\item Kay 2002: 1081.
\item Goodkind 1995: 351.
\item Ungar 2000: 308.
\end{enumerate}
\end{footnotesize}
Vietnam’s sex ratio at birth, which had been 106.9 in 1989, rose to 107.7 by 1999 and 110.5 by 2009.\footnote{Vietnam GSO 1989, 1999, 2009.}

Although the preferential status and treatment of sons during this period may reflect a resurgence of traditional values, cultural explanations are insufficient for accounting for over-time trends and provincial-level patterns of son preference. Scholars who argue that cultural norms and practices sanction son preference tend to associate son preference with traditional customs and beliefs that structure the social organization of underdeveloped, largely agrarian societies. As such, rural life is assumed to be associated with a greater pressure to conform to traditional views on the need to bear sons, whereas urban life is assumed to reduce these pressures. In urban areas, as lineage is replaced by new opportunities to earn a living independent of one’s position in the family, through jobs acquired on the basis of one’s skills and qualifications, producing male offspring should become less of a priority.\footnote{Chung and Das Gupta 2007: 5.} Because the organization of urban life differs greatly from that of rural life, these scholars assume that industrialization and urbanization will reduce parents’ bias towards sons.

Contrary to scholars’ assumptions, however, the emergence and persistence of son preference in Vietnam occurred during a period in which the country became more urbanized. By 2009, 29.6 percent of the population lived in urban areas, compared to 19.4 percent in 1989.\footnote{Vietnam GSO 2009.} This chapter also finds evidence of extremely high son preference in some large cities in Vietnam. In 2009, the sex ratio at birth was 113.2 in Hanoi, the country’s capital, and 112.3 in Ho Chi Minh City, Vietnam’s largest city. In fact, son preference, as measured by the male-to-female sex ratio at
birth, appears to be uniformly worse in Vietnam’s urban areas than in its rural areas in 2009 (see Table A2 in the Appendix).\textsuperscript{220} If Vietnam’s sex ratios at birth tend to be higher in urban areas—where, from a cultural perspective, son preference should have been low—then some factor other than culture must be driving these changes in son preference at the provincial level. Furthermore, evidence shows that highly masculine sex ratios at birth did not emerge in Vietnam until the late 1990s—nearly a decade after the transition to a household responsibility system. The question of timing—of why highly masculine sex ratios at birth emerged when they did, and not earlier—cannot be explained by culture alone.

In addition, economic development and poverty reduction appear to have contributed to the country’s progress on female employment and education during this period. Poverty reduction is linked inextricably to policies that promote the use of a primary factor owned by the poor—their labor.\textsuperscript{221} Opening the economy to trade significantly increased employment in labor-intensive export industries, particularly employment for unskilled female workers.\textsuperscript{222} Although the female labor force participation rate declined slightly during this period, from 74.2 in 1980 to 68.2 in 2008, the male-to-female gap in labor force participation narrowed (see Table 4.1.).\textsuperscript{223} During this period, the country also began to devote a greater proportion of its resources to education, in part because of increased foreign aid for schooling. Education spending rose by 13.4 percent annually from 1993 to 2000, as did the provincial educational expenditure, which rose by 15 percent annually during this

\textsuperscript{220} Vietnam GSO 2009.
\textsuperscript{221} Heo and Doanh 2009: 955.
\textsuperscript{222} Schaumburg-Muller 2005: 359.
\textsuperscript{223} World Bank 2010.
period.\textsuperscript{224} By 2005 the ratio of girls to boys in primary and secondary education reached 98.3, and the mean years of schooling for females (15-19) reached 6.8 years, compared to 6.7 years for males.\textsuperscript{225} This apparent narrowing of the gap in gender inequality in education suggests that both females and males in the younger generation have greater access to and opportunities for schooling. During this period, however, son preference increased, despite these improvements in female employment and education. This lends little support to the theories of girls’ empowerment and women’s empowerment.

In sum, the return to household responsibility following the 1986 market reforms created an environment of economic uncertainty that heightened concerns for bearing sons. Although the preferential status and treatment of sons during this period may reflect a resurgence of traditional values, this section finds that cultural explanations are insufficient for accounting for over-time trends and provincial-level patterns of son preference in Vietnam. Indicators of female empowerment are also insufficient. For an alternative explanation, I turn to policy.

4.3. Son Preference and Vietnam’s 1988 “One-or-Two” Child Policy

In October of 1988, Vietnam’s Council of Ministers issued a draft of a new population policy aimed at slowing population growth through the promotion of a one-or-two child norm. Although anti-natal attitudes were not new to Vietnam—the state had been encouraging a two-or-three child norm in the North since the 1960s and the South since the late 1970s—this stringent policy reflected heightened

\textsuperscript{224} Fan et al. 2004: 14.
\textsuperscript{225} World Bank 2010.
concerns about the country’s population size, which had reached 67 million by this time and showed no signs of stagnating.\textsuperscript{226} Although the policy became an important instrument for demographic change, as indicated by the country’s remarkably fast decline in fertility and infant mortality, this chapter finds that a strong bias in favor of sons emerged in Vietnam during this period. It appears that in this environment of low fertility and low mortality, families increasingly resorted to pre-natal sex selection and abortion to guarantee a son within the one-or-two child rule. Although the return to household responsibility heightened concerns for bearing sons, it was not until the introduction of the 1988 anti-natal policy and the rapid decline in fertility and mortality during the 1990s that these concerns were born out. The 1988 policy appears to have played an important role in the emergence of son preference during the 1990s, as well as in its over-time trends and provincial-level variation.

The one-or-two child policy came some nine years after China introduced its harsher one-child policy, but was better suited to Vietnam’s scarce resources and institutional weaknesses.\textsuperscript{227} The primary goals of the policy were to maintain population growth at 2 percent and to reduce it to 1.7 percent by 1990. The policy specifically targeted cadres, soldiers, and manual and civil servants, as well as families who lived in a municipality, a city, or an industrial zone. Families living in the Mekong River Delta, the Red River Delta, and the lowlands of the central coastal provinces or the midlands were also targeted. Ethnic minorities, however, were allowed to have three children.\textsuperscript{228}

\textsuperscript{226} Council of Ministers 1989: 169.
\textsuperscript{227} Goodkind 1995a: 89.
\textsuperscript{228} Council of Ministers 1989: 170.
The birth-planning program that accompanied the one-or-two child policy included specific guidelines, such as minimum childbearing ages of government cadres (22 years for women and 24 years for men), as well as for the rest of the population (19 years for women and 21 years for men).\textsuperscript{229} The second child, if desired, had to be spaced at least 3 to 5 years after the first. Free contraceptive and abortion services were to be provided under the program, which also allowed for the sale of these services through private markets. The program also encouraged sterilization through cash incentives. Other incentives for keeping to the two-child limit included tax exemptions, access to low-interest loans, and exemptions from public labor.\textsuperscript{230} Posters and billboards depicted family planning as contributing to “family happiness,” and television programs providing information and promoting a two-child norm were shown several times a week on Vietnam’s television stations.\textsuperscript{231} In addition, local family planning cadres made repeated home visits to persuade women of the social and economic benefits of small family size.\textsuperscript{232}

Families in violation of the rule faced penalties ranging from salary deductions to expulsion, although it varied at the provincial and organizational level. Evidence suggests that government cadres who worked for state enterprises were subjected to harsh controls, which included receiving two tickets from their work unit at the time of marriage that “specified the appropriate window of time during which childbearing may take place and outlining the penalties that may accrue to

\textsuperscript{229} Council of Ministers 1989: 170.  
\textsuperscript{230} Gammeltoft 1999: 12.  
\textsuperscript{231} Goodkind 1995a: 85.  
\textsuperscript{232} Gammeltoft 1999: 12.
Vietnam’s strategies for encouraging a small family norm were often reminiscent of those used in China. Although the government revised the population policy in 2003 to ease restrictions on fertility, the one-or-two rule was quickly reinstated. Like most countries, the fear of uncontrolled population growth has dictated Vietnam’s policies. In fact, the resolution re-introducing the country’s population policy expressed concerns that “the surge in population would ruin what has been achieved, reduce socioeconomic development and efforts to improve the quality of the population, slow down the country’s industrialization and modernization process, and make the country further lag behind.”

Although Vietnam had experienced a gradual reduction in its fertility rate beginning in the mid-1960s, it was not until after the government implemented the one-or-two child policy that the country began experiencing the rapid fertility decline typically associated with East Asian development. Fertility in Vietnam fell from 4.2 births per woman in 1985 to 2.1 births per woman in 2009. As Table 4.1 shows, the sharpest decline in fertility during the 1960 to 2009 period actually took place from 1990 to 1995, during which it experienced an average decline of 4.9 percent annually.

The decline of the total fertility rate can be partly attributed to rising rates of

---

234 The government revised the one-or-two child policy in 2003 in an effort to align its policies with a declaration issued at the 1994 Cairo conference on population and development. Rather than enforcing a one-or-two child norm, the government encouraged a “small-family” norm. Party members and government officials were still required to conform to the one-or-two child rule, however. The change was very controversial, and the slight increase in the nation’s fertility rate that followed the policy’s liberalization did not help. According to Pham et al., “the rise in fertility provided the necessary evidence for political stakeholders, who saw fertility as primarily a state concern, as opposed to an individual one” (2008, p. 178). In March of 2005, the Central Executive Committee of the Vietnamese Communist Party reversed the relaxation of the population policy through Resolution 47, Further Strengthening of the Implementation of Population and Family Planning Policy, which re-introduced the former one-or-two child policy and its enforcement. A new Law on Population, superseding the 2003 Population Ordinance, was officially instituted in 2008.
235 Central Party Executive Committee 2005.
236 World Bank 2010.
contraceptive use and abortion. Abortion had been legal in Vietnam since 1954 and ultrasound technology had been widely available since the early 1990s. Contraceptive prevalence among women ages 15 to 49 increased from 20 percent in 1981 to 79.5 percent in 2008.\textsuperscript{237} Despite this increase in contraception, Vietnam’s anti-natal policy was heavily reliant on abortion in the absence or failure of contraception. This may be one explanation for Vietnam’s abortion rate, which now ranks among the highest in the world, averaging 43.7 abortions per 100 pregnancies.\textsuperscript{238}

As Table 4.1 illustrates, infant mortality per 1,000 live births also fell from 40.6 in 1985 to 19.5 in 2009.\textsuperscript{239} Following Vietnam’s impressively rapid decline in fertility, infant mortality fell by an annual average of 6.3 percent from 1995 to 2000—the biggest five-year decline in infant mortality during the 1960 to 2009 period. The government made extensive efforts in the 1990s to provide preventive health services to its citizens, and it launched a series of comprehensive national policies targeting rural infrastructure development, child malnutrition, and safe water and sanitation. These factors contributed to Vietnam’s rapid decline in infant mortality during the 1990s. Eighty percent of households now live within 5 kilometers of a health center offering maternal and child health services.\textsuperscript{240} Utilization rates of these health services have increased, as well. The number of births attended by skilled health staff rose from 77.1 percent in 1997 to 87.7 percent in 2006.\textsuperscript{241}

Although the government spent a relatively low percentage of its GDP on health (5.1

\textsuperscript{237} World Bank 2010.
\textsuperscript{238} Belanger et al. 2003: 245.
\textsuperscript{239} World Bank 2010.
\textsuperscript{240} Gabriele 2006: 265.
\textsuperscript{241} World Bank 2010.
percent, compared to 5.5 percent in China), it directed its social spending to rural areas and the poor.

The common tendency in societies characterized by a preference for sons is for fertility to increase as parents attempt to achieve their ideal family composition, which almost always includes at least one boy. Yet, in Vietnam’s low fertility and low mortality environment, evidence suggests that parents increasingly resorted to sex selection to guarantee a son within the one-or-two child rule. Vietnam’s sex ratio at birth, which had been well within the natural rate through the 1980s, increased from 106.9 in 1989 to about 107.7 in 1999. By 2009, it had reached 110.5. Annual survey data suggests that Vietnam’s sex ratios at birth fluctuated between 104 and 108 during the 2000s, reaching a high of 108.6 in 2006. Unfortunately, the General Statistical Office (GSO) Census, which is the most representative source available for estimating the sex ratio at birth, is only conducted once every ten years. As such, it is difficult to accurately capture annual trends. Even so, it is evident from GSO Census data that Vietnam’s sex ratio at birth has become more masculine over the past two decades.

Vietnam’s dramatic decline in fertility and mortality, which occurred against the backdrop of rising sex ratios at birth, does not support the theories of girls’ empowerment or women’s empowerment. Rather, it was this fertility decline, coupled with low mortality, which exacerbated son preference when met with the one-or-two child policy. Evidence of a strong bias in favor of sons emerged in Vietnam’s 1999

---

243 These are the corrected results of the GSO/UNFPA Survey from 2006. See: UNFPA 2009a: 17.
Although Vietnam’s national level sex ratio at birth was only 107.7, slightly above the natural rate, many of its provincial level sex ratios were far higher—especially, it appears, in areas that had been targeted by the one-or-two child policy. In Ho Chi Minh City, for example, the sex ratio at birth increased from 107 in 1989 to 112.4 in 1999. Ho Chi Minh City—the largest city in Vietnam—had experienced a stricter enforcement of the one-or-two child policy. In Hanoi, the country’s capital, the sex ratio at birth increased from 105 in 1989 to 110.5 in 1999. Hanoi is located in the Red River Delta, which, too, had experienced greater enforcement of the one-or-two child policy. The location of the country’s highest sex ratio at birth belonged to Kien Giang, which possessed a sex ratio at birth of 128.7.

Kien Giang, located in the Mekong River Delta, had also been a target of the policy. Already by 1999, it appears that son preference was remarkably lower in rural areas—characterized by higher fertility and mortality and less rigorous enforcement of the anti-natal policy—than in urban areas. According to the 1999 census, the sex ratio at birth in rural areas averaged 106.9, compared to 111.5 in urban areas. In 1989, however, the sex ratio at birth was largely the same in rural and urban areas, averaging 106.9 and 107, respectively. This suggests that the degree of enforcement of the anti-natal policy may help to explain provincial-level patterns of son preference.

After publication of the 1999 data, which was based on a 5 percent sample of the population, the government “corrected” the results based on an apparent undercount of children. This had the outcome of lowering Vietnam’s sex ratios for that year. The corrected numbers shifted Vietnam’s national-level sex ratio at birth from 107.7 to 105.2. The provincial-level results shifted, as well. This discrepancy between the sample population and the enumerated results casts some doubt on the credibility of the national data. According to Belanger et al. (2003), the publication of unbalanced sex ratios can have political consequences at home and abroad; in 2003, the Vietnamese government passed a population ordinance banning sex selection of the fetus by any means, and it was suggested that the 1999 sample results prompted the initiative. Because Belanger et al. (2003) conclude that the corrected results may have resulted from political pressure, the 5 percent sample results are used in this discussion.
Differences in the enforcement of the one-or-two child policy may also account for trends in son preference by birth order. Data from Ho Chi Minh City in 1999 showed the sex ratio at birth for the first birth averaged 104.4, but for the second birth increased to 113.2.\textsuperscript{245} Similarly, in Hanoi in 2001, the sex ratio at birth remained within the natural rate for the first birth and increased to 121.8 for the second birth.\textsuperscript{246} The observable rise in son preference in second-order births in Vietnam may be due to the one-or-two child policy. If the first birth is a daughter, then families face limited opportunities for bearing a son and are more likely to resort to sex selection.

It also appears that the one-or-two child policy may be an important factor in explaining national and provincial level differences in Vietnam’s 2009 sex ratios at birth (see Table A2 in the Appendix). In regions where the one-or-two child policy has been more strictly enforced, sex ratios at birth are higher. According to Vietnam’s 2009 census, the sex ratio at birth in the Red River Delta averaged 115.3 and in the Mekong River Delta it averaged 109.9. The country’s highest provincial-level sex ratio at birth—130.7—was found in Hung Yen, which is located in the Red River Delta, where the policy has been more rigorously enforced.

In urban areas where government control is tighter and where the one-or-two child policy has tended to be more strictly enforced, sex ratios at birth are higher. For example, Ca Mau, in the Mekong River Delta, had a sex ratio at birth of 112.7 in 2009. Yet, disaggregating this figure by the province’s urban and rural areas reveals an important pattern: Ca Mau’s sex ratio at birth averaged 110.5 in rural areas and 121.4 in urban areas. As Table A2 in the Appendix shows, the majority of provinces

\textsuperscript{245} Belanger et al 2003: 240.
\textsuperscript{246} Belanger et al 2003: 240.
in 2009 displayed similar urban-rural gaps in the sex ratio at birth. Furthermore, in regions predominantly populated by ethnic minorities (for whom the one-or-two child policy has been less rigorously enforced), sex ratios at birth fall within the natural rate. In the Central Highlands, for example, the sex ratio at birth in 2009 averaged 105.6. Overall, anti-natal policy appears to have played an important role in the emergence and persistence of son preference in Vietnam, which lends support to the findings in Part I.


Vietnam’s high sex ratios at birth are ultimately the reflection of human intervention. The government introduced in the late 1980s and 1990s a number of market-oriented health system reforms that aligned better with the free market policies initiated by doi moi. The decline in agricultural collectives caused severe financing problems for the government that made it impossible to maintain the existing, free health care system. As such, the government legalized private medical practice, deregulated the pharmaceutical market, implemented user fees in health centers and public hospitals, and initiated both state-funded and voluntary health insurance programs.\(^{247}\) The lack of state funding for local health services, however, inadvertently facilitated pre-natal son preference by encouraging practitioners to offer sex selection and abortion services, which are among the easiest and most lucrative sources of funding.\(^{248}\) In this low fertility and low mortality environment, in which an

---

\(^{247}\) Gabriele 2006: 265.
\(^{248}\) Croll 2000: 170.
anti-natal policy was strictly enforced, it appears that families increasingly resorted to pre-natal sex selection and abortion to guarantee a son within the two-child rule.

Prior to the doi moi market reforms, the state had essentially paid for all health care. However, between 1986 and 1990, the health budget could only pay for 40 percent of the most basic requirements. As such, the state passed legislation in 1989 that enabled public health clinics to charge fees and allowed for the privatization of clinics and pharmacies. Some provinces decided against charging fees, whereas others allowed for it. The fees were intended to support staff and supplies, although they were not sufficient to support new equipment or buildings. The state also encouraged medical staff to leave the state sector to reduce state spending on salaries. Although total health care spending as a percentage of GDP rose to 5.1 percent in 2001, the health system has remained severely underfunded.

The shortfalls in local health service funding, and the need for medical personnel, hospitals, and clinics to be self-supporting, encouraged practitioners to offer ultrasound for sex identification—among the easiest and most profitable of services—to finance an otherwise underfunded system. Vietnam’s success at lowering fertility in a culture with a high demand for sons was largely achieved through the use of pre-natal sex identification and abortion. Since 1991, ultrasound services have been provided as part of Vietnam’s reproductive health program (for the purpose of detecting fetal anomalies) and have been available and accessible in both urban and rural areas. The services cost between 40,000 and 50,000 VND

---

251 Schettino and Gabriele 2008: 33.
252 Croll 2000: 170.
(US$2.50 to $3.50), which the majority of women can afford.\textsuperscript{253} Evidence suggests that utilization of these services is high—an average of 6.6 scans during each pregnancy was reported in Hanoi during the mid-2000s, which women reportedly said was to ensure “that the baby is ok.”\textsuperscript{254} According to the \textit{2006 Population Change Survey}, 86 percent of urban women and 63 percent of rural women are aware of the sex of their baby before delivery, with 94 percent of urban women and 92 percent of rural women having obtained this information through ultrasound.\textsuperscript{255}

Abortion is legal in Vietnam and it is provided as part of the country’s reproductive health program. It is currently accessible free of charge in the public health services and at a cost of between 120,000 and 150,000 VND (US$8.00 to $10.00) in private clinics.\textsuperscript{256} Second trimester abortions are available. Utilization of abortion is high—as mentioned earlier in the chapter, Vietnam’s abortion rate ranks among the highest in the world, averaging 43.7 abortions per 100 known pregnancies.\textsuperscript{257}

Although Confucian texts and Buddhist scriptures do not take a specific stance on abortion, they do argue strongly for protecting all life. Traditional Vietnamese interpretations of these doctrines maintained that the pregnant woman and her relatives were morally obliged to protect the fetus until birth.\textsuperscript{258} In many Asian societies, however, industrialization and a move away from traditional values during the twentieth century led to a greater acceptance of abortion. The state’s vision

\textsuperscript{253} Pham et al. 2008: 180.
\textsuperscript{254} Pham et al. 2008: 180.
\textsuperscript{255} Pham et al. 2008: 180.
\textsuperscript{256} Pham et al. 2008: 181.
\textsuperscript{257} Belanger et al. 2003: 245.
\textsuperscript{258} Lecso 1987: 217.
of modernization—including small families and an embrace of technology—helps to explain why abortion was legalized in 1954 and why fertility reduction was targeted even before the 1986 transition period. Those Vietnamese who were surveyed in the studies of Gammeltoft (2001) and Johannson et al (1998) emphasized Vietnam’s vision of modernization when reconciling the practice of abortion with pro-life values. Those who were surveyed also noted how individuals should behave in a “civilized way” because they are living in a “modern society,” and therefore should not follow “backward customs,” such as large family size. Accordingly, a modern couple is expected to control its fertility within the limits set by the state, which indicates a shift in values that might partially be the result of Vietnam’s population policy and its accompanying campaigns promoting the two-child family.

The high male-to-female sex ratios at birth that emerged in Vietnam indicate the use of ultrasound technology for sex selective abortion. Although technology serves as a means, rather than a cause, of son preference, pre-natal sex selection and the reforms that encouraged practitioners to offer it were key to enabling parents to achieve their ideal gender composition in light of the one-or-two child policy. Although the government has passed laws forbidding pre-natal sex selection by any means (including an article in the 2003 Population Ordinance and a decree issued in October of 2006 imposing fines on those who offer sex selection), the laws have done little to dissuade practitioners from offering these services. It appears that for many practitioners, pre-natal sex selection is an easy—and profitable—solution to overcoming Vietnam’s underfunded health system.

---

4.5. Discussion and Conclusion

Prior to the 1990s, all evidence suggests that son preference in Vietnam was largely absent and male-to-female sex ratios at birth were relatively stable and close to natural rates. By 2009, however, Vietnam possessed a sex ratio at birth of 110.5. Why did this change? This chapter points to three core factors: (1) the introduction and stringent enforcement of the 1988 one-or-two child policy; (2) the rapid reduction in fertility and infant mortality during the 1990s; and (3) the introduction of the 1986 market reforms, which ushered in a return of household responsibility and dismantled the state-led health care system.

The emergence of a strong bias in favor of sons, I find, occurred after a period of remarkably fast fertility and infant mortality decline, which came on the heels of the 1986 doi moi market reforms and the 1988 one-or-two child policy. The return of household responsibility and the enforcement of a one-or-two child rule presented families with the dilemma of choosing whether to invest their limited resources in raising sons versus raising daughters. Notably, among these families, fertility was restricted and infant mortality was low. As such, the composition of one’s offspring had to be determined before birth; these parents could not rely on the death of a female infant to make room for a son, or on having a large family to ensure the desired composition of their offspring. To guarantee at least one son within Vietnam’s one-or-two child rule, these parents increasingly resorted to sex selective abortion. This was inadvertently facilitated by the lack of funding for local health services following the market reforms, which encouraged practitioners to offer prenatal sex identification, which is among the easiest and most profitable of services.

\[\text{260 Vietnam GSO 2009.}\]
The chapter also finds that at the provincial level, families residing in areas targeted by the strict enforcement of Vietnam’s one-or-two child policy (particularly those living in urban areas) exhibited a much higher rate of son preference than those living in areas not targeted by the policy (i.e., rural areas), which does not support the theory that cultural factors—associated with traditional agrarian societies that place a premium on having sons—sanction and sustain son preference. The chapter also finds evidence of greater girls and women’s empowerment over time despite the increasing preferential treatment of sons, which does not support the theories that girls’ empowerment or women’s empowerment will reduce son preference.

Son preference in Vietnam appears to correspond to the degree of enforcement of the one-or-two child policy, both over-time and at the provincial level, rather than to cultural factors or to the level of girls or women’s empowerment. The findings of this chapter suggest that regardless of how empowered girls and women may be, the enforcement of a policy that limits fertility will generate a strong bias in favor of sons. These findings demonstrate the importance of political interventions, specifically state-led population policies, in generating and sustaining son preference. Although parental attitudes and choices influence familial resource allocation and ultimately the survival of daughters, it is the underlying circumstances driving these behaviors that are worth investigating, debating, and changing. These findings lend support to the hypothesis advanced in Part I that antenatal policy is an important explanatory factor in the development of son preference. The following chapter will explore these trends in China.

---

This chapter compares national and provincial-level trends in China to the findings and conclusions reached in Part I. The preceding part found that the enforcement of an anti-natal policy better explains the development of a strong bias in favor of sons than does female empowerment. Yet, by relying on cross-sectional data, it neglects to consider trends in the independent and dependent variables over time, as well as patterns of birth and survival in other countries where highly masculine sex ratios at birth have emerged. Given the findings in Part I, this chapter asks: in what ways and why has the degree of son preference in China changed since the formation of the PRC in 1949, and to what extent has anti-natal policy influenced these trends?

This chapter aims to: (1) examine the status and treatment of females in China before and after the implementation of the 1979 one-child policy; (2) investigate the extent to which the findings of Part I support trends in China from 1960 to 2009; and (3) demonstrate how the findings of this chapter support or refute the main theoretical explanations for son preference discussed in this project: women’s empowerment, girls’ empowerment, culture, and anti-natal policy.

This chapter yields a few key findings. Prior to the 1979 one-child policy, all evidence suggests that a strong bias in favor of sons in China was largely absent and male-to-female sex ratios at birth were relatively stable and close to natural rates. By 2009, however, China possessed a sex ratio at birth of 119.5—the highest in the world. Why did this change? Similar to the Vietnam case, this chapter points to the following three core factors: (1) the introduction and stringent enforcement of the

262 CIA 2010.
1979 one-child policy; (2) the rapid reduction in fertility and infant mortality that occurred in the late 1970s and early 1980s; and (3) the introduction of the 1979 market reforms, which ushered in a return of household responsibility and dismantled the state-led health care system.

The emergence of a strong bias in favor of sons in China, I find, occurred after a period of remarkably fast fertility and infant mortality decline (see Table 5.1), which coincided with the implementation of the 1979 one-child policy and 1979 market reforms. The enforcement of a one-child rule, coupled with the return of household responsibility, forced families to choose whether to invest their resources in raising a son versus raising a daughter. It appears that under these circumstances, families increasingly resorted to pre-natal sex selection to guarantee a son within the one-child rule. These actions were facilitated by the lack of funding for local health services following the market reforms, which encouraged practitioners to offer sex identification services—among the most profitable sources of funding.

Table 5.1: Patterns of Birth, Survival, and Female Empowerment in China, 1960-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Sex Ratio at Birth, males per 100 females</th>
<th>Fertility Rate, births per woman</th>
<th>Fertility Rate, mean annual % decline over previous 5 years</th>
<th>Infant Mortality Rate, per 1,000 live births</th>
<th>Infant Mortality Rate, mean annual % decline over previous 5 years</th>
<th>Mean Years Schooling females 15-19</th>
<th>Mean Years Schooling females 15+</th>
<th>Female Labor Force Participation Rate, % of female population ages 15+</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1965</td>
<td>—</td>
<td>5.9</td>
<td>+1.4</td>
<td>111</td>
<td>5.8</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1970</td>
<td>105.9</td>
<td>5.5</td>
<td>1.3</td>
<td>82.8</td>
<td>5.7</td>
<td>5.7</td>
<td>2.9</td>
<td>—</td>
</tr>
<tr>
<td>1975</td>
<td>106.4</td>
<td>3.8</td>
<td>7.3</td>
<td>64.2</td>
<td>5.0</td>
<td>6.5</td>
<td>3.5</td>
<td>—</td>
</tr>
<tr>
<td>1980</td>
<td>107.4</td>
<td>2.6</td>
<td>7.0</td>
<td>46.1</td>
<td>6.4</td>
<td>7.2</td>
<td>4.3</td>
<td>71.0</td>
</tr>
<tr>
<td>1985</td>
<td>111.4</td>
<td>2.6</td>
<td>0.0</td>
<td>36.7</td>
<td>4.5</td>
<td>7.1</td>
<td>4.9</td>
<td>71.6</td>
</tr>
<tr>
<td>1990</td>
<td>114.7</td>
<td>2.3</td>
<td>2.4</td>
<td>36.8</td>
<td>+0.1</td>
<td>7.5</td>
<td>5.4</td>
<td>73.0</td>
</tr>
<tr>
<td>1995</td>
<td>117.4</td>
<td>1.9</td>
<td>4.4</td>
<td>36.4</td>
<td>0.2</td>
<td>8.1</td>
<td>5.9</td>
<td>72.3</td>
</tr>
<tr>
<td>2000</td>
<td>119.7</td>
<td>1.8</td>
<td>1.1</td>
<td>29.8</td>
<td>3.9</td>
<td>8.6</td>
<td>6.5</td>
<td>70.9</td>
</tr>
<tr>
<td>2005</td>
<td>119.0</td>
<td>1.8</td>
<td>0.0</td>
<td>21.5</td>
<td>6.3</td>
<td>8.6</td>
<td>6.9</td>
<td>68.5</td>
</tr>
<tr>
<td>2009</td>
<td>119.5</td>
<td>1.8</td>
<td>0.0</td>
<td>16.6</td>
<td>6.3</td>
<td>8.8</td>
<td>7.3</td>
<td>67.5</td>
</tr>
</tbody>
</table>

Overall, it appears that son preference in China corresponds to the degree of enforcement of the one-child policy, both over-time and at the provincial level, rather than to cultural factors or to the level of girls or women’s empowerment. Table 5.1 illustrates several of these trends. These findings lend support to the hypothesis advanced in Part I that the enforcement of an anti-natal policy is an important explanatory factor in the development of son preference. This chapter traces these trends beginning with the formation of the People’s Republic of China (PRC) in 1949.

5.1. Gender Under Mao: Women in the post-1949 Construction of the PRC

Following a bloody civil war, the Chinese Communist Party (CCP), led by chairman Mao Zedong, defeated the ruling Nationalist Party and formed the People’s Republic of China (PRC) in 1949. All evidence suggests that son preference in China was relatively stable and close to natural rates following the 1949 transition. What accounts for this absence of son preference? This section points to: the introduction of a commune system of production, which removed individual control over household resources and allocated women land and work points; the formation of a state-led health system, which emphasized preventive health measures, health education, and greater access to health services in rural areas; and the introduction of a relatively non-coercive family planning program that focused more on encouraging smaller family size than on meeting specific fertility targets. These factors ultimately eased concerns about whether to invest family resources in raising sons versus raising daughters, which limited son preference.
Beginning in 1950, the CCP introduced a comprehensive set of land reform campaigns that redistributed the holdings of landlords and rich peasants, but left production in the hands of households.\textsuperscript{263} Women played a special role in these campaigns. After enshrining the equality of men and women in the constitution of 1950, the CCP proclaimed that women were ‘land-owners’ eligible for land allocation. The campaigns included provisions for maternity leave and childcare within state owned enterprises, and women were encouraged to work outside of the home “to rebuild a strong, prosperous China.”\textsuperscript{264} The CCP formally recognized women’s contribution to the labor force by giving them work points along with men, and the CCP encouraged women to leave their homes to participate in political meetings.\textsuperscript{265} The government also began financing anti-illiteracy campaigns during this period and made it a requirement that parents enroll all sons and daughters in school.

The CCP also made an effort to destroy lineages during this period, which were seen as avenues to status and power.\textsuperscript{266} Before the creation of the PRC in 1949, the state propagated traditional, Confucian values to reinforce the ruler’s authority and build a strong state. During this period, lineages were responsible for enforcing law and order, and they linked rituals and economic incentives with the imperial bureaucracy.\textsuperscript{267} After 1949, the state destroyed genealogies and ancestral halls, and banned ancestor worship rituals and the assembling of large clans or lineages.\textsuperscript{268}

\textsuperscript{263} McNicoll 2006: 5.
\textsuperscript{264} Edwards 2000: 61.
\textsuperscript{265} Das Gupta 2009: 17.
\textsuperscript{266} Das Gupta 2009: 16.
\textsuperscript{267} Das Gupta 2009: 7.
\textsuperscript{268} Das Gupta 2009: 16.
Commune control replaced lineage control, and local cadres served to mediate in family disputes, raise awareness of women’s oppression in the household, and ensure that women participated in community life.  

During this period, the replacement of family-based production by collective units transformed women’s roles within the family. Because women’s income was perceived to be essential for the family, men no longer treated women as expendable. As wage earners, women also gained respect and influence in the family decision-making process. Laws were passed during this period that gave rights of equal inheritance to women, banned child marriage, and strengthened the rights of divorced and widowed women. These laws, however, were met with violent resistance and an estimated 70,000 to 80,000 suicides and murders of women occurred between 1950 and 1953. The state backed off from implementing controversial aspects of the laws after widespread peasant opposition threatened the country’s stability. Hence, despite the state’s efforts, the CCP could not destroy the fundamental system of social organization in China—the family.  

Despite popular resistance to many of the state’s policies targeting the status and treatment of women, the commune system of production did eliminate individual control over household resources, which reduced the dilemma families may have faced of choosing whether to invest their limited resources in sons or daughters. The relative absence of a strong bias in favor of sons during this period is reflected in the country’s low sex ratios at birth and low rates of female infanticide and neglect.

---

269 Das Gupta 2009: 16.
270 Das Gupta 2009: 17
271 Das Gupta et al. 2000: 6
272 Das Gupta et al. 2000: 6
China’s sex ratio at birth during the 1960s and 1970s averaged 106—well within the natural rate.\textsuperscript{273} Female infanticide and neglect did occur in China, but it was quite limited. Data from 1981 shows that the infant mortality rates of girls and boys were roughly equal,\textsuperscript{274} which indicates low female neglect, and data on female infanticide indicates that the practice was not widespread in China from 1949 to 1979.\textsuperscript{275}

The CCP also drew on the state’s administrative strengths to improve the country’s health and living standards.\textsuperscript{276} Preventive health measures, including vaccination, improved public hygiene, and improved sanitation, were enacted during this time. Beginning in the 1950s, a massive preventive health program dispatched physicians and barefoot doctors to remote rural areas. The number of barefoot doctors increased from around 100,000 in 1957 to 1.5 million by 1965.\textsuperscript{277} The government also began providing national health insurance to all citizens. Under the Cooperative Medical Scheme, which by the 1970s covered most of the rural sector, the financing of China’s rural health system was transferred to the village level.\textsuperscript{278} The government introduced health education to women, who were assumed to be responsible for household health and sanitation, as well as public education on reproductive health and hygiene. The government also launched a prenatal health care campaign to modernize midwifery practices.\textsuperscript{279} These initiatives contributed to China’s impressive reduction in infant mortality, which, as Table 5.1 shows, fell by an average of 6.4 percent annually from 1975 to 1980—the steepest decline in infant mortality during

\textsuperscript{273} Croll 2001: 228.  
\textsuperscript{274} Croll 2001: 229.  
\textsuperscript{275} Croll 2000: 33.  
\textsuperscript{276} McNicoll 2006: 9.  
\textsuperscript{277} McNicoll 2006: 9.  
\textsuperscript{278} McNicoll 2006: 9.  
\textsuperscript{279} Das Gupta et al. 2000: 8.
the 1960 to 2009 period. Even more impressive, data from 1981 shows little difference in the infant mortality rates of girls and boys.\textsuperscript{280} Hence, the creation of a state-led health care system reduced the dilemma of investing resources in sons versus daughters, which contributed immensely to keeping son preference low.

The health of women and children also benefitted from other campaigns, notably family planning. After the government declared in 1971 that China’s birth rate must be reduced, it implemented the “later, longer, fewer” campaign. This campaign was accompanied by strenuous efforts to ensure good conditions for pregnancy, delivery, and child health, which contributed to the country’s progress on maternal and child health.\textsuperscript{281} The government’s efforts appeared to be remarkably effective: the country’s fertility rate halved in less than ten years.\textsuperscript{282} As Table 5.1 illustrates, fertility fell by an average of 7.3 percent annually from 1970 to 1975—the sharpest decline in fertility during the 1960 to 2009 period. Delayed marriage played a significant role in the decline, as did abortion, contraception, and sterilization.

This campaign, however, did not target fertility to the same degree as the 1979 one-child policy. By encouraging, rather than coercing, the population to take certain measures, the campaign made notable—but far less drastic—progress on reducing fertility. Son preference, as measured by the sex ratio at birth, remained relatively stable and close to the natural rate during this period in part because families faced few consequences if they continued to bear children until they achieved their desired family composition. By increasing the population’s awareness of the drawbacks of having a large family size (i.e., fewer resources to devote to each child, greater

\textsuperscript{280} Croll 2001: 229.
\textsuperscript{281} Das Gupta et al. 2000: 8
\textsuperscript{282} McNicoll 2006: 11.
malnutrition and mortality) the campaigns jumpstarted the country’s rapid fertility decline, but did so in a more subtle fashion. Son preference remained low from 1949 to 1979 partly for this reason.

5.2. China’s 1979 Market Reforms and the Emergence of Son Preference

Despite the country’s notable progress after 1949, the collectivization policy pursued under the Great Leap Forward of 1958-60 significantly reduced productivity. Massive food shortages, combined with a series of natural disasters that had hit China in the early 1960s, had led to the deaths of between twenty and thirty million Chinese. Less than six years later, China experienced the Great Proletarian Cultural Revolution of 1966-76, which drove the country into further political and economic disarray. By the mid-1970s, China’s economy was stagnating. This situation prompted the government to introduce a series of market reforms in 1979 to boost productivity and economic growth. Despite the country’s subsequent economic boom and rapid socioeconomic development, a strong bias in favor of sons emerged in China during the 1980s. What accounts for this change? This section points to the return of household responsibility following the 1979 reforms, which, similar to Vietnam, created an environment of economic uncertainty that heightened concerns for bearing sons. The emergence of a preferential status and treatment of sons during this period may also reflect a resurgence of traditional values. However, this section finds that cultural explanations are insufficient for accounting for over-time trends and provincial-level variation of son preference in China. The section also finds that

female employment and education actually improved during this period of increasing son preference, which lends little support to the theories of female empowerment.

In an effort to jumpstart the economy, the 1979 reforms opened the country to international trade and foreign direct investment, and shifted the country from a command economy to a market-driven economy. The government began to allow for individual ownership of land and factories, as well as for the establishment of stock markets, private banks, and public markets where producers could sell their goods without government interference. These changes resulted in rapid economic growth. From 1960 to 2007, Gross Domestic Product (GDP) per capita in 2005 constant prices increased from $704 to $7,868, representing an average annual rise in GDP of 5.3 percent.\footnote{Heston et al. 2009.}

During this period, however, the state also phased out the pre-reform ‘iron-rice bowl’ that provided lifetime employment with guaranteed welfare benefits, including housing, health care, education, pensions, recreation, and amenities.\footnote{Das Gupta et al. 2000: 6.} The state dismantled the work point system in the rural areas, and the family once again became the production unit under the household responsibility system. Inequality, as measured by the Gini coefficient, nearly doubled from 28.6 in 1975 to 44.9 in 2003.\footnote{WIDER 2008. The Gini index measures inequality on a scale of zero to one, with zero corresponding to a perfectly even income distribution and one indicating that all incomes are concentrated in the richest population group. Only those years with a population, area, and age coverage of “all” were used in this assessment. All coefficients were derived from income.} This increase in inequality stemmed from the unequal distribution of China’s economic growth. Urban and coastal regions benefitted the most, whereas the country’s remote, rural areas remained much poorer.\footnote{Edwards 2000: 62.} Poverty also grew in urban
areas, despite the fact that economic growth and market liberalization lifted millions of Chinese out of poverty.\textsuperscript{289} The growth in urban poverty stemmed from the decreasing earning power of many households, which largely resulted from economic restructuring and lay-offs. Research indicates that women in China suffer from higher unemployment rates and greater difficulty in finding alternate employment.\textsuperscript{290}

This shift from a commune system of production to a household responsibility system, which created an environment of economic uncertainty, heightened families’ concerns about bearing sons. China’s sex ratio at birth, which had been close to the natural rate of 106 in the 1960s and 1970s, rose to 108.5 in 1985, 110.9 in 1986, and 119.5 in 2009 (see Table 5.1). Some scholars argue that the market reforms in China brought out a resurgence of Confucian, patriarchal norms.\textsuperscript{291} Although the resurgence of traditional values may help to explain the emergence of a strong bias in favor of sons, cultural explanations are insufficient for accounting for over-time trends and provincial-level patterns of son preference in China.

Scholars who argue that cultural norms and practices sanction son preference tend to associate son preference with the traditional customs and beliefs that structure the social organization of underdeveloped, largely agrarian societies. Because the organization of urban life differs from that of rural life, these scholars assume that industrialization and urbanization will reduce son preference. Similar to Chapter 4, however, this chapter finds evidence of extremely high son preference in some large cities in China. In fact, son preference appears to be uniformly worse in China’s

\textsuperscript{289} World Bank 2002: 16.
\textsuperscript{290} World Bank 2002: 18.
\textsuperscript{291} Miller 2001: 1087.
urban areas than in its rural areas.\textsuperscript{292} If son preference tends to be higher in urban areas—where, from a cultural perspective, son preference should have declined or remained low—then some factor other than culture must be driving these changes in son preference at the provincial level. Secondly, evidence shows that China’s sex ratios at birth rose considerably during the 1980s, 1990s, and 2000s, whereas cultural factors remained relatively constant. If cultural factors are constant and the sex ratio at birth varies, then some other factor or set of factors must be driving these changes in son preference over time.

Furthermore, economic development appears to have contributed to the country’s progress on employment and education during this period, which lends little support to the theories of girls’ empowerment and women’s empowerment. Although the female labor force participation rate declined from 71 percent in 1980 to 67.5 percent in 2008, the male-to-female gap in the labor force participation rate narrowed from 16.5 in 1980 to 12.2 in 2008.\textsuperscript{293} Beginning in the mid-1980s, the government implemented another series of policies, including the 1986 Law of Compulsory Education and the 1988 Regulation for Eliminating Illiteracy, all of which emphasized gender equality in education.\textsuperscript{294} The government also encouraged women to attend school because education beyond the primary level was required for the most promising of mobility paths—modern sector employment.\textsuperscript{295} China’s youth (ages 15-24) literacy rate in 1982 was 82 percent for females and 95.2 percent for

\textsuperscript{292} Scharping 2003: 214.
\textsuperscript{293} World Bank 2010.
\textsuperscript{294} World Bank 2002: 18.
\textsuperscript{295} McNicoll 2006: 14.
males.\textsuperscript{296} By 2008, it had risen to 99.2 percent for females and 99.4 percent for males.\textsuperscript{297} Furthermore, as Table 5.1 shows, the mean years of schooling for females (15-19) reached 8.6 years in 2005, compared to 8.8 years for males.\textsuperscript{298} This apparent narrowing of the gap in gender inequality in education suggests that both females and males in the younger generation have greater access to and opportunities for schooling. Yet, mounting evidence shows that son preference has continued to take place in China despite these substantial improvements in female education. In fact, in China’s 1990 census, the sex ratios at birth were 112.5 for mothers with some primary schooling, 114.2 for those who had completed primary school, and 116.2 for middle school graduates.\textsuperscript{299} This relationship between more years of schooling and more masculine sex ratios at birth led Scharping (2003) to conclude that “apparently, better schooling is used for more effective sex screening.”\textsuperscript{300} These trends, which are further examined in Chapter 7, do not support the theories of girls’ empowerment or women’s empowerment.

In sum, the return to household responsibility following the 1986 market reforms created an environment of economic uncertainty that heightened concerns for bearing sons. Although the preferential treatment of sons during this period may reflect a resurgence of traditional values, this section finds that cultural explanations are insufficient for accounting for over-time trends and provincial level patterns of son preference in China. Indicators of female empowerment are also insufficient. For an alternative explanation, I turn to policy.

\textsuperscript{296} World Bank 2010.
\textsuperscript{297} World Bank 2010.
\textsuperscript{298} World Bank 2010.
\textsuperscript{299} Croll 2001: 231.
\textsuperscript{300} Scharping 2003: 294.
5.3. Son Preference and China’s 1979 One-Child Policy

The state introduced a one-child policy in 1979 to reduce population growth and facilitate its goals of modernization. Although anti-natal attitudes were not new to China—the state had been promoting a “later, longer, fewer” campaign since 1971—this stringent policy reflected heightened concerns about the country’s population size, which continued to grow unabated. Although the one-child policy became an important tool for hastening the country’s demographic transition, this section finds that a strong bias in favor of sons emerged in China during this period of remarkably fast fertility and infant mortality decline. It appears that in this environment of low fertility and low mortality, families increasingly resorted to pre-natal sex selection and abortion to guarantee a son within the one-child rule. Although the return to household responsibility heightened concerns for bearing sons, it was the combination of the 1979 policy and rapid demographic change that caused these concerns to be born out. The one-child policy appears to have played an important role in the emergence of son preference during the 1980s, as well as in its over-time trends and provincial-level variation.

The one-child policy initially encouraged couples to have only one child by giving families incentives, including provision of child health care fees, priority housing and job allocation for urban residents, and private land and housing lots in rural areas.\(^{301}\) By the mid-1980s, however, the government began to use more coercive measures to enforce the one-child rule, and reports surfaced of forced abortions (even into the third trimester), forced sterilization, and compulsory IUD

---

\(^{301}\) Edwards 2000: 74.
insertions. The policy was met with resistance, especially in China’s rural areas. 

Relaxations of the policy began in parts of China as early as 1984, although in China’s privileged urban sectors, the population continued to be subject to the one-child policy. Couples were allowed to have two children if they met certain criteria, such as if they lived in a poor area or had an only daughter. The government also introduced more lenient birth regulations for some non-Han ethnic populations.

Research suggests that by the 1990s, there was a de facto two-child policy in China’s rural areas. Exemptions to the one-child rule often came with a spacing requirement, however, which stipulated a minimum of four to six years between the first and second birth.

The subsequent decline in fertility largely resulted from the one-child policy. As Table 5.1 shows, China’s fertility rate fell from 5.5 births per woman in 1960 to 1.8 births per woman in 2009. Although the average annual decline in fertility from 1960 to 2009 was 2.3 percent in China, compared to 2.5 percent in Vietnam, Vietnam’s fertility rate has yet to fall below the replacement level of 2.1 births per woman; China’s fertility rate, conversely, reached 1.8 births per woman in 2000 and has remained at that level.

Partly because of this decline in fertility, infant mortality per 1,000 live births also continued to rapidly decline—with fewer children, parents could devote more of their resources to each child. Infant mortality fell from 150 in 1960 to 16.6 in 2009,

---

303 Croll 2000: 80.  
304 Baochang et al. 2007: 130.  
305 World Bank 2010.  
representing an average annual decline of 4.4 percent (outperforming Vietnam).\textsuperscript{307} Although the steepest decline in China’s infant mortality rate occurred during the period from 1975 to 1980, which experienced an average annual decline of 6.4 percent, China experienced another wave of rapid infant mortality decline from 2000 to 2005 and from 2005 to 2009, averaging 6.3 percent annually in each period (see Table 5.1).

Yet, it appears that in this environment of low fertility and infant mortality, son preference emerged. Reported sex ratios at birth for China rose from the natural rate of 106 in the 1960s and 1970s to 108.5 in 1981, 110.9 in 1986, 118 in 1995, and 119.5 in 2009.\textsuperscript{308} China’s dramatic decline in fertility and infant mortality, which occurred against the backdrop of rising sex ratios at birth, does not support the theories of girls’ empowerment or women’s empowerment. Rather, it was this rapid fertility decline, coupled with low mortality, which exacerbated son preference when met with the one-child policy. The policy “reinforced anew the age-old secondary status of daughters…as the sex of the single child became a very important issue.”\textsuperscript{309}

Although China’s one-child policy encompasses much variation, both geographically and demographically, the one-child rule has remained a core element of China’s family planning program. The one-child rule continues to bestringently applied to over a third of China’s national population, and, even when all of the exemptions are considered, the overall average fertility rate targeted by China’s policies falls below 1.5 births per woman—a level far below replacement.\textsuperscript{310}

\textsuperscript{307} World Bank 2010.  
\textsuperscript{308} Croll 2001: 229; CIA 2010.  
\textsuperscript{309} Croll 2000: 22.  
\textsuperscript{310} Baochang et al. 2007: 144.
has continued to rely on coercion, in addition to a system of incentives and penalties, to achieve its fertility targets. A tightening of the one-child policy took place in the early 1990s, following the disappointing results of the fourth population census. A renewed campaign in favor of IUD insertions, sterilizations, and abortions occurred in 1991, which subsequently saw the highest number of contraceptive operations and abortions performed since 1983.\textsuperscript{311} In the same year, the government began sterilizing couples with only one daughter. These changes correspond to a worsening of China’s sex ratio at birth during the 1990s.

More recent reports, such as one published in December of 2010 by Chinese Human Rights Defenders, documents the continued use of coercive and violent family planning tactics, such as forced sterilization of women who have already had one child, forced late-term abortions of expectant mothers, and campaigns that reward individuals for reporting on the reproductive status of their neighbors.\textsuperscript{312} Financial penalties for violating the one-child policy are common, as well. In one city in Hunan Province, authorities collected \$1.8 million in fines between July and September 2010.\textsuperscript{313} In some localities, the budget relies primarily on these fines, which has presented a major obstacle to relaxing or revoking the policy.

Similar to the findings in Part I, research suggests that the one-child policy is an important factor in explaining national and provincial level differences in China’s sex ratio at birth because changes in the sex ratios over time correspond with changes in the degree of rigidity used to enforce the regulation.\textsuperscript{314} Furthermore, in urban areas

\textsuperscript{311} Scharping 2003: 78.
\textsuperscript{312} Jacobs 2010: 1.
\textsuperscript{313} Jacobs 2010: 2.
\textsuperscript{314} Edwards 2000: 75
where government control is tighter and where the one-child policy has been more strictly enforced, sex ratios at birth are higher. This urban-rural gap in enforcement, which sees urban areas displaying higher sex ratios and rural areas lower sex ratios,\textsuperscript{315} mirrors similar trends in Vietnam at the provincial level. It appears that the problem of son preference has arisen over the course of the one-child campaign, not before it.\textsuperscript{316} Furthermore, in provinces where the majority of the population consists of ethnic minorities and therefore the one-child policy is less rigorously enforced (i.e., Tibet, Xinjiang), the sex ratios at birth fall within the normal range.\textsuperscript{317} Another study found that sex ratios at birth in China diminished as the number of children that families had increased,\textsuperscript{318} which suggests that the one child policy may be exacerbating son preference. Overall, anti-natal policy appears to have played an important role in the emergence and persistence of son preference in China, which lends support to the findings in Part I.

5.4. Making Ends Meet: China’s Market Reforms, Health, and Sex Selection

Beginning in 1979, the state expanded the private economy into areas where government services had formerly played a role. The government replaced free health services, free education, and free family planning with fee-for-service, and the privatization of health care facilities swiftly gained ground. The lack of funding for local health services following the dismantling of China’s state-led health care system, however, inadvertently facilitated pre-natal son preference by encouraging

\textsuperscript{315} Scharping 2003: 214.
\textsuperscript{316} Scharping 2003: 289.
\textsuperscript{317} Edwards 2000: 75.
\textsuperscript{318} Scharping 2003: 217.
practitioners to offer sex identification and abortion services, which are among the easiest and most lucrative sources of funding. In China’s low fertility and low mortality environment, in which an anti-natal policy was strictly enforced, it appears that families increasingly resorted to pre-natal sex selection and abortion to guarantee a son within the one-child rule.

Although health care expenditures in China from 1950 to 1985 were overwhelmingly public for urban citizens with formal employment, today 75 percent of health spending consists of private, out-of-pocket fees. The shortfalls of local health service funding, and the need for medical personnel, hospitals, and clinics to be self-supporting, has encouraged the use of ultrasound for sex selective abortion.

The subsequent innovation in reproductive technology, combined with the state’s liberal abortion laws, brought the ability to choose whether to have a son or a daughter within reach of millions of people. In the past, the gender of one’s offspring was a matter of chance, with larger family size serving as a means of accommodating gender preference. Following the introduction of sex selection, parents had the ability to exercise greater control over the gender composition of their families, which was especially pertinent given China’s one-child policy. Yet, in these environments in which parents increasingly rely on sex selection and abortion to guarantee a son within the mandated family size, unborn daughters are increasingly at risk.

319 Croll 2000: 170.
322 Frejka and Ross 2001: 239.
323 Croll 2000: 16.
The high male-to-female sex ratios at birth that emerged in China in the 1980s indicated the use of ultrasound technology for sex selective abortion. Because ultrasound has long been used to monitor IUDs and pregnancy in China, both the technology and the technical expertise are widely available. China manufactured its own ultrasound B machine first in 1979 and later had the capability of producing over 10,000 per year, or enough to provide every county in China with four machines.324 The state also imported high-quality ultrasound B machines during this period; at its peak in 1989, 2,000 machines were imported.325

In 1993, the government banned hospitals from using ultrasound to reveal the sex of the fetus. Another law went into effect in 1995 banning the sex screening of fetuses except on medical grounds; doctors who perform such tests could lose their licenses. Enforcement, however, is limited, and doctors allegedly perform sex selective abortions as a favor to friends or in response to a bribe.326 The country’s rising sex ratio at birth indicates that these laws have done little to dissuade doctors from using the technology, in part because pre-natal sex selection is an easy and profitable solution to overcoming China’s underfunded health system. Although technology serves as a means, rather than a cause, of son preference, pre-natal sex selection and the reforms that enabled it nevertheless were key to allowing families to achieve their ideal gender composition in light of the one-child policy.

324 Miller 2001: 1088.
326 Miller 2001: 1089.
5.5. Discussion and Conclusion

This chapter yields a few key findings. Prior to the 1979 one-child policy, all evidence suggests that son preference in China was largely absent and male-to-female sex ratios at birth were relatively stable and close to natural rates. By 2009, however, China possessed a sex ratio at birth of 119.5—the highest in the world. Why did this change? This chapter points to three core factors: (1) the introduction and stringent enforcement of the 1979 one-child policy; (2) the rapid reduction in fertility and infant mortality that occurred in the late 1970s and early 1980s; and (3) the introduction of the 1979 market reforms, which ushered in a return of household responsibility and dismantled the state-led health care system.

Similar to the Vietnam case, the emergence of a strong bias in favor of sons, I find, occurred after a period of remarkably fast fertility and infant mortality decline, which coincided with the 1979 one-child policy and the 1979 market reforms. The enforcement of a one-child rule and the return of household responsibility presented families with a difficult situation. Under these circumstances, families had to choose whether to invest their limited resources in raising a son or a daughter. Notably, among these families, fertility was restricted and infant mortality was low. As such, the composition of one’s offspring had to be determined before birth; these parents could not rely on the death of a female infant to make room for a son, or on having a large family to ensure the desired composition of their offspring. To guarantee a son within China’s one-child rule, these parents increasingly resorted to pre-natal sex identification and abortion. Pre-natal sex selection was inadvertently facilitated by the lack of funding for local health services following the market reforms, which

327 CIA 2010.
encouraged practitioners to offer these services, which are among the easiest and most profitable sources of funding.

Similar to the Vietnam case, this chapter also finds that at the provincial level, families residing in areas targeted by the strict enforcement of China’s one-child policy (primarily urban areas) exhibited a much higher rate of son preference than those living in areas not targeted by the policy (namely, rural areas). This urban-rural difference in the development of a strong bias in favor of sons does not support the theory that cultural factors—associated with traditional agrarian societies—sanction and sustain son preference. The chapter also finds evidence of improvements in girls and women’s empowerment over time despite the emergence and persistence of a preferential treatment of sons, which does not support the theories that girls’ empowerment or women’s empowerment will reduce son preference.

The findings of this chapter demonstrate the importance of political interventions, specifically state-led population policies, in generating and sustaining son preference. Although China intended to use the one-child policy to transform the country into a modern global power, the consequences of this policy challenge its continued prosperity and global rise. As Greenhalgh (2008) writes, “Carried out in defiance of cultural and political reason, the policy has induced social suffering and human trauma on a vast scale.” Despite the fact that the policy’s coercive enforcement has damaged women’s reproductive health and exacerbated discrimination and violence against girls, China’s leaders, fearing a fertility rebound, have insisted on maintaining the one-child rule, which is currently embedded in

---

national law.\textsuperscript{330} The findings of this chapter lend support to the hypothesis advanced in Part I that the enforcement of an anti-natal policy is an important explanatory factor in the development of a strong bias in favor of sons. The following chapter will explore these trends in South Korea.

\textsuperscript{330} Greenhalgh 2008: 1.
Chapter 6: South Korea in Comparative Perspective

This chapter compares national and provincial-level trends in South Korea to the findings and conclusions reached in Part I. The preceding part found that the enforcement of an anti-natal policy better explains the development of a strong bias in favor of sons than does girls or women’s empowerment. Yet, by relying on cross-sectional data, it neglects to consider trends in the independent and dependent variables over time, as well as patterns of birth and survival in other countries where highly masculine sex ratios at birth have emerged. Given the findings in Part I, this chapter asks: in what ways and why has the degree of son preference in South Korea changed since independence in 1945, and to what extent has anti-natal policy influenced these trends?

This chapter aims to: (1) examine the status and treatment of females in South Korea before and after the implementation of the 1962 population policy, the 1976 population policy, and the 1996 population policy; (2) examine the extent to which the findings of Part I support trends in South Korea from 1960 to 2009; and (3) demonstrate how the findings of this chapter support or refute the main theoretical explanations for son preference discussed in this project: women’s empowerment, girls’ empowerment, culture, and anti-natal policy.

This chapter yields a few key findings. Prior to independence, all evidence suggests that son preference in South Korea was widespread. Yet, it appears that son preference worsened from the 1950s to the mid-1990s, as indicated by South Korea’s rising male-to-female sex ratio at birth. By 1993, South Korea possessed a sex ratio at
birth of 115.6—the highest in the world.\footnote{Miller 2001: 1084.} Beginning in the mid-1990s, however, these trends began to reverse. By 2009, South Korea possessed a sex ratio at birth of 106.4—well within the natural rate.\footnote{CIA 2010.} What explains these changes? This chapter points to four core factors to explain the evolution of a strong bias in favor of sons: (1) the state’s reinforcement of traditional patriarchal and patrilineal values; (2) the introduction of anti-natal population policies in 1962 and 1976, the latter of which enforced a two-child rule; (3) the rapid reduction in fertility and infant mortality in the early 1970s and 1980s; and (4) the curtailment of state expenditures on social welfare, which encouraged practitioners to offer sex identification and abortion services. To explain the subsequent decline in son preference, this chapter points to two core factors: (1) the transition to democracy in 1987, which eliminated the patrilineal social order; and (2) the revocation and replacement of South Korea’s anti-natal population policy in 1996.

This chapter finds that in South Korea under authoritarianism,\footnote{Authoritarian rule refers to South Korea from 1948 to 1986. During this period, it received a “polity” score ranging from -3 to -9 (+10= most democratic; -10= most autocratic), except from 1960-61, when it received a polity score of 8, and from 1963 to 1971, when it received a polity score of 3. See: Marshall and Jaggers (2010a, 2010b).} the state reinforced patriarchal and patrilineal values to maintain social order and political stability, which generated a strong bias in favor of sons. Yet, it was not until after the introduction of progressively stricter anti-natal policies in 1962 and 1976 (the latter of which enforced a two-child rule) that families had to face the dilemma of choosing whether to invest their resources in raising sons versus raising daughters. In South Korea’s low fertility and low mortality environment (see Table 6.1), families
increasingly resorted to sex selection to guarantee a son within the mandated family size. The state’s curtailment of funding for health services during this period encouraged practitioners to offer sex identification and abortion services, which are among the easiest and most profitable sources of revenue.

The emergence of a strong bias in favor of sons, which persisted—and worsened—through the mid-1990s, appears to correspond to the degree of enforcement of the anti-natal policy, both over-time and at the provincial level, rather than to cultural factors or to the level of girls or women’s empowerment. The transition to democracy in 1987 destroyed South Korea’s patrilineal social order. This shift was followed by the gradual relaxation and eventual replacement of South Korea’s anti-natal population policy in 1996, which appears to have played an important role in effecting a reduction in son preference. Table 6.1 illustrates several of these trends.

Table 6.1: Patterns of Birth, Survival, and Female Empowerment in South Korea, 1960-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Sex Ratio at Birth, males per 100 females</th>
<th>Fertility Rate, births per woman</th>
<th>Fertility Rate, mean annual % decline over previous 5 years</th>
<th>Infant Mortality Rate, per 1,000 live births</th>
<th>Infant Mortality Rate, mean annual % decline over previous 5 years</th>
<th>Mean Years of Schooling females 15-19</th>
<th>Mean Years of Schooling females 15+</th>
<th>Female Labor Force Participation Rate, % of female population ages 15+</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>—</td>
<td>5.7</td>
<td>—</td>
<td>96</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1965</td>
<td>—</td>
<td>4.9</td>
<td>3.0</td>
<td>63.4</td>
<td>8.0</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1970</td>
<td>109.5</td>
<td>4.5</td>
<td>1.4</td>
<td>41.2</td>
<td>8.3</td>
<td>8.3</td>
<td>4.2</td>
<td>—</td>
</tr>
<tr>
<td>1975</td>
<td>112.5</td>
<td>3.5</td>
<td>5.2</td>
<td>22.7</td>
<td>11.2</td>
<td>9.1</td>
<td>5.4</td>
<td>—</td>
</tr>
<tr>
<td>1980</td>
<td>107.3</td>
<td>2.8</td>
<td>4.0</td>
<td>17.0</td>
<td>5.6</td>
<td>9.4</td>
<td>6.5</td>
<td>43.6</td>
</tr>
<tr>
<td>1985</td>
<td>109.5</td>
<td>1.7</td>
<td>10.0</td>
<td>9.6</td>
<td>10.8</td>
<td>9.7</td>
<td>7.3</td>
<td>42.7</td>
</tr>
<tr>
<td>1990</td>
<td>112.5</td>
<td>1.6</td>
<td>1.0</td>
<td>7.9</td>
<td>3.8</td>
<td>9.8</td>
<td>8.1</td>
<td>47.1</td>
</tr>
<tr>
<td>1995</td>
<td>113.5</td>
<td>1.7</td>
<td>+0.7</td>
<td>6.9</td>
<td>2.7</td>
<td>9.9</td>
<td>8.8</td>
<td>48.5</td>
</tr>
<tr>
<td>2000</td>
<td>110.3</td>
<td>1.5</td>
<td>2.3</td>
<td>5.9</td>
<td>3.1</td>
<td>9.8</td>
<td>9.6</td>
<td>48.9</td>
</tr>
<tr>
<td>2005</td>
<td>107.7</td>
<td>1.2</td>
<td>6.0</td>
<td>5.2</td>
<td>2.5</td>
<td>9.8</td>
<td>10.2</td>
<td>50.0</td>
</tr>
<tr>
<td>2009</td>
<td>106.4</td>
<td>1.2</td>
<td>+2.5</td>
<td>4.5</td>
<td>3.5</td>
<td>9.8</td>
<td>10.4</td>
<td>49.9</td>
</tr>
</tbody>
</table>

South Korea’s experiences suggest that political intervention, specifically in the form of state-led population policies, is an important factor in the emergence and persistence of son preference—as well as in its decline. The findings of this chapter lend support to the hypothesis advanced in Part I that the enforcement of an anti-natal policy is an important explanatory factor in the development of a strong bias in favor of sons. This chapter traces these trends beginning with independence in 1945.

6.1. Gender under Authoritarianism: Women in South Korea

In the process of gaining independence from Japanese rule following World War II, the Korean peninsula was divided into two parts in 1945, with Soviet troops occupying the North and American troops occupying the South. At this time, South Korea was overcrowded, cut off from the more industrial and developed North, and politically unstable. After experiencing the near total destruction of its economic infrastructure during the Korean War (1950-53), and the widespread corruption and inefficiency of the Rhee regime (1948-60) and the short-lived Chang Myon regime (1960-61), Park Chung Hee led a military coup in 1961 that established South Korea’s military-led government of the next three decades. Son preference, which was already widespread in South Korea, became stronger during this period. What accounts for this change? This section points to the state’s reinforcement of traditional patriarchal and patrilineal values, which intensified the preference for sons. While the reinforcement of traditional values helps to explain the heightened status and treatment of boys during this period, I find that these culturally grounded arguments are insufficient for explaining over-time trends and provincial-level

---

334 Seth 2010: 207.
patterns of son preference in South Korea. Furthermore, I find that female education and employment actually improved during this period of increased son preference, which does not support the theories of female empowerment.

Understanding the development of South Korea’s culture first requires a brief history of their origin. Korean culture has largely been influenced by China. The development of Buddhism and Confucianism in Korea came from the Chinese, and both shaped the way people thought about government, society, and ethics.\footnote{Seth 2010: 5.} Confucian values became deeply rooted in Korea by the seventeenth century.\footnote{Seth 2010: 5.} Almost all rights and obligations were given to men, including those of inheritance and ancestor worship, and women were regarded as subordinate.\footnote{Kwon 1981: 11.} Evidence suggests that the strong preference for sons in traditional Korea contributed to the widespread practice of female infanticide during this period.\footnote{Kwon 1981: 12.}

Between the 1950s and the transition to democracy in 1987, the state reinforced patriarchal and patrilineal values in order to maintain social order and political stability.\footnote{Chung and Das Gupta 2007: 4.} The 1958 Korean Civil Code, also referred to as the Family Law, preserved the patriarchal family structure that placed the husband at the head of the household, favored the eldest son in inheritance, transferred women to their husband’s family register upon marriage, and gave divorced men custody of children.\footnote{Chung and Das Gupta 2007: 4.} For the next three decades, these laws would severely restrict women’s rights, despite calls for greater gender equality.
Many scholars, particularly those who argue that cultural factors sanction and sustain son preference, suggest that South Korea’s reinforcement of patriarchal and patrilineal values in the 1950s generated a strong bias in favor of sons. Evidence suggests that female infanticide and neglect were widespread, and already by 1970, South Korea’s male-to-female sex ratio at birth had risen to above 109. Scholars who argue that cultural norms and practices sanction son preference suggest that it will diminish with rising development and urbanization. These scholars tend to associate son preference with traditional customs and beliefs that structure the social organization of underdeveloped, largely agrarian societies. As such, rural life is assumed to be associated with a greater pressure to conform to traditional views on the need to bear sons, whereas urban life is assumed to reduce these pressures.

South Korea certainly became more urbanized over the course of the twentieth and early twenty-first centuries. In an effort to boost economic growth, the government had initiated a land reform, expanded labor-intensive industries, and encouraged light manufactured exports before heavy import substitution. Gross Domestic Product (GDP) per capita in 2005 constant prices increased from $1,765 in 1960 to $4,083 in 1975, reaching $23,850 in 2007. During the 1960s and 1970s, millions of Koreans left rural areas to find work in cities. In 1960, farmers made up 61 percent of the population; by 1980, this number had fallen to 38 percent. Contrary to scholars’ assumptions, however, I find evidence of extremely high son

---

342 McGuire 2010: 212.
344 Seth 2010: 169.
preference in some large cities in South Korea. In fact, similar to the findings in the Vietnam and China cases, son preference, as measured by the male-to-female sex ratio at birth, appears to be uniformly worse in South Korea’s urban areas than in its rural areas. If South Korea’s sex ratios at birth tend to be higher in urban areas—where, from a cultural perspective, we should have seen a reduction in the preferential treatment of sons—then some factor other than culture must be driving these changes in son preference at the provincial level. Secondly, evidence shows that South Korea’s sex ratios at birth rose considerably over the course of the twentieth century, whereas little, if any, evidence shows additional laws having been passed after 1958 to further diminish the rights and roles of females. If cultural factors are relatively constant from the 1960s to the 1990s, and the sex ratio at birth varies, then some other factor or set of factors must be driving these changes in son preference over time.

In addition, economic development and poverty reduction appear to have contributed to the country’s progress on female education and employment during this period, despite the resurgence of traditional values. At every stage from 1950 to 2000, South Korea had the highest rate of educational attainment of any country within a comparable GDP per capita range. Among 15 to 19 year olds, the gender gap in education closed by 1985, when it reached 9.7 years for both males and females. Improvements in education contributed to progress on female labor force participation, which, as Table 6.1 shows, increased from 43.6 in 1970 to 45.8 in

---

346 Seth 2010: 176.
By 2009, it had reached 49.9. The male-to-female gap in labor force participation also narrowed during this period.\textsuperscript{349}

Yet, research suggests that these factors do little to reduce gender inequalities in the intra-household distribution of resources.\textsuperscript{350} Firstly, women in Korea are paid only a fraction of men’s earnings. In 1995, women earned 61.5 percent of the average male wage.\textsuperscript{351} Secondly, the societal status of women is perceived to be higher if they are full-time housewives—it implies that a second income is not needed and that the family is well-off.\textsuperscript{352} Thirdly, research finds that the pursuit of higher education among females in South Korea stems from the belief that higher education will elevate their social status and attract better-paid husbands, not empower them.\textsuperscript{353} These findings do not support the theories of girls’ empowerment or women’s empowerment. They also bring to light an alternative explanation—that education and employment are not adequate measures for capturing empowerment. It is possible that female empowerment works through other mechanisms that have been excluded by scholars studying the phenomenon. This is an area for further research.

In sum, while the resurgence of traditional values helps to explain the heightened status and treatment of boys during this period, this chapter finds that cultural factors are insufficient for explaining trends and provincial-level patterns of son preference in South Korea. Indicators of female empowerment are also insufficient. For an alternative explanation, this chapter turns to policy.

\textsuperscript{348} World Bank 2010.  
\textsuperscript{349} World Bank 2010.  
\textsuperscript{350} Chung and Das Gupta 2007: 1  
\textsuperscript{351} Hampson 2000: 180  
\textsuperscript{352} Hampson 2000: 176.  
\textsuperscript{353} Hampson 2000: 181
6.2. South Korea’s 1962 Population Policy and Son Preference

Although family size tended to be large in traditional Korea, high mortality kept the population size at bay. The surge in post-war fertility, however, coupled with better health conditions, produced a substantial baby boom in the late 1950s.\(^{354}\) The growing awareness of population problems among officials, in addition to low economic growth and the urgent need to boost food productivity, contributed to the state’s implementation of an anti-natal policy in 1962.\(^{355}\) Although the policy became an important instrument for effecting the country’s demographic transition, this chapter finds that a strong bias in favor of sons emerged in South Korea during this period of remarkably fast fertility and infant mortality decline. It appears that families increasingly resorted to infanticide (and later pre-natal sex selection and abortion) to guarantee a son in this environment of lower fertility and lower mortality. The 1962 population policy appears to have played an important role in the emergence of a strong bias in favor of sons, as well as in the country’s over-time trends and provincial-level variation in son preference during the 1960s and 1970s.

South Korea’s Planning Board defined the 1962 population policy as an economic measure and gave it high priority. The state began to mount a major effort to introduce contraception, and abortion, too, was made readily available. Working with the Planned Parenthood Federation of Korea, the state sent family planning staff to local clinics and trained women in rural communities to spread knowledge of birth control. The government accelerated these efforts after the mid-1960s and even declared 1966 to be the ‘Great Year of Family Planning.’ As with its other mass

\(^{354}\) Repetto 1981a: 5.  
\(^{355}\) Kwon 1981: 25.
programs, the government approached reducing the population size “much like a military campaign,” with detailed targets and monitoring of performance.\textsuperscript{356} As McNicoll (2006) writes, “an authoritarian government was always likely to see a family planning program as one more development activity to which to apply its talents [and] resources. Quite likely, too, potential clients would see the state’s interest as not markedly more objectionable than many of the government’s other intrusions into daily life.”\textsuperscript{357}

The government also made extensive efforts to provide preventive health services to its citizens, as well as to improve nutrition and living conditions, which ultimately led to the country’s rapid decline in infant mortality. Although the government spent a relatively low percentage of GDP on health, the government directed its social spending to rural areas and the poor.\textsuperscript{358} From 1960 to 1975, fertility fell from 5.7 births per women to 3.5 births per woman, and infant mortality per 1,000 live births fell from 96 to 22.7.\textsuperscript{359} In fact, the steepest period of infant mortality decline from 1960 to 2009 occurred during the 1970-75 period, which experienced an average decline of 11.2 percent annually (see Table 6.1).

The common tendency in societies characterized by a strong preference for sons is for fertility to increase as parents attempt to achieve their ideal family composition, which almost always includes at least one boy.\textsuperscript{360} Yet, in South Korea’s low fertility and low mortality environment, in which anti-natal measures were enforced, parents increasingly resorted to infanticide (and later sex selective abortion)

\begin{itemize}
\item \textsuperscript{356} Mason et al. 1980: 390.
\item \textsuperscript{357} McNicoll 2006: 10.
\item \textsuperscript{358} McGuire 2010: 207.
\item \textsuperscript{359} World Bank 2010.
\item \textsuperscript{360} Miller 2001: 1087.
\end{itemize}
to guarantee at least one son. Evidence suggests that by 1970, South Korea’s sex ratio at birth had already reached 109.\textsuperscript{361} By the time the 1976 population policy was implemented, this ratio had risen further, to well above 110.\textsuperscript{362} Although the 1962 policy became an important instrument for effecting the country’s demographic transition, it appears that a strong bias in favor of sons emerged in South Korea during this period.

6.3. South Korea’s 1976 Population Policy and Son Preference

Despite the 1962 policy, population growth remained a concern. When the Fourth Five-Year Development Plan was prepared in 1976, the Korean government set a long-range target of achieving zero population growth, or a net reproduction rate of 1.0 within 15 years. The projected population, with this fertility rate in mind, became the base population for the country’s long-term social and economic development plan (1977-1991), as well as for its Fourth Five-Year Development Plan, which included investments in employment, education, and housing.\textsuperscript{363} It appears that the enforcement of a target-oriented, two-child policy in South Korea’s environment of low fertility and low mortality led families to increasingly resort to pre-natal sex selection and abortion to guarantee a son within the mandated family size. The 1976 anti-natal policy appears to have played an important role in the development of a strong bias in favor of sons in South Korea, as demonstrated by the country’s over-time trends and provincial-level variation in son preference from the 1970s to the 1990s.

\textsuperscript{361} Korea National Statistical Office 2007.
\textsuperscript{362} Korea National Statistical Office 2007.
\textsuperscript{363} Kim 1981: 208
In an effort to achieve a two-child norm, the 1976 population policy set out to change social norms and attitudes towards small families through education, legal amendments, and incentive schemes, and to expand family planning services so that they reached more people.\textsuperscript{364} The purpose of the education program—which included an in-school program for elementary and secondary students, and an out-of-school program for older citizens that targeted government employees, civil defense militia, and the military reserves—was to cultivate attitudes favorable towards family planning and the two-child family.\textsuperscript{365} This target-driven fertility policy relied on various incentives and disincentives to facilitate the acceptance of the two-child rule, including tax-exemption schemes.\textsuperscript{366} Abortion, too, was fully liberalized in 1973 to facilitate these goals. Following the new policy, the program’s emphasis shifted from temporary contraception to permanent sterilization.\textsuperscript{367} The new policy also began to target the urban poor, who had noticeably higher fertility rates than the rest of the urban population.

The government’s population control measures were relatively successful. Fertility fell from 5.7 births per woman in 1960 to 1.2 births per woman in 2009, representing an average decline of 3.1 percent annually.\textsuperscript{368} South Korea far outpaced similar progress in Vietnam (2.5 percent) and China (2.3 percent). As Table 6.1 illustrates, the sharpest decline in fertility took place from 1980 to 1985, when South Korea experienced an average decline of 10 percent annually. The country’s fertility rate, which fell below the replacement level of 2.1 births per woman in the early

\textsuperscript{364} Kim 1981: 214.
\textsuperscript{365} Kim 1981: 214.
\textsuperscript{366} Kim 1981: 216.
\textsuperscript{367} Kim 1981: 218.
\textsuperscript{368} World Bank 2010.
1980s, has remained under 1.5 births per woman since 2000. Infant mortality per 1000 live births also declined from 96 in 1960 to 4.5 in 2009, representing an average annual decline of 6.1 percent.\textsuperscript{369} South Korea outperformed both China and Vietnam on infant mortality decline. Although the steepest decline in South Korea’s infant mortality rate occurred during the period from 1970 to 1975, which experienced an average annual decline of 11.2 percent, South Korea again experienced rapid infant mortality decline from 1980 to 1985, averaging 10.8 percent annually (see Table 6.1).

Yet, it appears that in this low fertility and low mortality environment, families increasingly resorted to sex selection to guarantee a son within the two-child rule. South Korea’s sex ratio at birth, which was already above 109 in 1970, increased from 111.3 in 1978 to 115.6 in 1993.\textsuperscript{370} South Korea’s dramatic decline in fertility and infant mortality, which occurred alongside rising sex ratios at birth, does not support the theories of girls’ empowerment or women’s empowerment. Rather, it was this rapid decline in fertility, coupled with low mortality, which exacerbated son preference when met with the two-child policy.

The most observable rise in son preference was in second-order births, which further demonstrates a relationship between the two-child policy and sex ratios.\textsuperscript{371} In the 1990s, the sex ratios at birth were around the norm for first births, increased to 112 for second births, and then increased to 185 and 229 for third and fourth births.\textsuperscript{372}

Evidence also suggests that in rural areas—characterized by higher fertility and mortality and less rigorous enforcement of the anti-natal policy—son preference, as

\begin{itemize}
  \item \textsuperscript{369} World Bank 2010.
  \item \textsuperscript{370} Korea National Statistical Office 2007.
  \item \textsuperscript{371} Croll 2001: 229
  \item \textsuperscript{372} Croll 2001: 229
\end{itemize}
measured by the male-to-female sex ratio at birth, tended to be lower than in urban areas. This suggests that the degree of enforcement of anti-natal policy may help to explain provincial-level patterns of son preference.

It appears that South Korea’s anti-natal policy played an important role in generating and sustaining a strong bias in favor of sons during this period. The government’s increasingly forceful policies regarding the country’s population problems resulted in a shift away from the dissemination of contraception and information and towards the manipulation of private incentives regarding family size.\textsuperscript{373} South Korea’s 1976 anti-natal policy fits with many of the region’s coercive, target-driven programs, such as those implemented in China and Vietnam.


Beginning in the 1960s, the state expanded the private economy into areas where government services had formerly played a role. In an effort to channel its resources into economic development and industrialization, the state curtailed social service expenditures. Even as late as 1989, the government maintained that families would be primarily responsible for social welfare.\textsuperscript{374} The state’s curtailment of funding for health services during this period inadvertently facilitated pre-natal son preference by encouraging practitioners to offer pre-natal sex identification and abortion services. The technological ability to detect the sex of the fetus first emerged in South Korea’s more industrialized and urban areas in the 1970s, and spread to the

\textsuperscript{373} Repetto 1981a: 9.
\textsuperscript{374} Chung and Das Gupta 2007: 4.
rest of the country shortly thereafter.\textsuperscript{375} It appears that in this low fertility and low mortality environment, in which progressively stricter anti-natal policies were enforced, families increasingly resorted to sex selection to guarantee a son within the mandated family size. Although technology serves as a means, rather than a cause of son preference, pre-natal sex selection and the conditions that enabled it nevertheless were key to allowing families to achieve their ideal gender composition in light of the 1962 and 1976 anti-natal policies, the latter of which ushered in a two-child rule.

Even though technically illegal until 1973, evidence suggests that at the beginning of South Korea’s fertility decline in 1961, there was one induced abortion for every nine live births.\textsuperscript{376} Although the widespread availability and low cost of abortions contributed to these figures, the incidence of abortion was high in part because of a societal aversion to the use of the contraceptive pill. In South Korea, women were discouraged from having control over their own bodies or their sexuality.\textsuperscript{377} Consequently, abortions—which required the services of a trained medical practitioner—became a form of contraception and played a key role in effecting the country’s fertility decline.

It should come as no surprise, then, that many families opted for sex-selective abortion when the technology became available in the 1970s. Demographic studies in South Korea have shown a rise in the proportion of male births since the late 1970s and have confirmed that widespread access to sex selection has permitted pre-natal son preference.\textsuperscript{378} Abortions were officially legalized in 1973 (although they were

\textsuperscript{375} Repetto 1981b: 147.
\textsuperscript{376} Repetto 1981b: 147.
\textsuperscript{377} Hampson 2000: 174.
\textsuperscript{378} Croll 2001: 228.
widely performed before then) and amendments were made in 1986 that eased restrictions for using abortion to prevent illegitimate births.\textsuperscript{379} South Korea’s sex ratio at birth, which was already above 109 in 1970, increased from 111.3 in 1978 to 115.6 in 1993.\textsuperscript{380}

The state’s curtailment of funding for health services during this period inadvertently facilitated pre-natal son preference by encouraging practitioners to offer sex identification and abortion services, which are among the most lucrative sources of funding.\textsuperscript{381} Scholars note that sex selective abortions came to “comprise the bulk of the Korean gynecologist’s income.”\textsuperscript{382} During the 1990s, sex selective abortions were widely available for US$125, and in many clinics no appointment was necessary.\textsuperscript{383} In 1991, there were apparently 76 abortions for every 100 known pregnancies in South Korea.\textsuperscript{384} Although technology serves as a means, rather than a cause of son preference, pre-natal sex selection nevertheless was key to allowing families to achieve their ideal gender composition in light of the 1962 and 1976 policies.

6.5. Democratization, Policy Change, and the Reduction of Son Preference

In 1987, after enduring nearly three decades of authoritarian rule, South Korea transitioned to a democracy. This transition eliminated South Korea’s patrilineal social order and improved the status of women. This shift was followed by the gradual relaxation and eventual replacement of South Korea’s anti-natal population
policy in 1996, which appears to have played an important role in effecting a reduction in son preference.

In 1989, the government began to grant women greater rights, including the right to inherit property and the right to gain custody of children in the event of divorce. The government also introduced the Mother-Child Welfare Act to safeguard the security of fatherless families. Reforms were gradually made to the 1958 Family Law. In 2005, the courts ruled that women could remain members of their natal household after marriage, women and men have equal rights to care for their ancestors, and parents could register their children under the mother’s family name.\footnote{Chung and Das Gupta 2007: 5.} The government also abolished male headship of families.

Trends in South Korea’s fertility rate, which now hovered around 1.7 births per woman, generated pressure to amend the 1976 population policy following the transition to democracy. During the early 1990s, the state began to relax the two-child rule. The government established a Population Policy Deliberation Committee in 1994, and in 1996 it officially adopted a new population policy. The new policy emphasized quality of life and welfare, rather than measures for achieving a targeted population size. The 1996 policy included specific provisions for reducing the imbalance in the sex ratio at birth and the incidence of induced abortion.\footnote{Jones and Leete 2002: 120.} It also included provisions for providing adequate health and welfare services to the elderly. The government introduced a single-payer National Health Insurance system shortly
thereafter.\textsuperscript{387} The revocation of South Korea’s anti-natal policy, coupled with the expansion of social services, appears to have initiated a reversal of son preference.

Remarkably, son preference—which had risen to 115.6 by 1993—slowly began to decline during the 1990s and 2000s. South Korea’s sex ratio at birth fell to 109.5 in 1999, 108 in 2004, and 106.4 in 2009—well within the natural rate.\textsuperscript{388} This decline occurred despite the continued availability of sex selection and abortion services, and despite the continued decline in fertility (1.2 births per woman by 2009) and infant mortality (4.5 deaths per 1,000 live births by 2009).\textsuperscript{389} The shift to democracy in 1987, followed by the gradual relaxation and replacement of South Korea’s anti-natal population policy in 1996, appears to have played a key role in reducing the country’s strong bias in favor of sons.

South Korea’s experiences also shed light on the consequences—and limitations—of population control. In 2007, the average household contained only 2.8 members, half the size of a generation earlier.\textsuperscript{390} In an effort to boost the fertility rate, the state began to introduce pro-natal policies. In 2008, the government began providing financial subsidies for parents with multiple children, including bonuses for a second and third child. The government also launched campaigns that discouraged abortions and threatened to take away the licenses of doctors who performed them.\textsuperscript{391} Despite these efforts, South Korea’s fertility rate has remained at 1.2 births per woman—one of the lowest fertility rates in the world. The uniformly higher cost of living in South Korea, coupled with strong demands for secondary schooling (which

\textsuperscript{387} McGuire 2010: 226.
\textsuperscript{388} Korea National Statistical Office 2007; CIA 2010.
\textsuperscript{389} World Bank 2010.
\textsuperscript{390} Seth 2010: 259.
\textsuperscript{391} Jones and Leete 2002: 120.
is largely fee-based), has kept family size small even after the dismantling of the antinatal policy. South Korea’s experiences should serve as a warning for other countries, such as China, that insist on maintaining population control policies despite their sub-replacement fertility rates.

6.6. Discussion and Conclusion

Although all evidence suggests that son preference in South Korea was widespread prior to independence, it appears to have worsened over the course of the twentieth century. By 1993, South Korea possessed a sex ratio at birth of 115.6—the highest in the world.\textsuperscript{392} Beginning in the mid-1990s, however, these trends began to reverse. By 2009, South Korea possessed a sex ratio at birth of 106.4—well within the natural rate.\textsuperscript{393} What explains these changes?

This chapter points to four core factors to explain the evolution of a stronger bias in favor of sons: (1) the state’s reinforcement of traditional patriarchal and patrilineal values; (2) the introduction of anti-natal population policies in 1962 and 1976, the latter of which enforced a two-child rule; (3) the rapid reduction in fertility and infant mortality in the early 1970s and 1980s; and (4) the curtailment of state expenditures on social welfare, which encouraged practitioners to offer pre-natal sex identification services. These findings are similar to those made in the Vietnam and China cases. To address the subsequent reversal of these trends beginning in the mid-1990s, this chapter points to two core factors: (1) the transition to democracy in 1987,

\textsuperscript{392} Miller 2001: 1084.
\textsuperscript{393} CIA 2010.
which eliminated the patrilineal and patriarchal social order; and (2) the revocation and replacement of South Korea’s anti-natal population policy in 1996.

Although the reinforcement of traditional values helps to explain the heightened status and treatment of boys in South Korea during the twentieth century, this chapter finds that cultural factors are insufficient for explaining over-time trends and provincial-level patterns of son preference. Rather, this chapter finds that son preference worsened during a period of remarkably fast fertility and infant mortality decline, which coincided with the 1962 and 1976 population policies. Because fertility was restricted and infant mortality was low, the composition of one’s offspring had to be determined before birth; as such, parents increasingly resorted to pre-natal sex identification and abortion to guarantee a son within the mandated family size. Similar to Vietnam and China, this chapter finds that these trends occurred despite the country’s progress on women and girls’ education and employment.

This chapter finds that it was not until after South Korea’s democratization in 1987 and the revocation of the anti-natal policy in 1996 that son preference began to decline. Evidence from this chapter suggests that there are linkages between regime type and son preference. According to Sen (1999), the role of public discussion—an important component of democracy—is often underestimated in evaluating social and political problems. In a number of developing countries, open dialogue—rather than coercion—has been key to reducing high rates of fertility. Sen focused his analysis of regime type on Kerala (a state of India). He noted how Kerala’s decline in fertility, which had fallen from 3.0 births per woman in 1979 to 1.7 births per woman

---

in 1999, had been achieved not through coercion, but mainly through the emergence of new values. Furthermore, this voluntary reduction in fertility did not produce any of the adverse effects found in countries that had enforced compulsory programs of birth control. Specifically, there was no tendency towards pre-natal sex identification and abortion in Kerala as there had been in countries enforcing population policies. Thus, South Korea’s entrenched authoritarianism may explain how the country’s anti-natal policies were successfully implemented, as well as why many unintended consequences, including that of a strong bias in favor of sons, emerged. This evidence suggests that democracy is more effective than authoritarianism at achieving demographic change without generating gender biases.

Regime type may also explain why social service provision in South Korea was lower under authoritarianism than under democracy—the former of which appears to have encouraged practitioners to offer sex identification services and facilitated pre-natal son preference. As the work of McGuire (2010) and Zweifel and Navia (2000) demonstrate, social service provision is often better on balance in a democracy than in an authoritarian regime. In democracies, electoral incentives place pressure on the government to provide for its people, and freedom of the press allows for the dissemination of information that can warn of impending crises. Democracy, especially long-term democratic practice, promotes the public provision and utilization of health services. Notably, the expansion of social service expenditures in South Korea following democratization appears to have reduced fertility and family planning pressures.

396 Sen 1999: 221.
397 McGuire 2010: 278.
Although evidence suggests that linkages exist between regime type and son preference, the extent to which regime type, specifically democracy, matters for reducing a society’s strong bias in favor of sons remains unclear. This is an important area for future research. In Chapter 7, I will briefly discuss some of the methods by which researchers could go about examining these trends.

Overall, the chapter’s findings lend support to the hypothesis advanced in Part I that the enforcement of an anti-natal policy is an important explanatory factor in the development of a strong bias in favor of sons. South Korea’s 1962, 1976, and 1996 population policies demonstrate the importance of political interventions in effecting the emergence—and decline—of son preference. Re-evaluating the efficacy of anti-natal policies may be more effective at reducing and eliminating son preference than strategies aimed at young girls and women.
This project sheds light on important causal mechanisms contributing to the emergence and persistence of son preference in certain regions and societies. Specifically, this project demonstrates that son preference is more than just a cultural phenomenon or a consequence of female empowerment—it is an outcome of human intervention that has, in many ways, been fostered by the state through coercive programs of fertility control. This relationship between politics, population policy, and son preference demonstrates the challenges of state birth planning. It appears that by enforcing policies that simultaneously sanction government regulation of fertility and promote individual family planning responsibility, a country can control its population size—but not the consequences of such measures. The development of a strong bias in favor of sons and the resulting gender imbalance in the population pose significant threats to the stability and security of nations in the twenty-first century. Maintaining the vitality of a country’s population, I find, is a balancing act. It requires that the underlying circumstances driving son preference be recognized and modified.

7.1. Overview of Findings

The goal of this thesis has been to provide both a quantitative and qualitative assessment of patterns of birth and survival in East Asia in an attempt to better understand which factors contribute to the emergence and persistence of son preference—as well as to its decline. This type of assessment has largely been absent...
from the literature, yet understanding the causal mechanisms influencing the
discrimination of women and girls in Asia would be extremely useful to governments
and NGOs working to reverse these trends. This project, which used quantitative
methods to analyze cross-national and cross-provincial data, as well as case studies of
Vietnam, China, and South Korea, set out to answer: what explains the emergence
and persistence of son preference in some countries and not in others? What can be
done to reverse this phenomenon?

Regarding the development of a strong bias in favor of sons, the findings of
this project point to three core factors: (1) the introduction and stringent enforcement
of an anti-natal policy, which limited the number of children a family could bear in an
effort to reduce population growth; (2) the rapid reduction of fertility and infant
mortality, which either coincided with or came on the heels of the government’s
implementation of an anti-natal policy; and (3) the expansion of the private economy
into areas where government services had formerly played a role, which placed
greater pressure on household resources and inadvertently facilitated pre-natal son
preference.

This project first drew on 2009 cross-national data, as well as 2009 cross-
provincial data from Vietnam, to quantitatively test the rival hypotheses of Amartya
Sen and Elisabeth J. Croll. Amartya Sen posits that improvements in measures of
women’s empowerment will lead to a reduction in son preference. Conversely,
Elisabeth J. Croll argues that the status and treatment of women has no effect on son
preference; rather, the focus should be on girls. She posits that improvements in

398 In this analysis, “rapid” refers to the steepest average annual percent decline in fertility and infant
mortality from 1960-2009. See Table 4.1, 5.1, and 6.1 in Part II for data on each of the project’s cases.
measures of girls’ empowerment will lead to a reduction in son preference. Chapter 2 found, however, that neither women’s empowerment nor girls’ empowerment influenced son preference in accordance with the hypothesized relationships. As such, the project developed an alternative explanation: that anti-natal policy explains the development of a strong bias in favor of sons. Chapter 3 found that in Vietnam, families residing in areas targeted by the one-or-two child policy increasingly resorted to pre-natal sex selection to guarantee a son. Notably, among these families, fertility was restricted and infant mortality was low.

The project’s case studies of Vietnam, China, and South Korea in Chapters 4-6 corroborated the results of Chapter 2 and Chapter 3. The emergence and persistence of son preference in these countries occurred despite lower fertility and mortality and greater opportunities for female education and employment. These trends challenge the prediction that greater female empowerment will reduce the preferential treatment of sons. Part II found that over-time trends and provincial-level patterns of son preference in Vietnam, China, and South Korea corresponded to the degree of enforcement of an anti-natal policy, rather than to cultural factors or empowerment. Because family size was restricted and both infant mortality and fertility were low, the composition of one’s offspring had to be determined before birth; these parents could not rely on the death of a female infant to make room for a son, or on having a large family to ensure the desired composition of their offspring. As such, families increasingly resorted to pre-natal sex selection to guarantee a son.

Evidence suggests that the use of pre-natal sex selection and abortion in the project’s three case studies was facilitated by the expansion of the private economy.
into areas where government services had formerly played a role. This transition, which reduced state expenditures on social services, encouraged practitioners to offer sex identification and abortion services, which are among the most lucrative sources of funding. This shift also placed greater pressure on household resources, which, in light of the restrictions on family size, encouraged families to invest their resources in raising sons.

This project advances the hypothesis that the enforcement of an anti-natal policy is an important explanatory factor in the emergence and persistence of son preference. The project’s findings yield important prescriptions for reversing these trends.

7.2. Evidence of a Substitution Effect?

The growing disequilibrium in the proportion of males to females in many societies worldwide is one of the most overlooked trends of the past century. In Asia in particular, which possesses some of the world’s most severe imbalances in gender, the consequences of son preference for the region’s stability and security are manifold. Yet, what are the implications of these trends for Asia’s daughters? Given the project’s findings, to what extent does increased sex selection reflect the substitution of pre-natal for post-natal discrimination, and what does this tell us about the prevailing strategies being used to combat son preference?

Daniel Goodkind (1996) first articulated the ‘substitution hypothesis’ in his analysis of sex-selective abortion and post-natal survival in several East Asian countries. He suggested that, “if parents increasingly have the option of sex-selective
abortion, daughters actually carried to term would more likely be wanted, and the result might be a decline in post-natal discrimination. ”\textsuperscript{399} A few scholars, including Monica Das Gupta, have refuted this hypothesis by drawing attention to the persistence of female neglect in Asian societies such as India. Although my quantitative work is limited by the absence of gender-disaggregated statistics for measures of survival and health in Vietnam, other measures of female discrimination—such as education—could be used to estimate the relationship. Recall that the project’s provincial-level analysis of the relationship between education and son preference (see Table 2.1) found a significant relationship between higher female primary school enrollment and higher sex ratios at birth. This suggests that in areas where parents more often resort to sex selection, young girls are better educated. Could these parents be substituting pre-natal for post-natal discrimination?

Let us stick with the example of education for a moment. If the substitution hypothesis holds, then the high female primary enrollment rates that the project finds in provinces with high sex ratios at birth may be a reflection of the decisions of families to give birth to a daughter. Because these girls are wanted, post-natal gender discrimination (i.e., in access to education, or health) may be noticeably lower, if not absent. In fact, evidence suggests that China, among other countries, has reported a reduction in its differential mortality rates over the last decade—a period during which its sex ratio at birth increased.\textsuperscript{400} Yet, these patterns should not be construed as potential benefits of pre-natal sex selection; rather, these patterns should be considered within the framework of strategies to combat it.

\textsuperscript{399} Goodkind 1996: 112.
\textsuperscript{400} Hesketh and Xing 2006: 13274.
Most of the current strategies for reducing son preference have shifted their focus from women to young girls in an effort to better target those who endure this discrimination. Yet, these strategies have largely neglected to consider the possibility that targeting young girls (most often in the form of education-based initiatives) may not be the answer to overcoming gender discrimination. My findings suggest that in environments where parents tend to resort to pre-natal sex selection, initiatives directed at improving the survival of young girls may actually be benefitting those girls lucky enough to have been carried to term—those wanted by their parents. Although evidence of a substitution effect is inconclusive, my findings suggest that current strategies for reducing son preference may be missing the target demographic—those yet to be born. Efforts to improve the status and treatment of females before birth, such as by re-evaluating the efficacy of anti-natal policies, may be more effective at reducing and eliminating son preference than efforts targeted at young girls and women. I take up this policy implication in the following section.

7.3. Policy Implications

Son preference is an inherently complex issue, yet my research finds that an all too often overlooked dimension of this phenomenon—anti-natal policy—may be an important factor driving it. Governments should re-evaluate the efficacy of anti-natal policies. Although it remains unclear if and how governments can rectify the situation in the short-term, actions can certainly be taken now to prevent such serious gender imbalances in the future.
This project finds that in low fertility and low mortality environments in which an anti-natal policy is strictly enforced, families increasingly resort to pre-natal sex selection and abortion to guarantee a son within the mandated family size. In each of the project’s case studies, I find evidence of this trend not only over-time and at the provincial level, but particularly when examining sex ratios at birth by parity. In each of the case studies, it appeared that the sex ratios became more masculine with the birth of each subsequent child. This trend led Elisabeth J. Croll (2001) to note that in China and South Korea, “the most observable rise [in the sex ratios at birth] was in second-order births because of the one- and two-child policies.”\footnote{Croll 2001: 229.} In South Korea, the government established a committee in 1994 for re-evaluating the efficacy of its two-child policy, which subsequently led to its revocation in 1996. The country’s highly masculine sex ratios at birth fell from a high of 115.6 in 1993 to 106.4 by 2009—well within the natural rate.

Anecdotal evidence suggests, however, that countries with anti-natal policies in place are reluctant to revise or revoke them over fears of a resurgence in population size. Yet, for these countries, most of which already have sub-replacement fertility rates, a resurgence should be the least of their concerns. In South Korea, for example, its already low fertility rate continued to fall after 1996. By 2005, fertility reached 1.1 births per woman—a rate so low that the government began providing cash incentives to parents with multiple children, including bonuses for a second and third child, in an effort to boost fertility.\footnote{Jones and Leete 2002: 120.} Although fertility increased slightly, to 1.2 births per woman by 2009, the campaigns were widely regarded as unsuccessful. South Korea,
however, is not alone. Pro-natal policies have notoriously been ineffective, in part because higher living costs have discouraged parents from raising large families.\textsuperscript{403}

South Korea’s experiences demonstrate the fine line that governments walk in attempting to avoid a long-term weakening of the state brought about by a dangerously low fertility rate and stagnant economic development brought about by excessive population growth.\textsuperscript{404} Very low fertility poses serious problems for the stability and security of a society. One of the core indicators of a nation’s power is its population size. Research indicates that Asia’s changing demographics may impede economic growth, which could subsequently hinder the region’s ability to augment power or to extend its influence internationally.\textsuperscript{405} Nations enforcing anti-natal policies ought to recognize the costs of population control—costs that extend beyond the creation of a gender imbalance. The track record shows that when it comes to population size, there’s a fine line between augmenting power and losing it.

In addition to re-evaluating anti-natal policies, governments should consider expanding social service expenditures to combat pre-natal son preference. A common tendency among researchers studying the phenomenon of son preference is to advocate for the stricter enforcement of laws that ban practitioners from offering sex identification and abortion services. As the project’s findings demonstrate, however, a more effective strategy would be for governments to reduce practitioners’ incentives for offering sex identification by increasing the provision of social services, particularly in the area of health. If their incomes were no longer dependent on user

\begin{flushright}
\textsuperscript{403} McNicoll 2001: 151.  \\
\textsuperscript{404} McNicoll 2001: 152.  \\
\textsuperscript{405} Eberstadt 2010: 236.
\end{flushright}
fees, practitioners would have little if any financial incentive for offering these services and would likely cease from doing so.

Most research on son preference does not advocate for a change in population policy or for an increase in the provision of social services; rather, research advocates for the expansion of women’s political and economic rights, which scholars tend to see as a prerequisite to a reduction in son preference. In South Korea, the revocation of its anti-natal policy and subsequent decline in son preference coincided with the expansion of women’s rights. However, it remains unclear whether these changes had much of an effect on the country’s reduction in son preference, or whether these benefits for women translated to daughters. Recall that women in China and Vietnam had far greater rights than women in South Korea, including the right to inherit, yet son preference had remained very strong in both countries, regardless. Furthermore, most of the rights gained by women in South Korea were rights that women in Vietnam and China already had. This suggests that the expansion of women’s rights may have contributed little, if at all, to South Korea’s reduction in son preference. As such, this project refrains from advocating for a rights-based approach to son preference. However, further research is needed into this dimension of the relationship.

7.4. Directions for Future Research

This project sheds light on important causal mechanisms contributing to the development of son preference. Specifically, it advances the hypothesis that the enforcement of an anti-natal policy is an important explanatory factor in the
development of a strong bias in favor of sons. Although this finding resulted from an examination of trends in East Asian countries, it certainly applies to other countries outside of East Asia. Because the project’s argument hinges on the enforcement of an anti-natal policy—in other words, the enforcement of restrictions on fertility—measures or incentives that limit fertility and family size may contribute to a similar increase in son preference even in countries without anti-natal policies in place.

According to Sen (1999), a number of countries, including India, have attempted to restrict fertility by using a variety of tactics that come close to force. These include verbal threats, making sterilization a condition of eligibility for anti-poverty programs and certain kinds of health care services, and denying maternity benefits to mothers with more than two children. Legislation was also proposed in the Indian parliament that would bar anyone with more than two children from holding national or state office. Recall that in 2009, India’s sex ratio at birth stood at 112.

Thus, the project’s finding of a relationship between fertility control and son preference applies even to those countries without explicit anti-natal policies in place. However, further quantitative work should be conducted on the relationship between anti-natal policy and son preference, particularly over time. It would be useful to examine patterns of son preference in a country that has since revoked its anti-natal policy (i.e., South Korea) to see if provincial-level differences in the sex ratio at birth—such as the more masculine sex ratios found in urban areas—have persisted. Research has uncovered similar urban-rural differences in son preference in countries

---

408 CIA 2010. Also, see Figure 1.1 in Chapter 1.
without anti-natal policies in place,\textsuperscript{409} which suggests that other factors, such as a family’s income level, may be contributing to patterns of low fertility and high son preference in these areas. As such, it would be valuable if researchers expanded on the project’s path diagram to test for other direct or indirect pathways that may influence son preference. Survey work and in-depth interviews with families would also be a useful addition to the analysis, particularly because they would enable researchers to better gauge what individuals state to be the motivating factors behind their decision-making.

Secondly, even though this project finds that cultural factors (in this case, Confucianism) play a role in the emergence of a societal preference for boys over girls, culture cannot account for why countries outside East Asia (i.e., Armenia, Azerbaijan) have witnessed the development of a strong bias in favor of sons over the past decade. Although these patterns indicate that the project’s findings are not limited to countries whose underlying beliefs and values exhibit a strong preference for sons, researchers should investigate non-Asian countries with highly masculine sex ratios at birth to better understand what drives son preference there. This may illuminate factors overlooked in the development of East Asia’s trends.

Thirdly, the project finds that girls’ empowerment and women’s empowerment are not associated with a reduction in son preference. This relationship, which was tested cross-nationally, indicates that efforts to empower women and girls worldwide through education, employment, and other means do not reduce the preferential status and treatment of sons. However, there remains a need for greater gender-disaggregated statistics. Elisabeth J. Croll (2001) argued that much of the

\textsuperscript{409} Das Gupta 2009.
discrimination against girls remains masked by statistics that are not disaggregated by gender. A decade later, these statistics remain few and far between. Without them, we cannot fully understand the extent of female disadvantage in infancy and childhood, which makes testing Croll’s hypothesis all the more difficult.

Lastly, evidence from Chapter 6 suggests that there are linkages between regime type and son preference. This is another important area for future research. Entrenched authoritarianism may explain how anti-natal policies were successfully implemented, but it may also explain why many unintended consequences, including that of a strong bias in favor of sons, emerged. Notably, the voluntary reduction in fertility—promoted through public discussion, rather than coercion—has been key to effecting demographic change in countries without producing any of the adverse effects found in societies enforcing compulsory programs of birth control.410 Evidence suggests that democracies are more effective than authoritarian regimes at achieving demographic change without generating gender biases. Regime type may also explain why social service provision in all three of the project’s case studies was lower under authoritarianism than under democracy—the former of which appears to have encouraged practitioners to offer sex identification services. As the work of McGuire (2010) and Zweifel and Navia (2000) demonstrate, electoral incentives in democracies place pressure on the government to provide for its people, which promotes the public provision and utilization of health services.411

Future research into the relationship between regime type and son preference could employ panel data from the Polity IV Project in conjunction with panel data of

410 Sen 1999: 221.
411 McGuire 2010: 278.
the male-to-female sex ratio at birth to examine these trends at the national and provincial levels. An understanding of the extent to which regime type influences son preference would be an important addition to the literature on son preference.

7.5. Conclusion

The increasing masculinity of Asia’s sex ratios poses far-reaching implications for global and regional stability, national viability, and individual liberty. Yet, this project’s findings demonstrate that son preference is more than just a consequence of cultural factors or limited female empowerment—it is an outcome of human intervention that has, in many ways, been fostered by the state through programs of population control. The efficacy of these policies ought to be questioned in light of the deteriorating status and treatment of females. Despite the gravity of these conclusions, this project demonstrates that these trends are not fixed. Son preference, for all of its complexity, appears to be reversible.
### Appendix

Table A1: Sex Ratio at Birth and Other Key Variables in Countries Worldwide, 2009

<table>
<thead>
<tr>
<th>Country Name</th>
<th>Sex Ratio at Birth (males per 100 females)</th>
<th>Fertility Rate (births per woman)</th>
<th>Infant Mortality Rate (per 1,000 births)</th>
<th>Female Labor Force Participation Rate (%)</th>
<th>Women’s Literacy Rate (women 15+)</th>
<th>Girls’ Literacy Rate (girls 15-19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>112.3</td>
<td>1.9</td>
<td>14.3</td>
<td>55.5</td>
<td>98.7</td>
<td>99.5</td>
</tr>
<tr>
<td>Algeria</td>
<td>105</td>
<td>2.7</td>
<td>30.0</td>
<td>38.2</td>
<td>63.9</td>
<td>89.1</td>
</tr>
<tr>
<td>Angola</td>
<td>105</td>
<td>5.8</td>
<td>100.9</td>
<td>76.3</td>
<td>57.0</td>
<td>65.2</td>
</tr>
<tr>
<td>Argentina</td>
<td>105.2</td>
<td>2.2</td>
<td>13.6</td>
<td>57.0</td>
<td>97.7</td>
<td>99.3</td>
</tr>
<tr>
<td>Armenia</td>
<td>113.3</td>
<td>1.7</td>
<td>20.7</td>
<td>68.6</td>
<td>99.4</td>
<td>99.8</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>112.4</td>
<td>2.3</td>
<td>31.9</td>
<td>66.3</td>
<td>99.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Bahrain</td>
<td>103</td>
<td>2.3</td>
<td>9.6</td>
<td>33.5</td>
<td>89.4</td>
<td>99.7</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>104</td>
<td>2.3</td>
<td>43.4</td>
<td>61.4</td>
<td>49.8</td>
<td>75.5</td>
</tr>
<tr>
<td>Belarus</td>
<td>106.2</td>
<td>1.4</td>
<td>11.3</td>
<td>68.1</td>
<td>99.7</td>
<td>99.8</td>
</tr>
<tr>
<td>Benin</td>
<td>105</td>
<td>5.5</td>
<td>76.3</td>
<td>68.1</td>
<td>28.1</td>
<td>42.1</td>
</tr>
<tr>
<td>Bhutan</td>
<td>105</td>
<td>2.6</td>
<td>53.9</td>
<td>54.1</td>
<td>38.7</td>
<td>68.0</td>
</tr>
<tr>
<td>Bolivia</td>
<td>105</td>
<td>3.5</td>
<td>41.7</td>
<td>64.1</td>
<td>86.0</td>
<td>99.0</td>
</tr>
<tr>
<td>Bosnia &amp; Herzegovina</td>
<td>107.4</td>
<td>1.2</td>
<td>12.7</td>
<td>65.4</td>
<td>95.9</td>
<td>98.7</td>
</tr>
<tr>
<td>Botswana</td>
<td>103</td>
<td>2.9</td>
<td>44.1</td>
<td>75.1</td>
<td>83.5</td>
<td>96.3</td>
</tr>
<tr>
<td>Brazil</td>
<td>105</td>
<td>1.9</td>
<td>18.3</td>
<td>64.0</td>
<td>90.0</td>
<td>98.6</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>104.7</td>
<td>2.1</td>
<td>5.5</td>
<td>62.6</td>
<td>93.3</td>
<td>99.6</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>106</td>
<td>1.5</td>
<td>9.0</td>
<td>63.4</td>
<td>97.9</td>
<td>97.3</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>103</td>
<td>6.0</td>
<td>92.1</td>
<td>79.7</td>
<td>21.6</td>
<td>33.1</td>
</tr>
<tr>
<td>Burundi</td>
<td>103</td>
<td>4.6</td>
<td>101.9</td>
<td>91.5</td>
<td>59.9</td>
<td>75.3</td>
</tr>
<tr>
<td>Cambodia</td>
<td>104.5</td>
<td>2.9</td>
<td>69.3</td>
<td>75.6</td>
<td>70.9</td>
<td>85.5</td>
</tr>
<tr>
<td>Cameroon</td>
<td>103</td>
<td>4.6</td>
<td>94.8</td>
<td>54.0</td>
<td>67.8</td>
<td>83.5</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>103</td>
<td>2.7</td>
<td>24.2</td>
<td>56.2</td>
<td>79.3</td>
<td>98.9</td>
</tr>
<tr>
<td>Central African Rep.</td>
<td>103</td>
<td>4.8</td>
<td>112.8</td>
<td>71.6</td>
<td>41.1</td>
<td>56.4</td>
</tr>
<tr>
<td>Chad</td>
<td>104</td>
<td>6.2</td>
<td>124.0</td>
<td>64.0</td>
<td>21.9</td>
<td>37.2</td>
</tr>
<tr>
<td>Chile</td>
<td>105</td>
<td>1.9</td>
<td>7.2</td>
<td>48.1</td>
<td>98.7</td>
<td>99.2</td>
</tr>
<tr>
<td>China</td>
<td>119.5</td>
<td>1.8</td>
<td>17.8</td>
<td>74.5</td>
<td>90.5</td>
<td>99.2</td>
</tr>
<tr>
<td>Colombia</td>
<td>106</td>
<td>2.4</td>
<td>16.7</td>
<td>43.3</td>
<td>93.4</td>
<td>98.4</td>
</tr>
<tr>
<td>Comoros</td>
<td>103</td>
<td>3.0</td>
<td>75.5</td>
<td>74.6</td>
<td>67.8</td>
<td>84.1</td>
</tr>
<tr>
<td>Congo, Dem. Rep.</td>
<td>103</td>
<td>6.0</td>
<td>125.8</td>
<td>57.4</td>
<td>56.1</td>
<td>61.8</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>105</td>
<td>2.0</td>
<td>9.8</td>
<td>48.8</td>
<td>96.2</td>
<td>98.6</td>
</tr>
<tr>
<td>Cote d’Ivoire</td>
<td>103</td>
<td>4.6</td>
<td>84.6</td>
<td>51.3</td>
<td>44.3</td>
<td>60.1</td>
</tr>
<tr>
<td>Croatia</td>
<td>105.5</td>
<td>1.5</td>
<td>4.7</td>
<td>58.9</td>
<td>98.0</td>
<td>99.7</td>
</tr>
<tr>
<td>Cuba</td>
<td>106</td>
<td>1.5</td>
<td>4.6</td>
<td>48.6</td>
<td>99.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Cyprus</td>
<td>105</td>
<td>1.5</td>
<td>3.5</td>
<td>64.5</td>
<td>96.7</td>
<td>99.9</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>104</td>
<td>2.6</td>
<td>27.2</td>
<td>54.6</td>
<td>88.2</td>
<td>96.3</td>
</tr>
<tr>
<td>Ecuador</td>
<td>105</td>
<td>2.6</td>
<td>21.1</td>
<td>48.1</td>
<td>81.7</td>
<td>95.6</td>
</tr>
<tr>
<td>Egypt</td>
<td>105</td>
<td>2.9</td>
<td>19.8</td>
<td>24.4</td>
<td>57.8</td>
<td>81.8</td>
</tr>
<tr>
<td>El Salvador</td>
<td>105</td>
<td>2.3</td>
<td>15.6</td>
<td>50.5</td>
<td>81.4</td>
<td>96.4</td>
</tr>
<tr>
<td>Equatorial Guinea</td>
<td>103</td>
<td>5.3</td>
<td>89.5</td>
<td>39.4</td>
<td>89.1</td>
<td>98.1</td>
</tr>
<tr>
<td>Eritrea</td>
<td>103</td>
<td>4.6</td>
<td>40.8</td>
<td>61.6</td>
<td>54.5</td>
<td>84.4</td>
</tr>
<tr>
<td>Estonia</td>
<td>106.3</td>
<td>1.7</td>
<td>4.7</td>
<td>70.2</td>
<td>99.8</td>
<td>99.8</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>103</td>
<td>5.3</td>
<td>69.4</td>
<td>80.8</td>
<td>22.8</td>
<td>38.5</td>
</tr>
<tr>
<td>Gabon</td>
<td>103</td>
<td>3.3</td>
<td>52.5</td>
<td>71.1</td>
<td>83.2</td>
<td>96.4</td>
</tr>
<tr>
<td>Country</td>
<td>Index</td>
<td>1.5</td>
<td>3.0</td>
<td>55.4</td>
<td>95.9</td>
<td>99.3</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Georgia</td>
<td>112</td>
<td>1.6</td>
<td>26.5</td>
<td>59.8</td>
<td>99.7</td>
<td>99.9</td>
</tr>
<tr>
<td>Ghana</td>
<td>103</td>
<td>4.0</td>
<td>48.7</td>
<td>75.2</td>
<td>59.3</td>
<td>77.9</td>
</tr>
<tr>
<td>Greece</td>
<td>106.4</td>
<td>1.5</td>
<td>3.0</td>
<td>55.4</td>
<td>95.9</td>
<td>99.3</td>
</tr>
<tr>
<td>Guatemala</td>
<td>105</td>
<td>4.1</td>
<td>33.3</td>
<td>50.0</td>
<td>68.7</td>
<td>83.6</td>
</tr>
<tr>
<td>Guinea</td>
<td>103</td>
<td>5.4</td>
<td>90.2</td>
<td>82.3</td>
<td>26.4</td>
<td>50.6</td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>103</td>
<td>5.7</td>
<td>116.6</td>
<td>61.2</td>
<td>36.5</td>
<td>61.6</td>
</tr>
<tr>
<td>Honduras</td>
<td>105</td>
<td>3.3</td>
<td>25.7</td>
<td>43.4</td>
<td>83.5</td>
<td>95.0</td>
</tr>
<tr>
<td>Hungary</td>
<td>105.7</td>
<td>1.4</td>
<td>5.4</td>
<td>54.8</td>
<td>98.9</td>
<td>99.0</td>
</tr>
<tr>
<td>India</td>
<td>112</td>
<td>2.7</td>
<td>51.9</td>
<td>35.7</td>
<td>50.8</td>
<td>74.4</td>
</tr>
<tr>
<td>Indonesia</td>
<td>105</td>
<td>2.2</td>
<td>30.7</td>
<td>53.3</td>
<td>88.8</td>
<td>96.3</td>
</tr>
<tr>
<td>Iran, Islamic Rep.</td>
<td>105</td>
<td>1.8</td>
<td>27.1</td>
<td>32.5</td>
<td>76.8</td>
<td>96.7</td>
</tr>
<tr>
<td>Iraq</td>
<td>105</td>
<td>4.1</td>
<td>35.7</td>
<td>14.2</td>
<td>69.2</td>
<td>80.2</td>
</tr>
<tr>
<td>Italy</td>
<td>106.6</td>
<td>1.4</td>
<td>3.4</td>
<td>51.6</td>
<td>98.5</td>
<td>99.9</td>
</tr>
<tr>
<td>Jamaica</td>
<td>105</td>
<td>2.4</td>
<td>26.0</td>
<td>62.2</td>
<td>90.8</td>
<td>98.2</td>
</tr>
<tr>
<td>Jordan</td>
<td>106</td>
<td>3.5</td>
<td>21.9</td>
<td>24.7</td>
<td>88.9</td>
<td>98.9</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>105.8</td>
<td>2.6</td>
<td>26.9</td>
<td>73.9</td>
<td>99.5</td>
<td>99.9</td>
</tr>
<tr>
<td>Kenya</td>
<td>102</td>
<td>4.9</td>
<td>55.7</td>
<td>77.6</td>
<td>82.8</td>
<td>92.9</td>
</tr>
<tr>
<td>Korea, Rep.</td>
<td>106.4</td>
<td>1.2</td>
<td>4.7</td>
<td>54.5</td>
<td>98.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Kuwait</td>
<td>104.1</td>
<td>2.2</td>
<td>8.4</td>
<td>45.6</td>
<td>93.1</td>
<td>98.5</td>
</tr>
<tr>
<td>Kyrgyz Republic</td>
<td>105.3</td>
<td>2.7</td>
<td>33.3</td>
<td>60.9</td>
<td>99.1</td>
<td>99.7</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>104</td>
<td>3.5</td>
<td>47.5</td>
<td>81.4</td>
<td>63.2</td>
<td>73.7</td>
</tr>
<tr>
<td>Latvia</td>
<td>105.4</td>
<td>1.5</td>
<td>7.3</td>
<td>70.6</td>
<td>99.8</td>
<td>99.7</td>
</tr>
<tr>
<td>Lebanon</td>
<td>105</td>
<td>1.8</td>
<td>11.9</td>
<td>24.1</td>
<td>86.0</td>
<td>99.0</td>
</tr>
<tr>
<td>Lesotho</td>
<td>103</td>
<td>3.3</td>
<td>66.1</td>
<td>71.9</td>
<td>95.1</td>
<td>98.0</td>
</tr>
<tr>
<td>Liberia</td>
<td>103</td>
<td>5.9</td>
<td>84.5</td>
<td>69.1</td>
<td>53.0</td>
<td>79.5</td>
</tr>
<tr>
<td>Libya</td>
<td>105</td>
<td>2.7</td>
<td>17.4</td>
<td>25.1</td>
<td>81.3</td>
<td>99.7</td>
</tr>
<tr>
<td>Lithuania</td>
<td>105.7</td>
<td>1.5</td>
<td>5.4</td>
<td>65.5</td>
<td>99.7</td>
<td>99.8</td>
</tr>
<tr>
<td>Macedonia, FYR</td>
<td>107.7</td>
<td>1.4</td>
<td>10.5</td>
<td>50.4</td>
<td>95.4</td>
<td>98.5</td>
</tr>
<tr>
<td>Madagascar</td>
<td>103</td>
<td>4.7</td>
<td>42.5</td>
<td>86.0</td>
<td>65.3</td>
<td>68.2</td>
</tr>
<tr>
<td>Malawi</td>
<td>101.5</td>
<td>5.5</td>
<td>71.4</td>
<td>74.6</td>
<td>65.8</td>
<td>85.0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>106.9</td>
<td>2.6</td>
<td>5.9</td>
<td>46.7</td>
<td>89.8</td>
<td>98.5</td>
</tr>
<tr>
<td>Maldives</td>
<td>105</td>
<td>2.0</td>
<td>12.7</td>
<td>58.3</td>
<td>98.4</td>
<td>99.4</td>
</tr>
<tr>
<td>Mali</td>
<td>103</td>
<td>6.5</td>
<td>102.5</td>
<td>38.1</td>
<td>18.2</td>
<td>30.8</td>
</tr>
<tr>
<td>Malta</td>
<td>105.8</td>
<td>1.4</td>
<td>5.9</td>
<td>41.3</td>
<td>93.5</td>
<td>99.1</td>
</tr>
<tr>
<td>Mauritania</td>
<td>103</td>
<td>4.5</td>
<td>74.6</td>
<td>60.4</td>
<td>49.5</td>
<td>63.4</td>
</tr>
<tr>
<td>Mauritius</td>
<td>105</td>
<td>1.6</td>
<td>14.7</td>
<td>46.3</td>
<td>84.8</td>
<td>97.4</td>
</tr>
<tr>
<td>Mexico</td>
<td>105</td>
<td>2.1</td>
<td>15.3</td>
<td>46.3</td>
<td>91.4</td>
<td>98.4</td>
</tr>
<tr>
<td>Moldova</td>
<td>105.9</td>
<td>1.5</td>
<td>15.2</td>
<td>53.4</td>
<td>97.8</td>
<td>99.7</td>
</tr>
<tr>
<td>Mongolia</td>
<td>105</td>
<td>2.0</td>
<td>26.3</td>
<td>70.0</td>
<td>97.8</td>
<td>97.2</td>
</tr>
<tr>
<td>Morocco</td>
<td>105</td>
<td>2.4</td>
<td>34.6</td>
<td>28.7</td>
<td>44.1</td>
<td>68.4</td>
</tr>
<tr>
<td>Mozambique</td>
<td>101.7</td>
<td>5.1</td>
<td>99.2</td>
<td>85.7</td>
<td>40.1</td>
<td>62.1</td>
</tr>
<tr>
<td>Myanmar</td>
<td>106</td>
<td>2.3</td>
<td>54.7</td>
<td>64.2</td>
<td>89.2</td>
<td>95.1</td>
</tr>
<tr>
<td>Namibia</td>
<td>103</td>
<td>3.4</td>
<td>34.9</td>
<td>53.5</td>
<td>87.7</td>
<td>94.8</td>
</tr>
<tr>
<td>Nepal</td>
<td>104</td>
<td>2.9</td>
<td>40.8</td>
<td>65.9</td>
<td>45.4</td>
<td>75.0</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>105</td>
<td>2.7</td>
<td>22.9</td>
<td>48.6</td>
<td>77.9</td>
<td>88.8</td>
</tr>
<tr>
<td>Niger</td>
<td>103</td>
<td>7.1</td>
<td>78.7</td>
<td>37.9</td>
<td>15.1</td>
<td>23.2</td>
</tr>
<tr>
<td>Country</td>
<td>ACI</td>
<td>FDI</td>
<td>CIT</td>
<td>PID</td>
<td>ECI</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Oman</td>
<td>0.05</td>
<td>3.0</td>
<td>9.8</td>
<td>26.1</td>
<td>80.9</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.05</td>
<td>4.0</td>
<td>71.9</td>
<td>21.8</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>Panama</td>
<td>0.05</td>
<td>2.5</td>
<td>16.2</td>
<td>52.6</td>
<td>92.8</td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>0.05</td>
<td>4.1</td>
<td>52.6</td>
<td>72.1</td>
<td>55.6</td>
<td></td>
</tr>
<tr>
<td>Paraguay</td>
<td>0.05</td>
<td>3.0</td>
<td>20.0</td>
<td>58.0</td>
<td>93.5</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>0.05</td>
<td>2.6</td>
<td>20.7</td>
<td>61.3</td>
<td>84.6</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>0.05</td>
<td>3.1</td>
<td>26.5</td>
<td>50.2</td>
<td>93.9</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>0.05</td>
<td>1.4</td>
<td>5.8</td>
<td>56.9</td>
<td>99.3</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>0.05</td>
<td>1.4</td>
<td>3.2</td>
<td>69.0</td>
<td>92.9</td>
<td></td>
</tr>
<tr>
<td>Qatar</td>
<td>0.05</td>
<td>2.4</td>
<td>10.0</td>
<td>49.3</td>
<td>90.4</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>0.05</td>
<td>1.4</td>
<td>11.2</td>
<td>55.3</td>
<td>96.9</td>
<td></td>
</tr>
<tr>
<td>Russian Federation</td>
<td>0.05</td>
<td>1.5</td>
<td>11.9</td>
<td>68.7</td>
<td>99.4</td>
<td></td>
</tr>
<tr>
<td>Rwanda</td>
<td>0.05</td>
<td>5.4</td>
<td>73.8</td>
<td>87.9</td>
<td>66.1</td>
<td></td>
</tr>
<tr>
<td>Sao Tome and Principe</td>
<td>0.05</td>
<td>3.8</td>
<td>52.4</td>
<td>46.9</td>
<td>83.3</td>
<td></td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>0.05</td>
<td>3.1</td>
<td>18.4</td>
<td>21.8</td>
<td>80.2</td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>0.05</td>
<td>4.8</td>
<td>51.8</td>
<td>65.3</td>
<td>33.0</td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>0.05</td>
<td>5.2</td>
<td>125.5</td>
<td>67.1</td>
<td>28.9</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>0.05</td>
<td>1.5</td>
<td>2.6</td>
<td>67.5</td>
<td>99.7</td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>0.05</td>
<td>2.5</td>
<td>44.7</td>
<td>51.0</td>
<td>88.1</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>0.05</td>
<td>1.5</td>
<td>3.6</td>
<td>63.2</td>
<td>96.9</td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>0.05</td>
<td>2.3</td>
<td>13.2</td>
<td>38.5</td>
<td>89.0</td>
<td></td>
</tr>
<tr>
<td>Sudan</td>
<td>0.05</td>
<td>4.2</td>
<td>69.7</td>
<td>32.3</td>
<td>59.6</td>
<td></td>
</tr>
<tr>
<td>Suriname</td>
<td>0.05</td>
<td>2.4</td>
<td>24.6</td>
<td>41.8</td>
<td>88.4</td>
<td></td>
</tr>
<tr>
<td>Swaziland</td>
<td>0.05</td>
<td>3.5</td>
<td>53.3</td>
<td>55.2</td>
<td>85.6</td>
<td></td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>0.05</td>
<td>3.2</td>
<td>14.6</td>
<td>22.0</td>
<td>77.2</td>
<td></td>
</tr>
<tr>
<td>Tajikistan</td>
<td>0.05</td>
<td>3.4</td>
<td>54.1</td>
<td>59.1</td>
<td>99.5</td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>0.05</td>
<td>5.6</td>
<td>69.9</td>
<td>88.8</td>
<td>66.3</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>0.05</td>
<td>1.8</td>
<td>12.5</td>
<td>70.7</td>
<td>91.5</td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>0.05</td>
<td>4.3</td>
<td>65.7</td>
<td>64.6</td>
<td>53.7</td>
<td></td>
</tr>
<tr>
<td>Tonga</td>
<td>0.05</td>
<td>4.0</td>
<td>16.7</td>
<td>56.0</td>
<td>99.1</td>
<td></td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>0.05</td>
<td>1.6</td>
<td>31.1</td>
<td>59.4</td>
<td>98.2</td>
<td></td>
</tr>
<tr>
<td>Tunisia</td>
<td>0.05</td>
<td>2.1</td>
<td>18.4</td>
<td>27.7</td>
<td>69.6</td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>0.05</td>
<td>2.1</td>
<td>19.9</td>
<td>26.9</td>
<td>81.3</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>0.05</td>
<td>6.3</td>
<td>81.0</td>
<td>80.5</td>
<td>66.8</td>
<td></td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.05</td>
<td>1.4</td>
<td>13.7</td>
<td>62.3</td>
<td>99.6</td>
<td></td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>0.05</td>
<td>1.9</td>
<td>7.0</td>
<td>42.5</td>
<td>91.5</td>
<td></td>
</tr>
<tr>
<td>Uruguay</td>
<td>0.05</td>
<td>3.7</td>
<td>11.7</td>
<td>64.4</td>
<td>98.5</td>
<td></td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>0.05</td>
<td>2.6</td>
<td>33.7</td>
<td>61.7</td>
<td>98.9</td>
<td></td>
</tr>
<tr>
<td>Vanuatu</td>
<td>0.05</td>
<td>4.0</td>
<td>15.0</td>
<td>79.7</td>
<td>79.5</td>
<td></td>
</tr>
<tr>
<td>Venezuela, RB</td>
<td>0.05</td>
<td>2.5</td>
<td>15.8</td>
<td>54.0</td>
<td>94.9</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>0.05</td>
<td>2.1</td>
<td>19.9</td>
<td>74.2</td>
<td>90.2</td>
<td></td>
</tr>
<tr>
<td>Yemen, Rep.</td>
<td>0.05</td>
<td>5.2</td>
<td>52.8</td>
<td>20.1</td>
<td>42.8</td>
<td></td>
</tr>
<tr>
<td>Zambia</td>
<td>0.05</td>
<td>5.8</td>
<td>87.9</td>
<td>60.4</td>
<td>61.0</td>
<td></td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>0.05</td>
<td>3.4</td>
<td>58.2</td>
<td>60.8</td>
<td>88.8</td>
<td></td>
</tr>
</tbody>
</table>

Source: World Bank (2010), World Development Indicators. Only those countries with complete data are included in this table.
Table A2: Sex Ratio at Birth and Other Key Provincial-level Variables in Vietnam, 2009

<table>
<thead>
<tr>
<th>Province</th>
<th>Sex ratio at birth (males per 100 females)</th>
<th>Infant mortality rate (per 1,000 live births)</th>
<th>Total fertility rate (births per woman)</th>
<th>Proportion of population with 3+ children (%)</th>
<th>Women’s literacy rate (females 15+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Country</td>
<td>110.5 (total), 110.6 (urban), 110.5 (rural)</td>
<td>16.0</td>
<td>2.03</td>
<td>16.1</td>
<td>91.4</td>
</tr>
<tr>
<td>Northern Midlands &amp; Mountains</td>
<td>108.5 (total), 112.4 (urban), 107.8 (rural)</td>
<td>24.5</td>
<td>2.24</td>
<td>18.7</td>
<td>82.8</td>
</tr>
<tr>
<td>Red River Delta</td>
<td>115.3 (total), 111.4 (urban), 117.1 (rural)</td>
<td>12.4</td>
<td>2.11</td>
<td>13.2</td>
<td>95.6</td>
</tr>
<tr>
<td>North South Central Coast</td>
<td>109.7 (total), 105.8 (urban), 111.1 (rural)</td>
<td>17.2</td>
<td>2.21</td>
<td>21.1</td>
<td>91.7</td>
</tr>
<tr>
<td>Central Highlands</td>
<td>105.6 (total), 107.2 (urban), 105.1 (rural)</td>
<td>27.3</td>
<td>2.65</td>
<td>27.4</td>
<td>85.1</td>
</tr>
<tr>
<td>Southeast</td>
<td>109.9 (total), 111.8 (urban), 107.8 (rural)</td>
<td>10.0</td>
<td>1.69</td>
<td>10.9</td>
<td>95.4</td>
</tr>
<tr>
<td>Mekong River Delta</td>
<td>109.9 (total), 113.4 (urban), 108.9 (rural)</td>
<td>13.3</td>
<td>1.84</td>
<td>12.4</td>
<td>89.5</td>
</tr>
<tr>
<td>Province (total) (urban) (rural)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ha Noi</td>
<td>113.2 (total), 109.5 (urban), 115.8 (rural)</td>
<td>10.7</td>
<td>2.08</td>
<td>11.4</td>
<td>96.3</td>
</tr>
<tr>
<td>Ha Giang</td>
<td>103.6 (total), 114.8 (urban), 102.5 (rural)</td>
<td>37.5</td>
<td>3.08</td>
<td>31.0</td>
<td>55.1</td>
</tr>
<tr>
<td>Cao Bang</td>
<td>104.6 (total), 115.3 (urban), 102.8 (rural)</td>
<td>28.7</td>
<td>2.18</td>
<td>20.0</td>
<td>77.4</td>
</tr>
<tr>
<td>Bac Kan</td>
<td>102 (total), 113 (urban), 99.6 (rural)</td>
<td>19.9</td>
<td>1.84</td>
<td>10.7</td>
<td>86.5</td>
</tr>
<tr>
<td>Tuyen Quang</td>
<td>102.2 (total), 99.8 (urban), 102.5 (rural)</td>
<td>19.9</td>
<td>2.1</td>
<td>10.8</td>
<td>89.3</td>
</tr>
<tr>
<td>Lao Cai</td>
<td>113.7 (total), 141.2 (urban), 108.7 (rural)</td>
<td>32.0</td>
<td>2.7</td>
<td>26.1</td>
<td>70.6</td>
</tr>
<tr>
<td>Dien Bien</td>
<td>102.8 (total), 119.6 (urban), 101 (rural)</td>
<td>39.7</td>
<td>2.55</td>
<td>34.6</td>
<td>54.8</td>
</tr>
<tr>
<td>Lai Chau</td>
<td>102.2 (total), 112.8 (urban), 100.8 (rural)</td>
<td>47.7</td>
<td>2.96</td>
<td>39.2</td>
<td>42.7</td>
</tr>
<tr>
<td>Son La</td>
<td>104.3 (total), 98.9 (urban), 104.9 (rural)</td>
<td>27.5</td>
<td>2.61</td>
<td>22.7</td>
<td>63.8</td>
</tr>
<tr>
<td>Yen Bai</td>
<td>111.6 (total), 111.1 (urban), 111.7 (rural)</td>
<td>28.7</td>
<td>2.38</td>
<td>19.6</td>
<td>81.9</td>
</tr>
<tr>
<td>Hoa Binh</td>
<td>116.3 (total), 109.7 (urban), 117.6 (rural)</td>
<td>19.9</td>
<td>1.98</td>
<td>7.7</td>
<td>93.2</td>
</tr>
<tr>
<td>Thai Nguyen</td>
<td>110.5 (total), 110.4 (urban), 110.5 (rural)</td>
<td>14.8</td>
<td>1.89</td>
<td>7.2</td>
<td>95.2</td>
</tr>
<tr>
<td>Lang Son</td>
<td>106.7 (total), 98.9 (urban), 108.9 (rural)</td>
<td>19.7</td>
<td>1.86</td>
<td>12.0</td>
<td>90.9</td>
</tr>
<tr>
<td>Quang Ninh</td>
<td>115 (total), 117.6 (urban), 112.1 (rural)</td>
<td>16.1</td>
<td>2.2</td>
<td>9.6</td>
<td>93.3</td>
</tr>
<tr>
<td>Bac Giang</td>
<td>116.8 (total), 126.4 (urban), 115.7 (rural)</td>
<td>17.2</td>
<td>1.94</td>
<td>13.1</td>
<td>94.6</td>
</tr>
<tr>
<td>Phu Tho</td>
<td>111.7 (total), 111.2 (urban), 111.8 (rural)</td>
<td>18.8</td>
<td>2.1</td>
<td>9.8</td>
<td>95.2</td>
</tr>
<tr>
<td>Vinh Phuc</td>
<td>114.9 (total), 120.2 (urban), 113.3 (rural)</td>
<td>12.9</td>
<td>2.13</td>
<td>13.7</td>
<td>95.7</td>
</tr>
<tr>
<td>Bac Ninh</td>
<td>119.4 (total), 110.3 (urban), 122.9 (rural)</td>
<td>13.2</td>
<td>2.32</td>
<td>18.7</td>
<td>95.1</td>
</tr>
<tr>
<td>Hai Duong</td>
<td>120.2 (total), 108 (urban), 123.4 (rural)</td>
<td>12.9</td>
<td>1.99</td>
<td>12.8</td>
<td>95.2</td>
</tr>
<tr>
<td>Hai Phong</td>
<td>115.3 (total), 114.7 (urban), 116 (rural)</td>
<td>11.8</td>
<td>2.16</td>
<td>8.9</td>
<td>96.4</td>
</tr>
<tr>
<td>Hung Yen</td>
<td>130.7 (total), 111.8 (urban), 133.9 (rural)</td>
<td>13.2</td>
<td>2.11</td>
<td>14.1</td>
<td>95.2</td>
</tr>
<tr>
<td>Thai Binh</td>
<td>111.6 (total), 109.7 (urban), 111.8 (rural)</td>
<td>11.8</td>
<td>2.08</td>
<td>16.0</td>
<td>95.4</td>
</tr>
<tr>
<td>Ha Nam</td>
<td>109.5 (total), 132.1 (urban), 106.8 (rural)</td>
<td>15.9</td>
<td>2.07</td>
<td>17.2</td>
<td>95.3</td>
</tr>
<tr>
<td>Nam Dinh</td>
<td>116.4 (total), 107 (urban), 118.6 (rural)</td>
<td>13.5</td>
<td>2.25</td>
<td>18.4</td>
<td>95.3</td>
</tr>
<tr>
<td>Ninh Binh</td>
<td>110.4 (total), 99.4 (urban), 113.1 (rural)</td>
<td>15.9</td>
<td>2.04</td>
<td>15.8</td>
<td>95.6</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Thanh Hoa</td>
<td>110.7</td>
<td>108.3</td>
<td>111</td>
<td>17.2</td>
<td>1.89</td>
</tr>
<tr>
<td>Nghe An</td>
<td>109.1</td>
<td>110</td>
<td>109.2</td>
<td>18.5</td>
<td>2.55</td>
</tr>
<tr>
<td>Ha Tinh</td>
<td>103.2</td>
<td>99</td>
<td>104.1</td>
<td>18.2</td>
<td>2.46</td>
</tr>
<tr>
<td>Quang Binh</td>
<td>104.4</td>
<td>101.5</td>
<td>105</td>
<td>20.9</td>
<td>2.37</td>
</tr>
<tr>
<td>Quang Tri</td>
<td>105.2</td>
<td>91.4</td>
<td>110.9</td>
<td>38.0</td>
<td>2.85</td>
</tr>
<tr>
<td>Thua Thien Hue</td>
<td>109.6</td>
<td>105</td>
<td>112.2</td>
<td>23.0</td>
<td>2.26</td>
</tr>
<tr>
<td>Da Nang</td>
<td>105.4</td>
<td>105.7</td>
<td>103.7</td>
<td>11.0</td>
<td>2.14</td>
</tr>
<tr>
<td>Quang Nam</td>
<td>112.8</td>
<td>114.3</td>
<td>112.4</td>
<td>21.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Quang Ngai</td>
<td>115.1</td>
<td>120.8</td>
<td>114.3</td>
<td>20.0</td>
<td>2.09</td>
</tr>
<tr>
<td>Binh Dinh</td>
<td>113.8</td>
<td>104.6</td>
<td>117.4</td>
<td>18.5</td>
<td>2.22</td>
</tr>
<tr>
<td>Phu Yen</td>
<td>110.1</td>
<td>96.3</td>
<td>114.6</td>
<td>21.0</td>
<td>1.96</td>
</tr>
<tr>
<td>Khanh Hoa</td>
<td>108.1</td>
<td>105.9</td>
<td>109.4</td>
<td>16.5</td>
<td>2.04</td>
</tr>
<tr>
<td>Ninh Thuan</td>
<td>110.8</td>
<td>114.2</td>
<td>109.2</td>
<td>22.6</td>
<td>2.4</td>
</tr>
<tr>
<td>Binh Thuan</td>
<td>112.9</td>
<td>104.5</td>
<td>118</td>
<td>15.0</td>
<td>2.07</td>
</tr>
<tr>
<td>Kon Tum</td>
<td>103.6</td>
<td>107.4</td>
<td>102.2</td>
<td>38.2</td>
<td>3.45</td>
</tr>
<tr>
<td>Gia Lai</td>
<td>103.2</td>
<td>110.2</td>
<td>101.1</td>
<td>25.8</td>
<td>2.88</td>
</tr>
<tr>
<td>Dak Lak</td>
<td>104.9</td>
<td>88.9</td>
<td>109.7</td>
<td>22.1</td>
<td>2.45</td>
</tr>
<tr>
<td>Dak Nong</td>
<td>102.2</td>
<td>121.2</td>
<td>99.7</td>
<td>26.8</td>
<td>2.72</td>
</tr>
<tr>
<td>Lam Dong</td>
<td>112.6</td>
<td>121.3</td>
<td>108.5</td>
<td>14.6</td>
<td>2.43</td>
</tr>
<tr>
<td>Binh Phuoc</td>
<td>108.3</td>
<td>120.9</td>
<td>106.1</td>
<td>19.9</td>
<td>2.45</td>
</tr>
<tr>
<td>Tay Ninh</td>
<td>112</td>
<td>104.1</td>
<td>113.3</td>
<td>14.0</td>
<td>1.79</td>
</tr>
<tr>
<td>Binh Duong</td>
<td>96.7</td>
<td>100.2</td>
<td>95.3</td>
<td>9.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Dong Nai</td>
<td>112.6</td>
<td>118.5</td>
<td>109.3</td>
<td>9.8</td>
<td>2.07</td>
</tr>
<tr>
<td>Ba Ria-Vung Tau</td>
<td>111</td>
<td>113.6</td>
<td>108.3</td>
<td>10.0</td>
<td>2.01</td>
</tr>
<tr>
<td>Ho Chi Minh City</td>
<td>112.3</td>
<td>111.4</td>
<td>116</td>
<td>8.9</td>
<td>1.45</td>
</tr>
<tr>
<td>Long An</td>
<td>102.9</td>
<td>109.2</td>
<td>101.9</td>
<td>11.0</td>
<td>1.85</td>
</tr>
<tr>
<td>Tien Giang</td>
<td>111.1</td>
<td>121</td>
<td>109.7</td>
<td>12.0</td>
<td>1.94</td>
</tr>
<tr>
<td>Ben Tre</td>
<td>100.5</td>
<td>95.1</td>
<td>101</td>
<td>13.0</td>
<td>1.81</td>
</tr>
<tr>
<td>Tra Vinh</td>
<td>112.7</td>
<td>115.6</td>
<td>112.2</td>
<td>17.0</td>
<td>1.86</td>
</tr>
<tr>
<td>Vinh Long</td>
<td>112.3</td>
<td>128.7</td>
<td>110</td>
<td>12.0</td>
<td>1.63</td>
</tr>
<tr>
<td>Dong Thap</td>
<td>108.5</td>
<td>111.8</td>
<td>107.8</td>
<td>16.0</td>
<td>1.87</td>
</tr>
<tr>
<td>An Giang</td>
<td>113.7</td>
<td>115.6</td>
<td>113.1</td>
<td>17.0</td>
<td>1.97</td>
</tr>
<tr>
<td>Kien Giang</td>
<td>110.6</td>
<td>116.7</td>
<td>108.5</td>
<td>15.0</td>
<td>1.84</td>
</tr>
<tr>
<td>Can Tho</td>
<td>114.1</td>
<td>112.1</td>
<td>117.6</td>
<td>9.6</td>
<td>1.72</td>
</tr>
<tr>
<td>Hau Giang</td>
<td>107.6</td>
<td>110</td>
<td>107</td>
<td>12.0</td>
<td>1.96</td>
</tr>
<tr>
<td>Soc Trang</td>
<td>109.8</td>
<td>107.7</td>
<td>110.4</td>
<td>17.0</td>
<td>1.79</td>
</tr>
<tr>
<td>Bac Lieu</td>
<td>109.3</td>
<td>104.1</td>
<td>111.4</td>
<td>14.0</td>
<td>1.75</td>
</tr>
<tr>
<td>Ca Mau</td>
<td>112.7</td>
<td>121.4</td>
<td>110.5</td>
<td>15.0</td>
<td>1.75</td>
</tr>
</tbody>
</table>

Works Cited


