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Author(s): James Lee and Wang Feng

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Malthusian Models and Chinese Realities: The Chinese Demographic System 1700–2000

JAMES LEE
WANG FENG

DURING THE LAST 300 years world population has increased roughly ten-fold. In 1700 world population was less than 700 million. Today on the eve of the twenty-first century, it stands close to 6 billion. While population growth rates have begun to decline throughout much of the world in recent times, population is expected almost to double again to some 11 billion, before stabilizing by the late twenty-second century.¹

Malthusian models

Ever since this acceleration in population growth began in the eighteenth century, population has been a central focus of social theory. The classic economists—Adam Smith, David Ricardo, and Robert Malthus, in particular—were all preoccupied with the relationship between population and social welfare. Their writings have greatly influenced later thinking on the processes and consequences of demographic change. Despite the triumphs of modern economic growth, the Malthusian concern that population growth imposes constraints on material progress and social wellbeing has persisted into the late twentieth century.

So has the Malthusian postulate that checks to population growth require cultural constructs and social formation peculiar to Western society. In his famous essays on population,² Malthus identified two kinds of checks.

¹ These numbers are derived from data from the United Nations Population Division, Department of Economic and Social Information and Policy Analysis. See also Biraben (1979), Coale (1975), Durand (1977), and McEvedy and Jones (1978).

² Malthus published the first edition of *An Essay on the Principle of Population* anonymously in 1798 and a substantially revised second edition in 1803. This second edition was followed by subsequent revised editions in 1806, 1807, 1817, and 1826. In 1986, an eight-volume complete edition of *The Works of Thomas Robert Malthus*, edited by E. A. Wrigley and David Souden, was published. We cite this edition here.

Either population growth was controlled by restricting nuptiality, which Malthus termed the preventive check and identified with the “modern” European world; or population grew uncontrollably until increasing poverty led to rises in mortality, which Malthus termed the positive check and identified with the nonmodern European and non-European world.³ For Malthus, delayed marriage was the preferred check on population growth. In contrast with the positive check, which operated through vice or misery, the preventive check operated through “moral restraint,” which was an individual decision to forgo marriage until one could support a family. This postponement not only encouraged individual savings and discouraged poverty; by restricting population growth, it kept the price of labor high and assured general prosperity.⁴

Malthus, in other words, was one of the first social theorists to compare the affluence of modern Western society to non-Western and non-modern Western societies and to link the gap between them to specific patterns of demographic behavior.⁵ His conclusion, that modern affluence was partly a product of differential population growth, has had a powerful influence not only on Western social theorists, but even on present-day Chinese policymakers. For Malthus, what we today term family planning required a uniquely Western ability to calculate consciously the costs and benefits of having children, and to decide deliberately to delay or abstain from marriage. Prosperity, in other words, was a product of Western individualism and Western rationality.⁶

Indeed, we now believe that the rise of such conscious individual decisionmaking resulting in small families is connected to the increase in literacy, the emergence and diffusion of Western individualism, and the growing penetration of market economies. Such scholars as John Hajnal (1965, 1982) and Alan Macfarlane (1978, 1986, 1987) have suggested that the

³ The metageography is from Malthus, who included a long and detailed survey of both worlds in the first two “books” of the second and subsequent editions of his essay and concluded, “In comparing the state of society which has been considered in this second book [on modern European society] with that which formed the subject of the first [on non-European and nonmodern European societies], I think it appears that in modern Europe the positive checks to population prevail less, and the preventive checks more than in past times, and in the more uncivilized parts of the world” (Malthus 1826/1986: 315).

⁴ “The period of delayed gratification would be passed in saving the earnings which were above the wants of a single man, and in acquiring habits of sobriety, industry and economy, which would enable him in a few years to enter into the matrimonial contract without fear of its consequences. The operation of the preventive check in this way, by constantly keeping the population within the limits of the food, though constantly following its increase, would give a real value to the rise of wages and the sums saved by labourers before marriage . . .” (Malthus 1826/1986: 475).

⁵ Here and elsewhere we follow the stylized lead of the neo-Malthusians and use East to refer to China and West to refer to Western Europe, especially England (Schofield 1989: 284–285). According to Malthus’s own definitions, “modern” Europe comprised Norway, Sweden, Russia, the middle parts of Europe, Switzerland, France, England, Scotland, and Ireland, while non-Europe and nonmodern Europe included Tierra del Fuego, the American Indians, the Islands of the South Sea, the ancient inhabitants of the North of Europe, modern pastoral nations, Africa, Siberia, the Turkish dominions and Persia, Hindustan and Tibet, China and Japan, and the ancient Greek and Roman world.

⁶ Goody (1996) discusses in detail the claim of the superiority of the West over the East and devotes a long chapter, almost one-fifth of the book, to the Malthusian and neo-Malthusian contributions in particular.

European origins of the demographic transition, the European roots of individualism, and even the European development of nineteenth-century capitalism are all intertwined and embedded in a European family and demographic culture that encouraged such revolutionary social and economic changes. By identifying and linking demographic systems both more explicitly and more systematically to social, economic, and cultural systems than Malthus did himself, they and other contemporary social theorists have elevated the level of Malthusian discourse and have amplified the theoretical implications of Malthusian formulations (Goody 1996).

In such a conception, non-Western patriarchy, social formation, and economic processes are all subsumed in a universal binary “other” that by its very nature is antimodern. China, in particular, is singled out as the personification of this other—partly as a consequence of its size, partly as a consequence of its better-documented history. Malthus specifically identified China as the prime example of a society dominated by the positive check and virtually devoid of any preventive check.⁷ Similarly Hajnal (1982) and Roger Schofield (1989) have proposed that if the Western European family system stood at one extreme of the social spectrum, China, together with India, occupied the other.⁸

This conflation and sweeping generalization originate at least partially from a paucity of empirical knowledge about Chinese society and population, not just two centuries ago, but even today. As recently as two decades ago, there were virtually no demographic students of China and little available data. China was at once the largest and the least known of any historical or contemporary human population.⁹ As a result, while research on European population history has confirmed Malthus’s observations of European, particularly English demographic behavior,¹⁰ the absence of similar studies of Chinese population history has facilitated the perpetuation of the binary opposition elaborated by Malthus. Superficial eighteenth-century commentaries have consequently become time-honored truths; Malthusian hypotheses have become accepted theories.¹¹

All this, however, is beginning to change. New data and new methods have reconstructed the population history of virtually all the 1.7 bil-

⁷ This is especially true beginning with the second edition in 1803. China is largely missing from the first, 1798, edition, but has a chapter more or less to itself in all subsequent editions.

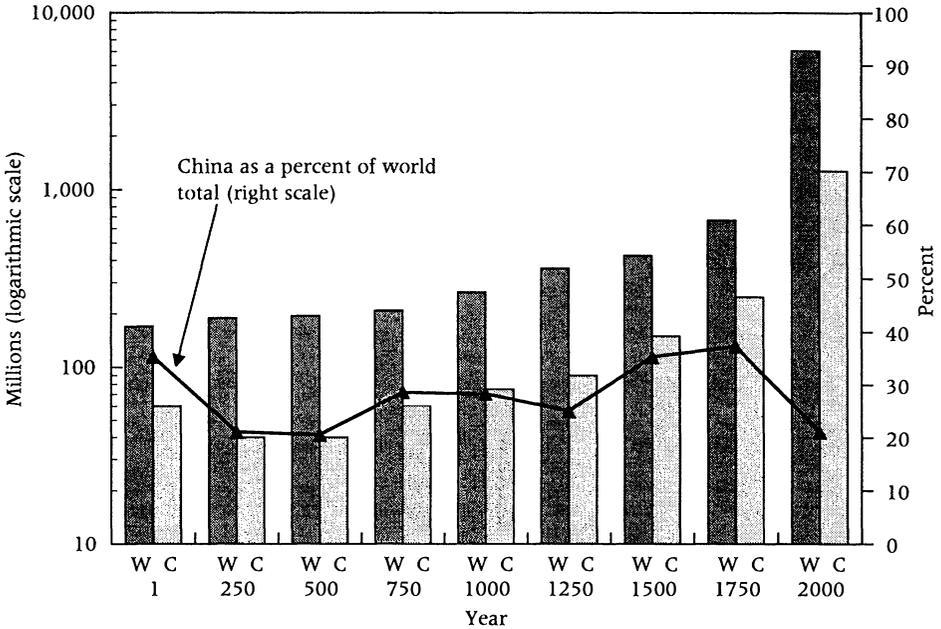
⁸ Macfarlane (1997: 363–367) provides the most recent reformulation of this contrast, this time between China and Japan.

⁹ These remarks do not, of course, apply to Taiwan, where in demography as in other respects, recent history has diverged from that of the rest of China. See Lavelly, Lee, and Wang (1990) for a discussion of the state of Chinese demography excluding Taiwan, and Solinger (1999) for a discussion of population mobility and migration studies of China in the 1990s.

¹⁰ The most important work is by the Cambridge Group for the History of Population and Social Structure, summarized in two volumes: Wrigley and Schofield (1981) and Wrigley et al. (1997).

¹¹ Wrigley et al. (1997), for example, conclude, “Had he but known it, Malthus might well have dubbed a preventive-check society, in which marriage acted as the demographic regulator, as ‘English’ to balance his designation of a positive-check society, where the regulator was mortality, as ‘Chinese’” (p. 549).

FIGURE 1 Population of China and the world, A.D. 1–2000



W = world C = China

SOURCES: Biraben (1979), Durand (1977), McEvedy and Jones (1978), United Nations (1998), Zhao and Xie (1988).

lion Chinese alive since 1950 and 0.5 million of the 3 billion Chinese alive in the eighteenth, nineteenth, and early twentieth centuries. Although such research is only beginning to uncover regional variations in Chinese demographic behavior, the broad contrasts with European demographic behavior and its Malthusian conceptualization are already apparent.¹²

As a result, we can now better appreciate the significance of China's historical and contemporary population. The third largest country in the world in terms of area, China is the largest in terms of population.¹³ The country's nearly 1.3 billion people account for roughly one-fifth of the world's population. This proportion was even larger in the past.¹⁴ Figure 1 compares

¹² See Lavelly and Wong (1998) and Zhao (1997b) for two other attempts at such comparison with Chinese data, and Das Gupta (1995) for a comparison of the European and Indian experience.

¹³ China will eventually lose its title of being the most populous country on earth. Current projection predicts India to replace China before the mid-twenty-first century. According to the United Nations Population Division, while Chinese population is projected to plateau more or less by 2030 at 1.5 to 1.6 billion, Indian population is projected to continue to grow to almost 1.7 billion by 2150.

¹⁴ For much of human history world population has been remarkably sparse. While we currently trace our hominid origins back millions of years, we also believe that as recently as 5000 B.C. there were no more than 5 million people, concentrated largely in Asia and Africa. These numbers grew slowly. A demographic regime of high mortality and low fertility restricted global population growth to below 2 per ten thousand a year. While the rate of population growth increased with the rise and spread of settled agriculture during the fifth millennium B.C. and of literate civilization during the first millennium B.C., it required a millennium for population to double. In A.D. 1, world population was still only 150 to 200 million. As late as 1700, 300 years after the Renaissance and 200 years after the Age of Discovery, world population was no more than 600 to 700 million (Biraben 1979, Coale 1975, Durand 1977, and McEvedy and Jones 1978).

Chinese and world population numbers from A.D. 1 to 2000, virtually the entirety of human history for which we have recorded demographic data or reasonable population estimates. For long stretches during the last two millennia, including the last three centuries, one of every three to four human beings has been Chinese.

In this essay and in a forthcoming book (Lee and Wang 1999), we summarize our current understanding of Chinese demographic behavior and confront the classic Malthusian model that has predominated in economic and demographic theory for the last 200 years. In so doing, we construct a stylized model of a Chinese demographic system to contrast with the ideal model first proposed by Malthus and elaborated by others.¹⁵ We suggest that the Chinese demographic system not only provides an alternative demographic model to the Malthusian model of preventive and positive checks; the supposed universality of the Malthusian “opposition” needs qualification, as does the currently prevailing understanding of Chinese society and economy during the last three centuries.

Specifically, we identify four distinctive aspects of Chinese demographic behavior—mortality, nuptiality, fertility, and fictive kinship and adoption—that persist today, that differ from Western patterns, and that temper the Malthusian understanding of comparative demographic behavior in general and of China in particular.

Chinese realities

For Malthus and many contemporary historians (Elvin 1973, Huang 1990), China, one of the richest of human societies, was also one of the poorest.¹⁶ Despite the advantages of natural geography,¹⁷ native industry,¹⁸ and a patriarchal state that raised agricultural production and agricultural productivity to prodigious levels,¹⁹ Chinese living standards were characterized by low wages and poor nutrition.²⁰ The prevalence of universal and

¹⁵ By “system” we mean the defining characteristics of Chinese demographic behavior during the last 300 years, in contrast to the “European demographic system” identified by Flinn (1981).

¹⁶ Thus Malthus, quoting a Jesuit writer, emphasizes the paradox that “the richest and most flourishing empire of the world is notwithstanding, in one sense, the poorest and the most miserable of all” (1826/1986: 130).

¹⁷ Malthus describes “the excellence of the natural soil, and its advantageous position in the warmest parts of the temperate zone, a situation the most favourable to the productions of the earth” (1826/1986: 126).

¹⁸ Malthus cites Duhalde, Staunton, and others “who agree in describing the persevering industry of the Chinese, in manuring, cultivating and watering their lands, and their success in producing a prodigious quantity of human subsistence. The effect of such a system of agriculture on population must be obvious” (1826/1986: 128).

¹⁹ Malthus refers to “the very great encouragement that from the beginning of the monarchy has been given to agriculture, which has directed the labours of the people to the production of the greatest quantity of human subsistence” (1826/1986: 126).

²⁰ “[T]he price of labour is generally found to bear as small a proportion everywhere to the rate demanded for provisions as the common people can suffer. . . . [T]hey are reduced to the use of vegetable food, with a very rare and scanty relish of any animal substance” (1826/1986: 130).

early marriage,²¹ in particular, reduced most people to a level of subsistence, forcing the poor to live in a state of abject poverty.²² This trend was further exacerbated by a custom of partible inheritance that doomed even the rich, leveling wealth after a few generations.²³ Extreme misery encouraged the common practice of infanticide,²⁴ which in turn further encouraged marriage.²⁵ Malthus concluded that Chinese population processes were overwhelmingly dominated by the positive, rather than the preventive check.²⁶ Indeed he wrote that famines “are perhaps the most powerful of all the positive checks to the Chinese population” (1826/1986: 135). Population processes inexorably doomed China to poverty and worse.²⁷

Aspects of the Chinese demographic system

Mortality. Recent Chinese evidence suggests that Malthus’s understanding of mortality, especially infanticide, needs qualification.²⁸ In China, the distinctive influence of mortality on population was not through famines or epidemics, but through individual proactive interventions. Famines of course occurred. So apparently did epidemics.²⁹ But these crises appear to

²¹ Malthus cites “the extraordinary encouragements that have been given to marriage, which have caused the immense produce of the country to be divided into very small shares, and have consequently rendered China more populous, in proportion to its means of subsistence, than perhaps any other country in the world” (1826/1986: 128).

²² “The effect of the encouragements to marriage on the poor is to keep the reward of labour as low as possible, and consequently to press them down to the most abject state of poverty” (1826/1986: 130).

²³ “The effect of these encouragements to marriage among the rich, is to subdivide property, which has in itself a strong tendency to promote population. . . . Property in land has been divided into very moderate parcels, by the successive distribution of the possessions of every father equally among his sons. . . . These causes constantly tend to level wealth; and few succeed to such an accumulation of it, as to render them independent of any efforts of their own for its increase. It is a common remark among the Chinese, that fortunes seldom continue considerable in the same family beyond the third generation” (1826/1986: 129–130).

²⁴ Thus Malthus, quoting Duhalde, observes how, “notwithstanding the great sobriety and industry of the inhabitants of China, the prodigious number of them occasions a great deal of misery. There are some so poor that, being unable to supply their children with common necessities, they expose them in the streets” (1826/1986: 130). He then concludes, “Respecting the number of infants which are actually exposed, it is difficult to form the slightest guess; but, if we believe the Chinese writers themselves, the practice must be very common” (1826/1986: 134).

²⁵ Malthus apparently thought that infanticide functioned both as a positive check and as an incentive for marriage. “[T]his permission given to parents thus to expose their offspring tends undoubtedly to facilitate marriage, and encourage population. Contemplating this extreme resource beforehand, less fear is entertained of entering into the married state” (1826/1986: 129).

²⁶ The only preventive check Malthus recognized in China was the practice of celibacy by Buddhist monks (1826/1986: 132). As a result, he thought that the preventive check did predominate in at least one contemporary Chinese province—Tibet (1826/1986: 122–123). Of course, for Malthus Tibet was clearly part of South Asia, not East Asia.

²⁷ “[I]n the times of famine which are here but too frequent, millions of people should perish with hunger. . . .” (1826/1986: 131). Similarly Malthus states (p. 132), “All writers agree in mentioning the frequency of the dearths in China.” And he quotes a Jesuit writing to a member of the Royal Academy of Sciences, that “Another thing that you can scarcely believe is, that dearths should be so frequent in China.” Malthus paraphrases the conclusion of the Jesuit’s letter: “[I]f famine did not, from time to time, thin the immense number of inhabitants which China contains, it would be impossible for her to live in peace” (1826/1986: 135–136).

²⁸ According to Malthus, infanticide was foremost among the vices checking population growth and was typical of many non-Western and nonmodern Western societies, including the classic Greek and Roman world as well as South America, the Pacific Islands, Australasia, South Asia, and East Asia, particularly China (1826/1986: 25–26, 31, 50, 54, 56, 120–122, 130–131, 134–135, 140–141, 146–147, 151–152).

²⁹ The historical record of epidemics in China is sparse. This is partly related to the nature of sources. It may also reflect the genuine scarcity of epidemics. See Benedict (1996) and Dunstan (1975) for two studies of specific epidemics.

TABLE 1 Male life expectancy at selected ages in China, circa 1650–1990

Time period	Location	Life expectancy		
		At age 0	At age 10	At age 20
1644–1739	Beijing	27.2	36.9	29.9
1740–1839	Beijing	33.6	37.2	29.5
1840–99	Beijing	34.7	37.8	32.2
1792–1867	Liaoning	35.9 ^a	43.2	36.4
1300–1880	Anhui	31	38.9	32.4
1906	Taiwan	27.7	33.5	NA
1921	Taiwan	34.5	40.8	NA
1929–31(a)	China	34.9	47	40.7
1929–31(b)	China	24.6	34.2	30.1
1929–33	Beijing	40.9	52.7	44.7
1936–40	Taiwan	41.1	45.6	NA
1953–64	China	42.2	44.3	36.1
1964–82	China	61.6	57.2	48
1973–75	China	63.6	59.9	50.5
1981	China	66.2	60.4	50.9
1989–90	China	68.4	61.1	51.5

^aLife expectancy at 1 *sui*, which is approximately at 6 months of life. Actual life expectancy at birth was several years lower.

SOURCES: 1644–1739 to 1840–99 for Beijing from Lee, Wang, and Campbell (1994); 1792–1867 for Liaoning from Lee and Campbell (1997); 1300–1880 for Anhui from Telford (1990); 1906, 1921, 1936–40 for Taiwan from Barclay (1954); 1929–31(a) for China from Notestein and Chiao (1937); 1929–31(b) for China from Barclay et al. (1976); 1929–33 for Beijing from Campbell (1999); 1953–64 and 1964–82 for China from Coale (1984); 1973–75, 1981, and 1989–90 for China from Huang and Liu (1995).

have had less severe mortality consequences than they did elsewhere. Successive historic Chinese states developed a variety of institutions to compensate for poor harvests, including an empire-wide system of granaries that annually redistributed up to 5 percent of the national grain supply during the eighteenth and nineteenth centuries (Will and Wong, with Lee 1991). Mortality, partly as a result, remained remarkably stable throughout the eighteenth and up to the early twentieth century. Table 1 summarizes male life expectancy at various ages from all populations in China for which we have reliable data or estimates from the seventeenth century to today. For some 300 years prior to the mid-twentieth century, male life expectancy at birth remained somewhere between the high 20s and the low 30s.³⁰

These large-scale collective enterprises were supplemented by a culture of mortality control through individual agency, which has existed for

³⁰ Several publications discuss in detail the stability of Chinese mortality. See Lavelly and Wong (1998), Lee and Campbell (1997), and Zhao (1997a). For an opposing view, see Harrell (1995). For a comparison between male and female mortality, see Chapter 4 of Lee and Wang (1999).

millennia. The pattern of mortality that emerged as a result of these efforts was highly differentiated by age, class, sex, and residential group. On the one hand, educated or wealthy Chinese families with access to knowledge of preventive techniques and the means to make use of them could prolong the life of favored family members by paying particular attention to personal hygiene and diet. On the other hand, Chinese could take life by resorting to infanticide. Such an active influence over mortality meant that survivorship was also determined as much by endogenous decisionmaking as by exogenous fortune. Chinese mortality patterns were consequently shaped not just by biology but also by choice.

Most prominent and prevalent among these choices was a primordial prejudice against daughters.³¹ Son preference dates back to the origins of ancestral worship in the second and third millennia B.C. and was reinforced by a patrilineal and patrilocal familial system, supported by the imperial and especially late imperial state, which systematically discriminated against daughters (Bray 1997). Only sons could sacrifice to the family spirits; only sons could carry the family name; only sons could generally inherit the family patrimony (Bernhardt 1995). Patrilocal marriage customs required daughters to marry out, and hypergamous marriage patterns required upper-class families to provide a dowry to accompany them. Daughters, therefore, were not only considered inferior culturally, they were also perceived by most families as a net economic and emotional loss.³²

Chinese parents, as a result, practiced infanticide to regulate the number and sex of their children.³³ Recent historical studies suggest that female infanticide in eighteenth-century China was prevalent in many, if by no means all, Chinese populations and averaged perhaps some 10 percent of female births nationally.³⁴ Even boys were vulnerable to such practices. While infanticide declined spectacularly in China during the early twentieth century, sex ratios continue to be biased toward males—implying the continued practice of female infanticide and neglect, though at almost an

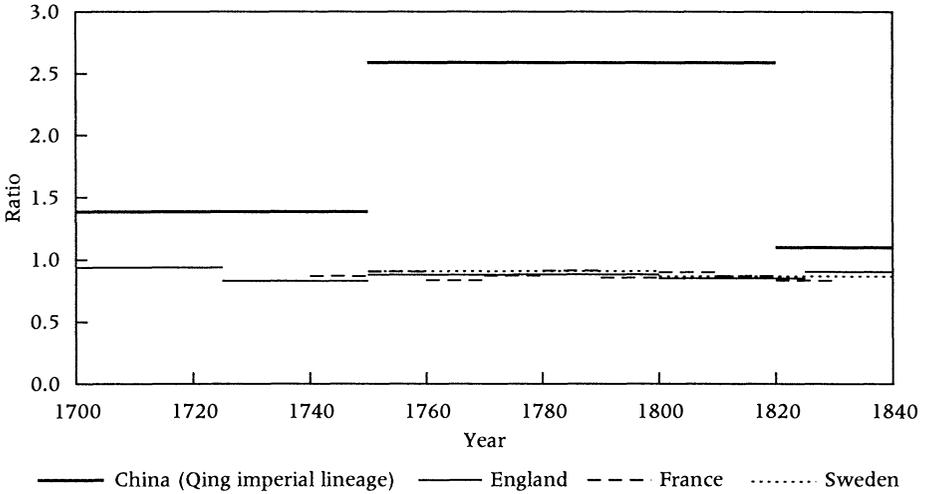
³¹ According to Ho (1975), "Oracle texts reveal that Shang kings frequently asked about the sex of infants yet to be born. . . . The word good was used to denote a boy and the phrase not good to denote a girl" (p. 323).

³² Thus the common saying that "a married daughter is like water spilled on the ground"—one you cannot retrieve.

³³ The earliest reference to female infanticide is a well-known passage from a third-century B.C. Chinese classical text, the *Han Feizi*: "Moreover, parents' attitude to children is such that when they bear a son they congratulate each other, but when they bear a daughter, they kill her. Both come from the parents' love, but they congratulate each other only when it is a boy and kill if it is a girl because they are considering their later convenience and calculating their long-term interests" (p. 319). See Chen (1989) and Liu Jingzhen (1994a and 1994b and 1995a and 1995b) for detailed studies of infanticide in China during the last millennium B.C. and the first millennium A.D. Lee (1981) and Waltner (1995), while less detailed, discuss infanticide in more recent times.

³⁴ This figure was higher in specific populations and specific years. Lee, Wang, and Campbell (1994) identify female infanticide rates among the Qing imperial lineage, for example, as high as 40 percent in the very late eighteenth century. To date, the only documented Chinese populations that clearly did not practice infanticide are from the twentieth century, in particular from Taiwan. See Lee (1981) and Li (forthcoming) for summaries of the qualitative evidence. Unfortunately, since many populations did not record female children, quantitative evidence is confined to a historical population of approximately 125,000.

FIGURE 2 Ratios of female-to-male infant mortality (${}_1q_0$) in China and selected European countries, 1700–1840



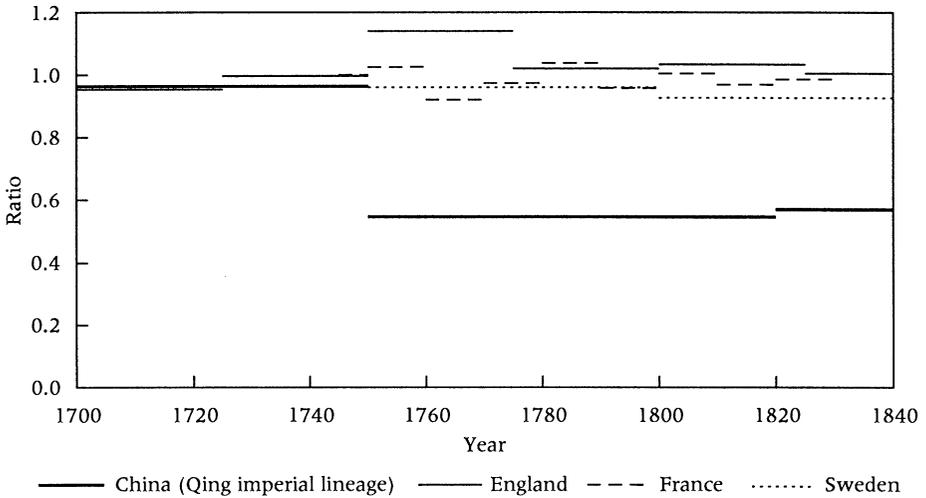
SOURCES: China: Lee, Wang, and Campbell (1994); England: Wrigley et al. (1997); France: Blayo (1975); Sweden: Statistiska Centralbyran (1969).

order of magnitude lower than in the past.³⁵ As a result of this practice, the average number of female children surviving to adulthood was particularly low compared to female survivorship in the West (Lee and Campbell 1997: 62, 67).

Chinese mortality patterns were thus highly differentiated by sex. Figures 2 and 3 compare infant and child mortality, respectively, in three European populations and the one Chinese historical population for which we have good estimates. The contrast is striking. While European males and females died more or less in equal numbers during the first year of life, Chinese females died in far larger numbers than Chinese males. While these differences varied by time and place, they were largest among neonates, among which females had a death rate as much as four times that of males (Lee, Wang, and Campbell 1994). At the same time, while a highly sex-specific pattern continued among Chinese children aged one to four years, by the second half of the eighteenth century the direction of the differential was reversed, with only about half as many female as male deaths. Evidently those Chinese families who decided to use infanticide to limit the numbers of their children, especially daughters, also used newly

³⁵ According to Coale and Banister (1994), excess female deaths declined from 15 percent to 5 percent between 1935 and 1950, and almost disappeared in the 1960s. Beginning in the mid-1980s, however, the ratio of males to females at birth rose from 108 in 1984 to 116 in 1991 (Gu and Roy 1995: 24).

FIGURE 3 Ratios of female-to-male early childhood mortality (${}_4q_1$) in China and selected European countries, 1700–1840

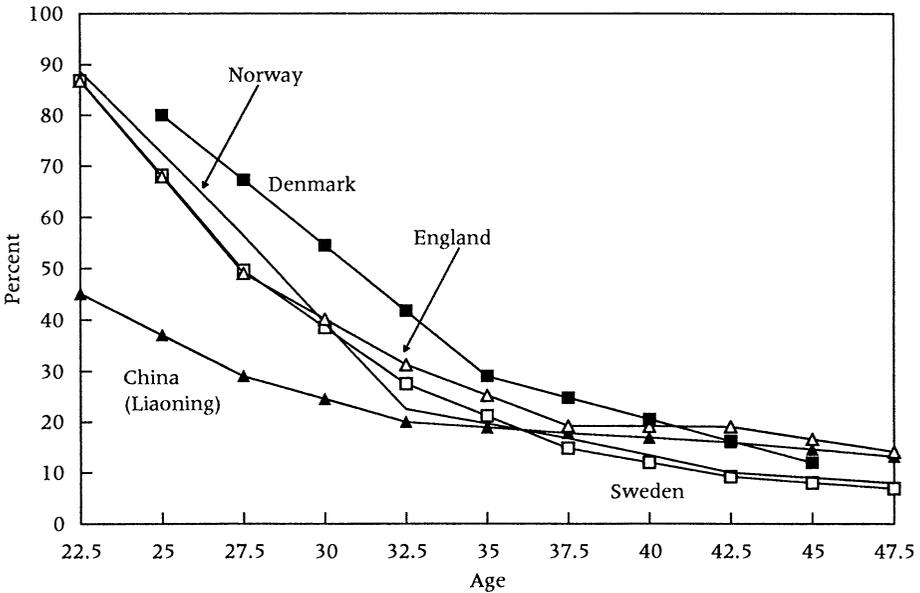


SOURCES: See Figure 2.

available methods of pediatric care to preserve the health of their remaining children, again especially their daughters. Nevertheless, because of the masculinity of the sex ratio at birth and the higher rate of female infant mortality, more male than female children in China survived to adulthood.

Nuptiality. Excess female infant mortality, combined with a significant gap between males and females in the customary age at marriage, produced the second distinctive feature of the Chinese demographic system: an unbalanced marriage market according to sex. Females married universally and early. Males married later, if at all. A shortage of marriageable females prevented a significant proportion of Chinese males from ever marrying, a situation further aggravated in the past by the practice of polygyny and the discouragement of female remarriage. Figure 4 contrasts the proportion of never-married males by age in several European populations around 1800 with a Chinese provincial population at that time for which comparable estimates are available. While Chinese men married earlier than their counterparts in Europe, by age 30 nearly one-quarter of Chinese men were still unmarried. By age 45, in both China and the West, between 10 and 15 percent of men were still bachelors and the Chinese proportion was slightly higher than in Sweden, Denmark, or Norway. Male marriage clearly did not fit the Malthusian model of universal Chinese marriage. In fact, Chinese males had no greater probability of ever marrying than Western males. But while Western men may have avoided marriage

FIGURE 4 Percent of never-married males, by age, China and selected European countries, around 1800



SOURCES: China (Liaoning): Lee and Campbell (1997); Denmark: Statens Statistiske Bureau (1905); England: Hinde (1985); Norway: Statistisk Sentralbyrå (1980); Sweden: Hofsten and Lundstrom (1976).

because of moral restraint, Chinese men were not able to marry because of the consequences of Malthusian “vice.”³⁶

Indeed, bachelorhood seems to be a universal Chinese phenomenon regardless of time and place. Table 2 compares estimates of the percentage of never-married men by age 30 and 40 in selected historical and contemporary Chinese populations. From the sixteenth through the late nineteenth century a significant proportion—up to as many as 20 percent of all 30-year-old men—were still unmarried.³⁷ The Qing imperial nobility was an exception, but even they had a bachelorhood rate as high as 7 percent at age 40. This phenomenon of late male marriage and frequent celibacy continues today. According to the 1 percent sample survey conducted in China in 1995, at age 30, when virtually all women are already married, close to 8 percent of men are still single. Even by age 40, according to this survey, about 5 percent of Chinese men have never been married (State Statistical Bureau 1997: 412).

³⁶ Telford (1992a) was the first to observe the similarity in the probability of Chinese and Western European male marriage. But while bachelorhood in China was due primarily to what demographers call a “marriage squeeze,” that is, the unavailability of females, bachelorhood in Europe was due to marriage avoidance.

³⁷ Genealogical records notoriously underrecord bachelors, as they have no surviving progeny and are therefore far less likely to be remembered centuries later at the time of data compilation.

TABLE 2 Percent of males never married, China, selected periods and populations

Time period	Location	By age 30	By age 40	Sample size
1700–24 ^a	Anhui	8.2	NA	1,040
1640–1900	Beijing	13	7	1,103
1750–74 ^a	Anhui	16.1	NA	1,949
1774–1873 ^b	Liaoning	20.4	16	3,547
1800–19 ^a	Anhui	12.6	NA	2,353
1820–39 ^a	Anhui	14.1	NA	2,567
1929–31 ^b	North China	11.5	7.9	21,560
1929–31 ^b	South China	7.7	3.9	24,874
1900–25 ^{b c}	All China	13.7	6.8	6,538
1945–49 ^{b c}	All China	12.7	6.7	6,295
1955–59 ^{b c}	All China	9.8	NA	8,661
1982	All China	10.7	6.3	88,869
1990	All China	8.3	5.3	7,159,677
1995	All China	7.7	4.7	125,367

^a Proportion unmarried over age 20.

^b Ages 30–34 and 40–44.

^c Birth cohorts.

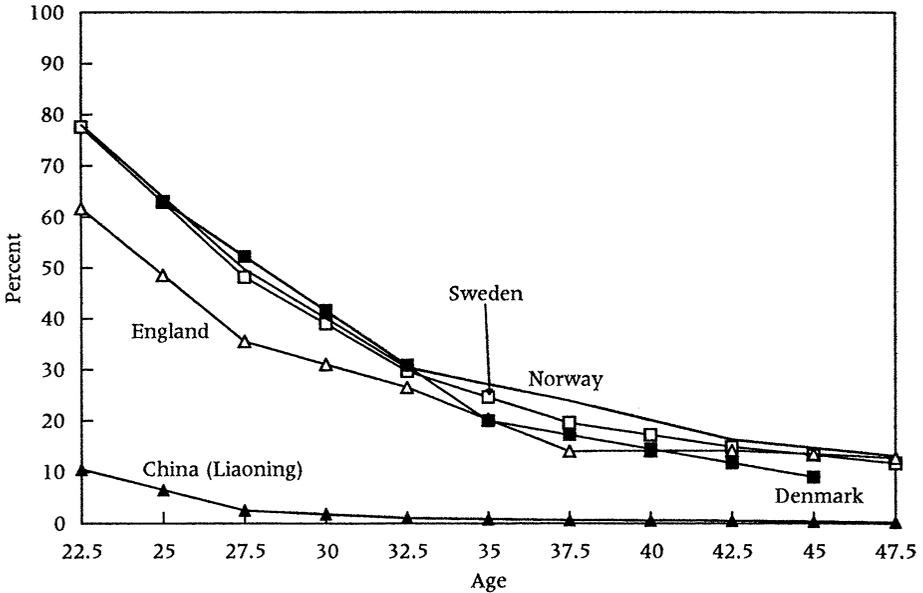
SOURCES: 1700–24, 1750–74, 1800–19, and 1820–39 for Anhui from Telford (1994); 1640–1900 for Beijing from Lee, Wang, and Ruan (1999); 1774–1873 for Liaoning from Lee and Campbell (1997); 1929–31 for North and South China from Notestein and Chiao (1937); 1900–59 for China from Wang and Tuma (1993); 1982, 1990, and 1995 for China from State Statistical Bureau (1987, 1993, and 1997).

Whereas male marriage in China has always been restricted, female marriage has always been universal. This stands in stark contrast to Western Europe, where female, like male, marriage occurred late if at all. Figure 5 contrasts the proportion of never-married females by age group around 1800 in the same populations shown in Figure 4.³⁸ By age 20 to 24 the vast majority of Chinese women were already married while a large majority of European women were still single. By age 30 to 34, virtually no Chinese women remained single. In contrast, about 30 percent of Western women the same age were still spinsters. Overall, while the proportion of currently married women aged 15 to 50 in Western Europe was less than 60 percent in the late nineteenth century (Coale and Treadway 1986), 90 percent of all similarly aged Chinese women were currently married. Even in the twentieth century when marriage grew increasingly common in Europe, at least 5 to 10 percent of all women are still unmarried by age 45.³⁹ In China the corresponding proportion of spinsters is virtually zero.

³⁸ Unfortunately, Western demographic records before the late nineteenth century rarely record the proportion of ever-married women by age. We generalize here on the basis of the best historical data, which are from Scandinavia, and thank Tommy Bengtsson, Andrew Hinde, Jan Oldervoll, Gunnar Thovaldsen, and Hanna Willert for their help in obtaining this information. See also Blayo and Henry (1967) on France.

³⁹ This is based on the proportions of married women aged 45–49 for France, Italy, Spain, and the United Kingdom in 1982 and 1990 (United Nations *Demographic Yearbook* 1984, 1992).

FIGURE 5 Percent of never-married females, by age, China and selected European countries, around 1800



SOURCES: See Figure 4.

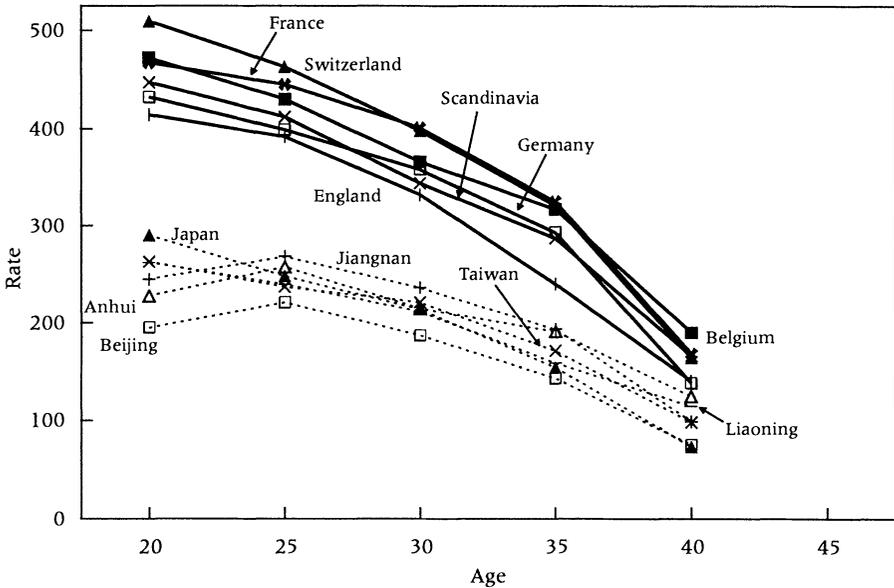
Fertility. Such persistently high nuptiality, however, did not inflate Chinese fertility because of the low level of fertility within marriage.⁴⁰ While Western married women in the absence of contraception had a total marital fertility rate (TMFR)—the number of children a married woman would bear in her lifetime if she experienced at each age the marital fertility rates of a given year—on average of 7.5 to 9 children,⁴¹ Chinese married women had a TMFR of 6 children or less.⁴² In Figure 6 we compare age-specific marital fertility rates for six East Asian and six Western European historical populations. The contrast is striking. European marital fertility was much higher than Asian, especially in the younger age groups, and it declined more slowly.

⁴⁰ We provide a detailed discussion of China's low marital fertility regime and the rationale and mechanisms that perpetuated such behavior, in Chapter 6 of Lee and Wang (1999). Zhao (1997c) traces this low marital fertility regime through the middle of the twentieth century.

⁴¹ Wilson (1984: 228) presents total marital fertility rates for a dozen seventeenth- and eighteenth-century European populations; they range from 6.6 to 10.8 with a mean of 8.5 and a mode of over 8. Flinn (1981: 31) calculates national TMFRs by aggregating 86 historical European populations. While his aggregation is problematic because of different sample sizes and population definitions, he concludes that TMFR around 1750 was 7.6 in England, 8.1 in Germany, 8.3 in Scandinavia, 8.9 in Belgium, and 9 in France. Most recently, Wrigley et al. (1997: 355, 450) completed a large-scale reconstitution of couples from 26 parishes from 1600 to 1824 and concluded that the TMFR was 7.4.

⁴² In addition, unmarried women in the West could also have a substantial number of births, further increasing Western fertility. In China they generally did not. The rate of out-of-wedlock births in almost all the available historical and contemporary Chinese populations is virtually zero. The only notable exception is the island province of Taiwan under Japanese occupation, which had a rate of out-of-wedlock births in the early twentieth century of less than 5 percent. By contrast, the proportions of out-of-wedlock births in Austria, Sweden, Denmark, Germany, Hungary, and Portugal were higher during this period and were considerably higher in the eighteenth and nineteenth centuries (Barrett 1980, Flinn 1981).

FIGURE 6 Age-specific marital fertility rates in selected populations of East Asia and Europe, 1600–1800



NOTES: The Beijing figures are monogamous male age-specific fertility rates but should closely approximate female age-specific fertility. The Anhui and Jiangnan figures are derived from counts of sons multiplied by 1.9. In addition we inflated the Anhui, Jiangnan, and Japanese figures by 20 percent for possible underenumeration.

SOURCES: European populations: Flinn (1981); Anhui: Telford (1992b); Beijing: Wang, Lee, and Campbell (1995); Jiangnan: Liu (1992); Liaoning: Lee and Campbell (1997); Taiwan: Wolf (1985); Japan: Kito (1991).

As a result, not only is the magnitude of East Asian marital fertility lower than European marital fertility, but the shape of the curve is different, with a much more gradual slope and less curvature. This low marital fertility is one of the most distinctive features of the Chinese demographic system. Contrary to the perception of Malthus and his contemporaries that Chinese fertility was relatively high, overall fertility was probably not much higher than European fertility. China's significantly lower marital fertility nearly counterbalanced the effects of earlier and universal marriage among Chinese women.

Recent progress in Chinese historical demography traces this moderate marital fertility regime back over seven centuries. Total marital fertility rates have been calculated as far back as the thirteenth century on the basis of retrospective Chinese genealogies.⁴³ More reliable estimates become

⁴³ These estimates were pioneered by Liu Ts'ui-jung (1978, 1981, 1985, 1992, 1995a, 1995b), who over the past two decades has analyzed some 50 genealogies, covering more than 260,000 individuals in 12 provinces of China. These data, nevertheless, are highly incomplete. Although the records in these genealogies date back as far as the twelfth century, vital information dates back only to the fifteenth and the sixteenth century. Moreover, since much of the information appears to have been retrospectively assembled in the late nineteenth and early twentieth century, many people may well be missing. Generally the principle is that the earlier the date, the greater the probability of underrecording. In addition, these genealogies generally represent elite populations, but since the proportions of the elite vary considerably by lineage, this bias is uneven. See Telford (1990).

available beginning in the seventeenth century based on the archives of the Qing imperial nobility, and beginning in the eighteenth century based on household registers. Table 3 summarizes all the available historical studies from the earliest time period for which fertility can be estimated relatively reliably. On average, a man married by age 20 rarely had more than 6 children if he remained in a married state to age 50. These fertility numbers are substantially lower than the average number of births computed for historical European populations, where the corresponding estimates are 7.5 to 9 children for monogamous men.

Moreover, when the modern fertility transition has occurred—the transition from “high” to “low” fertility—the speed of decline was far faster in China than was the case in the West. Although fertility in both China and the West has fallen to or below the replacement level of 2.1 children per woman, the Chinese fertility decline took less than a quarter-century, while the Western fertility decline took a half-century or longer. Chinese marital fertility, in other words, was not only significantly lower than Western marital fertility, it also declined faster, if later.

Fictive kinship and adoption. Finally, in spite of the strong Chinese preoccupation with perpetuation of lineage and adherence to a social welfare system that relied on family and lineage, Chinese parents ironically had to resort frequently to fictive kinship and adoption to replace biological descendants, a byproduct of low fertility and low survivorship.⁴⁴ As a consequence, the Chinese also developed a variety of marriage and adoption arrangements to overcome the limitations of biology and miscalculations in decisionmaking.⁴⁵ In addition to the 10 percent or more of persons who were allied by kinship ties through uxori-local or other nonstandard forms of marriage, Chinese families also adopted 1 to 5 percent or more of children ever born. Table 4 summarizes the proportion of such adoptions. Although the rates vary by location, period, and population, they indicate that at least one of every 100 Chinese children in the past were given up for adoption, which is almost an order of magnitude larger than for any early modern Western population.⁴⁶

⁴⁴ See Wolf and Huang (1980) for a detailed description of adoption in rural Taiwan during the early twentieth century and Wang and Lee (1998) for a description of adoption among the Qing nobility in the eighteenth and nineteenth centuries.

⁴⁵ These arrangements are described in detail by Arthur Wolf and his colleagues (Chuang and Wolf 1995, Wolf and Huang 1980).

⁴⁶ Chinese rates were higher in part because adoption was illegal in many early modern Western countries and because there are no available statistics on early modern Western fosterage rates. Today, however, adoption rates in the West can rival those in China. In the United States in 1986, for example, the ratio of reported adoptions, 104,088, to registered live births, 3.8 million, was over 2.5 percent (National Committee for Adoption 1989), a consequence partly of divorce. By contrast, according to the Swedish Census Bureau, in Sweden between 1988 and 1997 the annual ratio of residence permits issued for adopted children to live births ranged between 0.5 and 1 percent (Official Statistics of Sweden 1997a and 1997b). We thank Åke Nilsson for his help in obtaining this information.

TABLE 3 Estimates of total marital fertility rates (TMFR) and total fertility rates (TFR) in China, selected time periods and populations

Time period	Location	Fertility level (see notes)		Sample size
		TMFR	TFR	
1296–1864	Hunan	6.0		2,670
1462–1864	Anhui	6.1		1,654
1517–1877	Jiangsu	5.8		1,784
1520–1661	Anhui	5.4 to 8.2		11,804
1700–1890	Beijing	5.3		3,178
1774–1873	Liaoning	6.3		3,000
1929–31	22 provinces	6.2	5.5	50,000
1950	China	5.8	5.3	300,000
1955	China	6.2	6.0	300,000
1960	China	4.1	4.0	300,000
1965	China	6.3	6.0	300,000
1970	China	6.2	5.7	300,000
1975	China	4.4	3.6	300,000
1980	China	3.2	2.3	300,000
1985	China		2.2	500,000
1990	China		2.3	70,000
1992	China		2.0	
1990–95	China		1.92	

SOURCES and NOTES:

Hunan, Anhui 1296–1864 and Jiangsu 1517–1877 are from Liu (1995b). Liu suggests that the actual TMFR was slightly higher because not all women in the denominator for the youngest age groups would have been married. The discrepancy is unlikely to have been large, since age-specific fertility rates below age 20 were very low.

Anhui 1520–1661 is from Telford (1992b). Sample size refers to wives and concubines married to 10,512 males. Telford found a mean of 2.77 recorded male births per married woman, which implies a TMFR of 5.4 assuming a male-to-female sex ratio at birth of 105. He suggests that the actual TMFR should be higher because of underregistration of male births. Telford (1995) presents an estimated TMFR of 8.2 by excluding some registers with very low recorded fertility and inflating the remaining male births by 50 percent. He provides no explanation or justification for this procedure.

Beijing 1700–1890 is calculated from Wang, Lee, and Campbell (1995). The TMFR was calculated by adjusting age-specific fertility rates by estimated proportions married in each age group. This is probably an overestimate of the true TMFR because males were included in the denominator in the original calculation only if they had at least one child in their lifetime. Men who married but never had children accordingly contributed no person-years of risk. Moreover, the proportions of males married used in the adjustment were estimated on the basis of whether males had children by specific ages, and accordingly underestimate the actual proportions of males married.

Liaoning 1774–1873 is from Lee and Campbell (1997). The fertility calculation is based on population registers containing 12,466 individual records and over 3,000 marriages. The number given here, the TMFR, is higher than the TFR (given that not all people are married at all ages). The TMFR reflects a mortality or underregistration adjustment of 33 percent.

22 provinces are from Barclay et al. (1976). The TMFR was calculated from age-specific marital fertility rates of women aged 15–49. The survey on which the calculation is based covered some 200,000 Chinese farmers from over 46,000 households in 191 locales. We give the sample size of 50,000 assuming that each household contained slightly more than one woman of reproductive age.

China 1950–80 TFRs are from Coale and Chen (1987). 1950–80 TMFRs are calculated for women aged 20–44 from Lavelly (1986). 1985–92 TFRs are from Yao and Yin (1994). 1990–95 estimated from United Nations (1998). The numbers are based largely on several large-scale fertility surveys.

TABLE 4 Adoption rates in China, selected time periods and populations

Time period	Location	Adoption rate (%)	Sample size
1730	Beijing	5.9	662
1750	Beijing	6.1	897
1790	Beijing	11.8	1,145
1840	Beijing	6.2	1,087
1906–10	Taiwan	5.8	666
1911–15	Taiwan	7.2	758
1916–20	Taiwan	5.6	750
1921–25	Taiwan	5.9	819
1926–30	Taiwan	4.5	968
1931–35	Taiwan	3.1	1,070
1929–33	Southern China	0.8	2,679
1929–33	Southwest Plateau	2.7	2,100
1929–33	Lower Yangtze	1.3	14,321
1929–33	Northern Plain	1.2	18,985
1970	China	0.7	50,100
1980	China	1.1	35,104
1986	China	2.2	43,560

SOURCES and NOTES: Beijing from Wang and Lee (1998). The rate is the number of adopted sons per 100 sons who survived to age 5. Years refer to year of birth. Taiwan from Wolf and Huang (1980). Years refer to year of birth. 1929–33 from Wolf and Huang (1980), based on a survey of 35,976 families in 101 localities in China by John Lossing Buck. 1970, 1980, and 1986 are calculated from China's nationally representative 1988 Two-Per-Thousand Fertility Survey conducted by China's State Family Planning Commission. The adoption rate is the ratio of reported adoptions to live births (expressed as percent); sample size refers to the number of live births.

Such adoptions serve many purposes. Adoption is not just for the purposes of charity or attainment of parenthood. Chinese parents also adopt children to provide family labor or old-age support, to secure a spouse to marry their biological children, to increase family size, and to maintain ritual and religious continuity.⁴⁷ Consequently, they adopt children of all ages, from infancy well through adulthood, and on rare occasions even into old age.⁴⁸ We can distinguish as many forms of adoption as there were forms of marriage. Parents could adopt daughters as well as daughters-in-law, sons as well as sons-in-law. So could widows, widowers, never-married men, even eunuchs and, by proxy, the dead. The entitlement to children, and most importantly to a patrilineal male descendant, was so important that it even overrode the limitations of human biology.

⁴⁷ See Kurosu and Ochiai (1995) for a similar description of adoption in Tokugawa Japan.

⁴⁸ In our analysis of adoption among the Qing imperial nobility, of the 1,204 sons adopted, about 30 percent were adopted before age 1, 50 percent above age 5, 20 percent above age 20, and 5 percent above age 30. The oldest adoptee was in his 60s (Wang and Lee 1998). Similarly, if not as extreme, in the Taiwanese peasant populations studied by Wolf and Huang (1980), about half of all male adoptions occurred when the boy was 1 year old or older, and 15 percent occurred beyond age 5 (calculated from Table 15.4, p. 212).

The Chinese demographic system, in other words, was characterized by a multiplicity of choices that balanced marital passion and parental love with arranged marriage, the decision to kill or give away biological children, and the adoption of others' children. In contrast to the Malthusian paradigm, human agency in China was not restricted to nuptiality. Moreover, it was exercised largely at the collective rather than the individual level.⁴⁹ Chinese individuals constantly adjusted their demographic behavior according to collective circumstances so as to maximize collective utility. Such demographic adjustments allowed them to prosper in spite of China's population size and population growth. Chinese demographic success, therefore, was based on collective control, rather than individual restraint. Such control operates in China at a variety of scales of social organization. In our book (Lee and Wang 1999) we distinguish between the two extreme and probably most effective levels: the Chinese family at the base of society, and the Chinese state at the top.⁵⁰

The Chinese demographic transition

These distinctive characteristics of the Chinese demographic system and the collective nature of Chinese demographic processes also characterize the Chinese demographic transition. We can therefore not only identify a distinctive Chinese demographic system in the past, but also trace its salient legacy to the present.

Historically, a set of demographic mechanisms, primarily low female survivorship and low marital fertility, enabled China to maintain low population growth at the aggregate level until modern times: a long-term annual average growth rate of less than 5 per *ten thousand*. These adjustments perpetuated a homeostatic demographic regime in China for almost two millennia. In the first century A.D. there were some 75 million Chinese. By 1750, in spite of a frontier expansion that more than doubled Chinese territory, China's population had grown only threefold.

Beginning in the eighteenth century this changed. Broadly speaking, we can distinguish two periods of population growth in China's modern history. First, between 1750 and 1950 the population increased by some 150 percent from 225 million to 555 million, an annual rate just short of 5 per *thousand*. Then between 1950 and 1999 the population more than doubled from 555 million to 1.27 billion, an annual rate of almost 1.7 per *hundred*. The average annual rate of population growth, in other words, grew in each period by an order of magnitude, from the ten-thousands during much

⁴⁹ The collective nature of Chinese demographic processes in the past is most often discussed in terms of familial control over marriage and adoption (Wolf and Huang 1980, Yang 1959); but see also discussions of familial and even community control over fertility and infanticide in Fei (1947/1998) and Feng (1986).

⁵⁰ Intermediate organizations such as lineages and enterprises were generally less important than either of these two extremes. In south and especially southeast China, however, lineages could be quite important. Zheng (1992) is probably the most authoritative text on Chinese lineages during the late imperial period.

of the last two millennia to the one-thousands during much of the last three centuries, to the one-hundreds during much of the last 50 years.

This dramatic rise in population has, in turn, awakened China's contemporary Malthusian concerns. While some Chinese observers voiced similar concerns starting as early as the beginning of the nineteenth century,⁵¹ these misgivings were largely dismissed, especially in view of Chinese perceptions of sustained economic growth.⁵² It was not until the 1960s that the government encouraged family planning in urban China;⁵³ and it was not until the late 1970s that a forceful government population control policy was formulated and enforced nationwide. The primary motivation under Mao Zedong and his immediate successor, Hua Guofeng, was the unexpectedly massive population growth China had experienced from 555 million in 1950 to almost one billion by the late 1970s and the prospect of future doublings in the absence of a strict family planning policy. This encouragement of birth planning was reinforced under Deng Xiaoping by an overriding desire to raise per capita living standards as rapidly as possible to levels commensurate with those of world powers.

Current Chinese goals to limit population size to 1.2 or 1.3 billion by the year 2000 are derived from an explicit policy target to quadruple Chinese 1979 living standards to US\$800 per capita by 2000.⁵⁴ The result was the creation and implementation of one of the most draconian family planning policies in world history.⁵⁵ While this program has been highly successful in lowering fertility, it has also justified various extreme measures of birth planning by the need to raise China's economic development and living standards. The escalation of such pressing Malthusian concerns has made population control one of the two most important formal state policies, the other being economic reform. Whereas previously families adjusted their own demographic behavior to economic realities in spite of pronatalist government policies, the current government enforces family planning in spite of individual family resistance.⁵⁶

⁵¹ In a brief essay, Hong Liangji (1746–1809) made an observation similar to Malthus's formulation of the positive check, without, however, any mention of the preventive check and without Malthus's exhaustive documentation or extensive argumentation (Ho 1959: 271–272). More recently, Ma Yinchu (1882–1982), the former president of Peking University, made a strong plea for population control in 1958. Mao, however, criticized Ma as neo-Malthusian, and dismissed him from his post. He was rehabilitated only in the late 1970s.

⁵² In a typical response, Bao Shichen (1775–1855) refuted Hong Liangji: "The land of China is sufficient to support the people of the country. More people mean more labor; and labor is the basis of wealth, not the cause of poverty" (*Anwu sizhong*, 26.2b).

⁵³ See Chen and Kols (1982) and Lavelly and Freedman (1990) on the early development of the Chinese government's family planning program.

⁵⁴ Given this income target, Chinese "think tanks" produced a variety of optimization studies based on the economic growth rates of the 1970s. A population of 1.2 billion in the year 2000 was the compromise consensus. Some extreme estimates even claimed that China's optimum population was 600 to 700 million (Song, Tuan, and Yu 1985).

⁵⁵ Again, having arrived at a 1.2 billion target population for the year 2000, these same think tanks calculated that each couple could have no more than two children. They therefore formulated the policy of one child per couple, based on the assumption that this was a target and not an immediately attainable goal (Song, Tuan, and Yu 1985).

⁵⁶ Aird (1990) and Banister (1987) document this resistance in some detail.

China's leaders, in other words, launched the largest family planning program in the twentieth century on the foundation of little more than nineteenth-century social theory. Government policy seems to have virtually embraced the original Malthusian paradigm, without acknowledgment and without full consideration of its consequences.⁵⁷ China's poverty is believed to be largely the product of Chinese overpopulation. While this explanation is certainly convenient, it has been accepted in the absence of almost any serious social scientific research. In spite of the subsequent development of population studies in China and the great increase in our understanding of Chinese population processes, Malthusian or neo-Malthusian theory and what Chinese officials call Marxist population theory continue to provide nearly the sole justification and motivation for China's unprecedented family planning program.⁵⁸

In fact, however, Chinese urban fertility had begun to decline before the imposition of the current family planning program. In Shanghai, China's largest metropolis and a forerunner in adoption of birth control, fertility started to decline no later than 1955 (Guo 1996). Figure 7 contrasts the earlier decline in the total fertility rate in Shanghai with the later decline nationwide. In spite of the massive interruption and rebound from the famine associated with the Great Leap Forward, total fertility in Shanghai fell from above 5 in 1955, to 3 in 1959, and reached the replacement level of 2.1 as early as 1967. This decline was accomplished through a combination of early reliance on abortion and a subsequent transition to modern contraceptive use. The Shanghai municipality established an official family planning program in 1964 and reported contraceptive saturation among eligible couples within a few years.

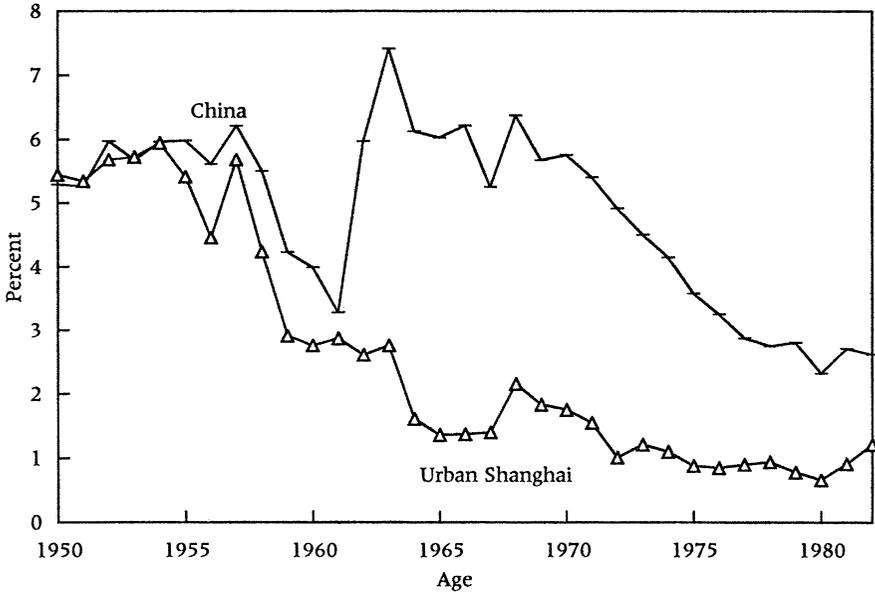
Nationwide, China's fertility transition accelerated greatly after 1970, following the official *wan* (later marriage) –*xi* (longer spacing) –*shao* (fewer births) family planning program. By the late 1970s, 80 percent of Chinese women had used contraception by age 35 (Wang forthcoming). Close to one-third of urban women and one-fifth of rural women had had at least one induced abortion. China had become a society with one of the highest rates of contraceptive use in the world.⁵⁹ The national fertility level consequently declined precipitously, from 5.7 in 1970 to 2.8 in 1979, a record

⁵⁷ The predominant concerns of Chinese policymakers in the late 1970s were the relationships between "hands" (production) and "mouths" (consumption), and the constraints exerted by rapid population growth on capital investment, employment, and resources. This concern is exemplified by Song Jian and his colleagues, whose work had an important influence on China's formation of the one-child policy. Song's call for a tighter population control policy was based explicitly not only on food supply, but also on the limits of energy and other natural resources, and on environmental constraints (Song and Yu 1985).

⁵⁸ Because of Marx's criticisms of Malthus, official Chinese rhetoric, based on a few sentences in Engels's oeuvre, advocated a "Marxist" population theory of "two kinds of production," a phrase that referred to the close links between material production and human reproduction.

⁵⁹ Indeed the contrast with other societies that also rely heavily on induced abortion is striking. In 1990 contraceptive use in Russia among married women was 15 percent; in China it was over 90 percent (Wang forthcoming).

FIGURE 7 Total fertility rates in urban Shanghai and in China, 1950–82



SOURCE: Coale and Chen (1987).

speed of decline unmatched by any other large population in human history. While this decline was particularly swift among urban Chinese, whose total fertility fell close to replacement level, it was also quite sharp among rural populations in those regions with a long tradition of birth control.⁶⁰

In spite of their success in fertility control, the Chinese leadership accelerated the pace of their policy goals in 1979 to reach replacement fertility, 2.1, as rapidly as possible under the slogan of one child per couple. This slogan became the basis for a mass mobilization campaign on the same scale as land reform in the 1950s and economic reform in the 1980s. Because of their strong desire to raise China’s living standard to levels comparable with Western industrialized societies, China’s leaders elevated family planning to the level of economic planning in state policy. In so doing, they made antinatalist population policy for the first time in world history a central component of a national development strategy.

As a result, the implementation of the Chinese national family planning program has been more insistent and more compulsory than family planning programs elsewhere. The state not only mandates a minimum age at marriage and a maximum number of children, but has even pro-

⁶⁰ Total fertility as early as 1973 was only 2.8 in rural Jilin, 2.82 in rural Jiangsu, 3.46 in rural Zhejiang, and 4.16 in rural Liaoning. By contrast, it was as high as 7.4 in rural Guizhou, 6.48 in rural Gansu, 5.35 in rural Guangdong, and 5.17 in rural Henan (Coale and Chen 1987).

moted mandatory abortion, mandatory IUD insertion and retention, and mandatory sterilization to achieve population goals (Banister 1987). This has led, for example, to the well-known excesses of the sterilization campaign of 1983, when cadres used mass mobilization to force many people to undergo abortion and sterilization (Hardee-Cleaveland and Banister 1988).⁶¹ While recent family planning campaigns have been less heavy-handed, cadres continue to be responsible for the implementation of birth control policy in localities under their jurisdiction; those who fail to fulfill family planning targets face such explicit punishments as monetary fines, demotions, and, since 1991, dismissal. Consequently, even though state family planning rhetoric emphasizes education and voluntarism, local cadres in some places continue to resort to physical coercion to meet the demanding goals set by the state.⁶²

Just as programs of land and economic reform reached different parts of China at different times and with different intensity, the current family planning program has been more effective in some areas and some periods than in others.⁶³ This was especially true in rural China, where the needs for familial labor and old-age support resulted in negotiations between the local peasantry, cadres, and government officials.⁶⁴ As a result, the one-child policy was formally relaxed and modified in 1984 and 1988, with the exception of a few localities.⁶⁵ Most of rural China has always followed a de facto two-child policy. This stands in sharp contrast to urban China, where more than 90 percent of all couples during the past two decades have had only one child. Such uniform and rapid urban compliance was at least initially a consequence largely of urban dependence on the state for employment, housing, education, and other benefits (Wang 1996). In rural China, where there is no such dependence, there is also no such compliance.

⁶¹ According to official Chinese statistics, the annual number of male sterilizations consequently nearly doubled from 649,476 in 1982 to 1,230,967 in 1983, while the annual number of female sterilizations more than quadrupled, from 3,925,927 in 1982 to 16,398,378 in 1983 (China Population Information Center 1988: 245).

⁶² The paradox of course is that such coercion is illegal and has been widely publicized by the Chinese as well as Western media. Indeed, some of the most celebrated stories of forced family planning "broken" by the Western media were in fact first exposed and criticized by the Chinese government. See the article "China's crackdown on birth: A stunning, and harsh, success" by Nicholas Kristof on page one of the *New York Times*, 25 April 1993. The main tragedy cited by Kristof, the death on 30 December 1992 of a neonate just nine hours after his seven-month-pregnant mother was forced to induce his birth, was, as Kristof acknowledged, taken from a classified government report.

⁶³ For major changes in Chinese family planning policy in the 1980s, see Greenhalgh (1986), Hardee-Cleaveland and Banister (1988), Zeng (1989), Luther, Feeney, and Zhang (1990), and Feeney and Wang (1993).

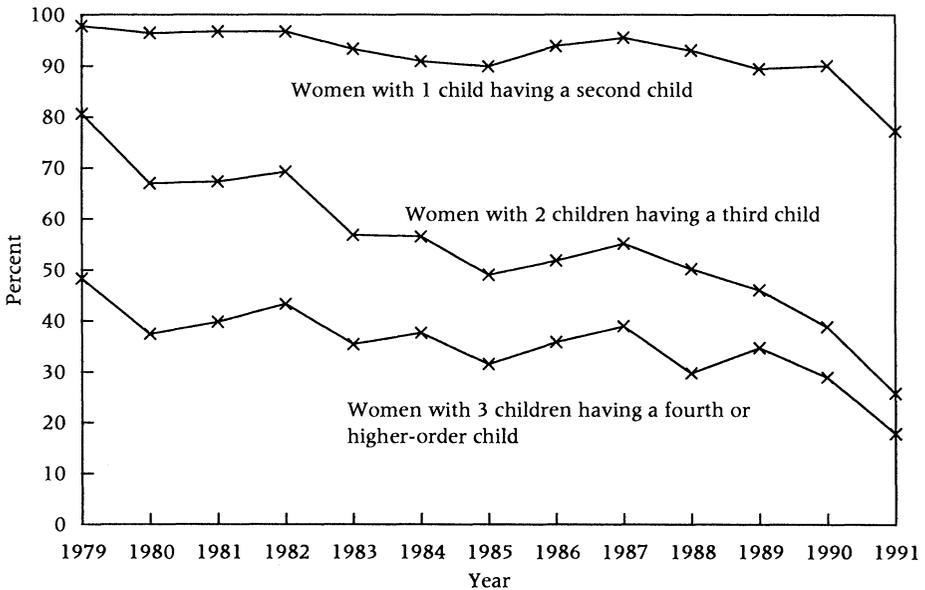
⁶⁴ Greenhalgh (1986 and 1993) documents in detail the evolution of one-child policy implementation in rural China, specifically in Shaanxi province. Resistance from the peasantry and the decline of state power following rural reforms in the 1980s led many rural cadres to delay or defer implementation and to adjust or request adjustments in family planning policy. The central government responded both by formally relaxing the policy and by letting provincial and lower-level governments establish their own conditions under which families are exempted from the one-child policy. Peasant resistance and negotiations resulted in a "peasantization" of the one-child policy.

⁶⁵ According to Zeng Yi (1989), while the suburban counties of Beijing, Tianjin, and Shanghai and most rural areas of Jiangsu and Sichuan provinces did not formally relax the one-child policy, in six provinces and autonomous regions—Guangdong, Hainan, Ningxia, Qinghai, Yunnan, and Xinjiang—rural couples were allowed to have a second child, while in the 18 remaining provinces, excluding Xizang which was not part of his study, rural couples were allowed to have a second child if the first child was female.

The common assumption that China uniformly follows a one-child policy is simply not true for rural families, who account for 80 percent of the total population. Figure 8 describes the rural period parity progression ratio, that is, the proportion of rural women at each parity (number of live births) who go on to have at least one other child. The proportion of women who had a first child and went on to have a second child was scarcely affected by the one-child policy throughout the 1980s. This proportion declined from close to 100 percent in 1979, to 90 percent in 1985, and to 77 percent in 1991. By contrast, the proportion of women with two children who went on to have a third birth declined markedly from 81 percent in 1979, to 49 percent in 1985, and to 26 percent in 1991; while the proportion of women with three children having a fourth or higher-parity birth declined from 48 percent in 1979 to 18 percent in 1991.

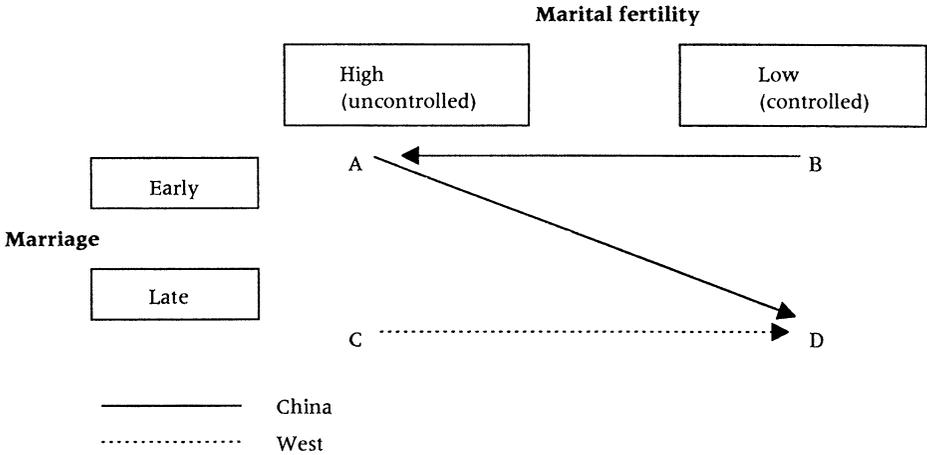
Government intervention largely accounts for the acceleration of the Chinese fertility decline from a total fertility rate of 6.1 in the second half of the 1960s to an estimated below-replacement level of 1.9 in the early 1990s. Nevertheless the Chinese fertility transition is fundamentally a consequence of new collective institutions and collective goals, not the innovation of ideas. In contrast to the Western fertility transition, which required a revolutionary extension of individual decisionmaking from marriage to fertility, the Chinese fertility transition required the transfer of control over nuptiality and fertility from the family to the state. For the

FIGURE 8 Parity progression ratios (in percent) in rural China, 1979-91



SOURCE: Feeney and Yuan (1994).

FIGURE 9 Stylized paths of fertility transition: Western Europe and China



Chinese, deliberate fertility control has long been within the calculus of conscious choice. China's unusually rapid fertility transition may, therefore, be attributed to the fact that the Chinese people did not require a change in attitudes, only the establishment of new goals and institutions, along with the diffusion of efficient birth control technologies.

The Chinese fertility transition is quite different from the stylized Western transition. Figure 9 contrasts these two kinds of transitions.⁶⁶ The matrix identifies four types of fertility regime, classified simultaneously by marriage age, early or late, and fertility control within marriage, high or low. As Malthus would have predicted, the transition in Western Europe followed the path from C to D. In other words, marriage age was already relatively late, and the fertility transition essentially involved a shift from uncontrolled to controlled marital fertility. By comparison, fertility transition in most developing countries requires both a postponement of marriage to later ages and fertility control within marriage: a move from A to D.

China, we suggest, followed a far more complex path. The Chinese fertility transition did not resemble the European transition, nor does it fit well with the general pattern just described for developing countries. Rather, it shifted first from B to A, and only then from A to D. Marital fertility appears to have been low originally compared with premodern European populations. But with the rise of economic opportunities in the eighteenth century and the deterioration of familial authority in the twentieth, Chinese fertility control relaxed, shifting the Chinese fertility regime from B to A, that is, yielding a high overall fertility compared with modern European populations. This resulted in two stages of population growth: a slow

⁶⁶ The figure with some modifications replicates a matrix drawn from Matras (1965) and Macfarlane (1986).

rise in population over two centuries from 225 million in 1750 to 555 million in 1950 and the recent population explosion, which more than doubled population size in just 50 years from 555 million in 1950 to nearly 1.3 billion in 2000. This explosion, in turn, generated a collective response: a state decision to reimpose population control by means of a strict family planning program, involving both a demand for later marriage and birth control within marriage, thus moving China from A to D.

While the transition in Europe and elsewhere came about largely by an extension of individual agency from nuptiality to fertility and mortality behavior, the Chinese demographic transition is the product of the transfer of the collective decisionmaking process from the family to the state. For the Chinese, planning demographic events has always been an important part of life. Demographic decisions are never individual. They require careful consideration of collective needs at both ends of the social spectrum: the family and the state. Rational decisionmaking in this context is a process of negotiation that takes into full consideration hierarchical prerogatives and collective interests. What matters is not individual preferences, but the person's gender, birth order, and relation to the household head within the family, and his or her occupation, place of residence, and political status in the society.

A salient characteristic of such a collective process is the enormous cost it imposes on individuals. At no stage of an individual's life can he or she behave in a way so as to maximize his or her personal interests. Until recent decades, a couple's marriage was arranged by their parents and elders and their marital life was monitored and controlled by other people. There was little room for personal romance or sexual indulgence. Perhaps most painfully, for a society where the parental relationship is the primary social relationship, many parents were forced to kill or acquiesce to killing their own children. While the Chinese can now generally choose their own spouse, they still cannot choose the number of their children. And, if they live in cities or work for state enterprises, they can have only one child.

For the Chinese public, the broadly accepted and deeply held goals of the family planning program legitimize the imposition of such individual costs. While many Chinese sympathize with the victims of state coercion when its methods lead to excess, unlike Western observers they also believe that such sacrifices are necessary and that excesses are probably unavoidable.⁶⁷ In that sense, their ambivalence over forced abortion and ster-

⁶⁷ Most Chinese understood the government rationale for the population policy. In a representative survey conducted in Hebei, Shaanxi, and Shanghai in 1985, women of reproductive age were asked what they believed to be the main reason for the one-child policy. They were provided with five choices: population control, economic development, for both mother's and children's health, other, and don't know. A majority of respondents (50 percent in Shaanxi, 63 percent in Hebei, and nearly 80 percent in Shanghai) reported that the main reason was for population control. Between 10 and 20 percent of the women believed it was for women's and children's health, and another 10 percent or so mentioned the need for national economic development (State Statistical Bureau 1986, Vol. 1: 98).

ilization probably resembles that of family members in the past when a young couple had to kill or abandon an infant. All collective societies exact individual sacrifices in the name of the greater good of the group. In Chinese culture, moreover, such sacrifices are not only deemed necessary, they are also routinely glorified.⁶⁸ While this is less true of family planning now, that is only because such control has become a universal and routinized practice.

The Chinese family planning program and its distinctive demographic checks and institutions are the product of long-standing Chinese social, cultural, and political traditions. In it, we can easily recognize many characteristic features of the Chinese demographic system, only with contemporary trappings. While fertility has declined in recent decades to an extremely low level, sex-selective abortion has risen. To some extent, infanticide and adoption have also returned.⁶⁹ Nevertheless, we must also recognize that the consequent reductions in Chinese fertility have already reduced world population growth by perhaps 250 million. By 2030, when China's population is expected to plateau at 1.5 billion, its size will be well below one-fifth of the global total, a reflection of the remarkable and in no small extent policy-induced speed of the Chinese fertility transition.⁷⁰

Conclusion

The binary contrast between a collectivist "East" and an individualist "West" and the linkage between demography and ideology can be overdrawn.⁷¹ Nevertheless, the comparison of human experience over time and place remains important to all social scientific enterprises. Only through his explicit comparison of population behavior in the non-European and nonmodern European world with that in the modern European world was Malthus able to identify the distinctive differences between Western and non-Western population behavior and to produce his influential demographic model of positive and preventive checks. Only through similar comparisons, largely between "East" and "West," were subsequent scholars able to link Malthusian population processes to social organization and economic behavior (Hajnal 1982).⁷² Without such comparisons, Malthus and these later schol-

⁶⁸ Public displays of symbols of local achievement have a long history in China. The arches, banners, and inscriptions of the past, however, have generally been replaced by official certificates. Typically the contemporary government awards such certificates to families who have a child in the army or to couples who pledged to have only one child in the late 1970s and early 1980s, when the current family planning program was in its early stage.

⁶⁹ See Johnson, Huang, and Wang (1998) for a recent discussion of adoption in contemporary China.

⁷⁰ World population in 2030 is predicted to be 8.4 billion (United Nations 1998).

⁷¹ See, for example, Goody's critique titled, "From collective to individual: The historiography of the family in the West," in Goody (1996: 162–204).

⁷² See Lee and Ochiai (1998) for a recent assessment and reaffirmation of such comparisons using data from the Eurasian Population and Family History Project.

ars would only have written descriptive population history or population studies, not social theory.

Any attempt to reduce human experience to a simple binary opposition, of course, requires caution and qualification. While collectivism and individualism may explain many of the demographic differences between China and Europe, they are also universal aspects of human behavior.⁷³ Even in the contemporary United States, where individualism is often extolled, few individuals can live free from a web of social and political regulations and constraints. Similarly, even in China, where collectivism appears triumphant, individuals have always been able to exercise a degree of personal initiative. The comparison of demographic behavior and demographic systems in this essay illustrates the social consequences of the different cultural, ideological, and political orientations in East Asia and Western Europe and the quantitative significance of these consequences.

The explanatory power of the Malthusian or neo-Malthusian models lies in part in the simplicity of the Malthusian binary model. In contrast, the current fashion in history and in some of the social sciences is to use comparison to generate complexity. This is true even in the quantitative social sciences, where sophisticated multivariate techniques of analysis are used to measure the multiple dimensions of human motivation and experience. We are now confounded by a multiplicity of coefficients and explanations at the individual and aggregate level organized by class, ethnicity, gender, geography, and time. The challenge of such approaches is that in the absence of any larger organizing principles or narratives, it is increasingly hard to fit each story within a global or even historical context. Ironically, while the world has grown increasingly smaller, our understanding of our shared experience has grown increasingly complex, so complex as to defy synthesis.

That this may be less true in demography is a tribute to Malthus. Ever since the publication of the first edition of *An Essay on the Principle of Population* in 1798, his model of positive and preventive checks has remained predominant in the intellectual discourse of population studies. While our increasing scientific and technological productivity has proven his pessimistic predictions regarding population and living standards to be incorrect, the Malthusian focus on the potentially precarious balance between human numbers and resources remains one of the central preoccupations of our time. Following on the two-hundredth anniversary of the publica-

⁷³ Social thinkers, especially political philosophers, have long recognized the existence of such basic aspects of human behavior and have commented on their implications (Triandis 1995). It was not until a few decades ago, however, that social scientists, most notably clinical psychologists, began to conceptualize and measure personal traits as collectivist or individualist. Such research has shown that just as individuals from some societies are more likely to demonstrate one inclination over the other, so within the same society substantial differences can also coexist whether measured by age, birth order, gender, education, ethnicity, occupation, or the like.

tion of the first edition of Malthus's essay, it therefore seems especially appropriate to review the Malthusian model in light of our new understanding of Chinese realities.

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References

- Aird, John S. 1990. *Slaughter of the Innocents: Coercive Birth Control in China*. Washington, DC: American Enterprise Institute.
- Banister, Judith. 1987. *China's Changing Population*. Stanford: Stanford University Press.
- Barclay, George W. 1954. *Colonial Development and Population in Taiwan*. Princeton: Princeton University Press.
- Barclay, George W., Ansley J. Coale, Michael A. Stoto, and T. James Trussell. 1976. "A reassessment of the demography of traditional rural China," *Population Index* 42(4): 606–635.
- Barrett, Richard E. 1980. "Short-term trends in bastardy in Taiwan," *Journal of Family History* 5(3): 293–312.
- Benedict, Carol. 1996. *Bubonic Plague in Nineteenth-Century China*. Stanford: Stanford University Press.
- Bernhardt, Kathryn. 1995. "The inheritance rights of daughters," *Modern China* 21(3): 269–309.
- Biraben, Jean-Noël. 1979. "Essai sur l'évolution du nombre des hommes," *Population* 34(1): 13–25.
- Blayo, Y. 1975. "La mortalité en France de 1740 à 1829," *Population* 30 (numéro spécial): 123–142.
- Blayo, Y. and Louis Henry. 1967. "Données démographiques sur la Bretagne et l'Anjou de 1740 à 1829," *Annales démographiques historiques*: 91–171.
- Bray, Francesca. 1997. *Technology and Gender: Fabrics of Power in Late Imperial China*. Berkeley: University of California Press.
- Buck, John Lossing (ed.). 1937. *Land Utilization in China*. Nanking: University of Nanking.
- Campbell, Cameron. 1999. "Mortality change and the epidemiological transition in Beijing, 1644–1990," in Liu et al. (eds.).
- Chen Guangsheng. 1989. "Songdai shengzi buyu fengsu de shengxing jiqi yuanyi" (The reasons for the rise of infanticide during the Song), *Zhongguo shi yanjiu* (Research in Chinese history) 1: 138–143.
- Chen, Pi-chao and Adrienne Kols. 1982. "Population and birth planning in the People's Republic of China," *Population Reports*, Series J, No. 25.
- China Population Information Center. 1988. *Zhongguo renkou ziliao shouce* (Handbook of Chinese population materials). Beijing: Zhongguo renkou qingbao zhongxin.

- Chuang, Ying-chang and Arthur Wolf. 1995. "Marriage in Taiwan, 1881–1905: An example of regional diversity," *Journal of Asian Studies* 54(3): 781–795.
- Coale, Ansley J. 1975. "The history of the human population," *Scientific American* 231(3): 31–51.
- . 1984. *Rapid Population Change in China, 1952–1982*. Washington, DC: National Academy Press.
- Coale, Ansley J. and Judith Banister. 1994. "Five decades of missing females in China," *Demography* 31(3): 459–479.
- Coale, Ansley J. and Chen Sheng-Li. 1987. *Basic Data on Fertility in the Provinces of China, 1940–82*. Honolulu: Papers of the East-West Population Institute.
- Coale, Ansley J. and Roy Treadway. 1986. "A summary of the changing distribution of overall fertility, marital fertility, and the proportion married in the provinces of Europe," in Ansley J. Coale and Susan Cotts Watkins (eds.), *The Decline of Fertility in Europe*. Princeton: Princeton University Press, pp. 31–181.
- Das Gupta, Monica. 1995. "Fertility decline in Punjab, India: Parallels with historical Europe," *Population Studies* 49(3): 481–500.
- Dunstan, Helen. 1975. "Late Ming epidemics: A preliminary survey," *Ch'ing-shih wen't-i* 3(3): 1–59.
- Durand, John D. 1977. "Historical estimates of world population: An evaluation," *Population and Development Review* 3(3): 253–296.
- Elvin, Mark. 1973. *The Pattern of the Chinese Past*. Stanford: Stanford University Press.
- Feeney, Griffith and Wang Feng. 1993. "Parity progression and birth intervals in China: The influence of policy in hastening fertility decline," *Population and Development Review* 19(1): 61–101.
- Fei, Xiaotong. 1947/1998. *Xiangtu Zhongguo, Shengyu zhidu* (Earthbound China and the system of reproduction). Beijing: Beijing Daxue chubanshe.
- Feng Er kang. 1986. "Qingdai de hunyin zhidu yu funu de shehui diwei shulun" (The state of women and the Qing marriage system), *Qingshi yanjiu ji* 5: 305–343.
- Flinn, Michael W. 1981. *The European Demographic System, 1500–1820*. Baltimore: The Johns Hopkins University Press.
- Gamble, Sidney D. 1954. *Ting Hsien: A North China Rural Community*. Stanford: Stanford University Press.
- Goody, Jack. 1996. *The East in the West*. Cambridge: Cambridge University Press.
- Greenhalgh, Susan. 1986. "Shifts in China's population policy, 1984–86: Views from the central, provincial, and local levels," *Population and Development Review* 12(3): 491–515.
- . 1993. "The peasantization of the one-child policy in Shaanxi," in Deborah Davis and Stevan Harrell (eds.), *Chinese Families in the Post-Mao Era*. Berkeley: University of California Press, pp. 219–250.
- Gu Baochang and Krishna Roy. 1995. "Sex ratio at birth in China, with reference to other areas in East Asia: What we know," *Asia-Pacific Population Journal* 10(3): 17–42.
- Guo Shenyang. 1996. "Determinants of fertility decline in Shanghai: Development or policy?" in Alice Goldstein and Wang Feng (eds.), *China: The Many Facets of Demographic Change*. Boulder: Westview Press, pp. 81–96.
- Hajnal, John. 1965. "European marriage patterns in perspective," in D. V. Glass and D. E. C. Eversley (eds.), *Population in History: Essays in Historical Demography*. London: Edward Arnold, pp. 101–143.
- . 1982. "Two kinds of preindustrial household formation system," *Population and Development Review* 8(3): 449–494.
- Hardee-Cleaveland, Karen and Judith Banister. 1988. "Fertility policy and implementation in China, 1986–88," *Population and Development Review* 14(2): 245–286.
- Harrell, Stevan (ed.). 1995. *Chinese Historical Microdemography*. Berkeley: University of California Press.

- Hinde, P. R. A. 1985. "The fertility transition in rural England," Ph.D. dissertation, University of Sheffield.
- Ho, Ping-ti. 1959. *Studies on the Population of China, 1368–1953*. Cambridge, MA: Harvard University Press.
- . 1975. *Cradle of the East*. Hong Kong: Chinese University of Hong Kong Press.
- Hofsten, E. and H. Lundstrom. 1976. *Swedish Population History: Main Trends from 1750 to 1970*. Stockholm: Statistiska Centralbyran.
- Huang, Philip. 1990. *The Peasant Family and Rural Development in the Yangzi Delta, 1350–1988*. Stanford: Stanford University Press.
- Huang Rongqing and Liu Yan. 1995. *Zhongguo renkou siwang shuju ji* (A collection of mortality data of China's population). Beijing: Zhongguo renkou chubanshe.
- Johnson, Kay Ann, Huang Banghan, and Wang Liyao. 1998. "Infant abandonment and adoption in China," *Population and Development Review* 24(3): 469–510.
- Kito, Hiroshi. 1991. "Zen kindai Nihon no shushō-ryoku: Kōshoshushō-ritsu wa jijitsu dattaka" (Fertility in premodern Japan: Was fertility truly high?), in *Jyōchi keizai ronshū* 36: 83–98.
- Kurosu, Satomi and Emiko Ochiai. 1995. "Adoption as an heirship strategy under demographic constraints: A case from nineteenth-century Japan," *Journal of Family History* 20(3): 261–288.
- Lavelly, William R. 1986. "Age patterns of Chinese marital fertility, 1950–1981," *Demography* 23(3): 419–434.
- Lavelly, William and Ronald Freedman. 1990. "The origins of the Chinese fertility decline," *Demography* 27(3): 357–367.
- Lavelly, William, James Lee, and Wang Feng. 1990. "Chinese demography: The state of the field," *Journal of Asian Studies* 49(4): 807–834.
- Lavelly, William and R. Bin Wong. 1998. "Revising the Malthusian narrative: The comparative study of population dynamics in late imperial China," *Journal of Asian Studies* 57(3): 714–748.
- Lee, Bernice. 1981. "Infanticide in China," in Richard Guisso and Stanley Johannesen (eds.), *Women in China: Current Directions in Historical Scholarship*. Lewiston, NJ: Edwin Mellen Press, pp. 163–177.
- Lee, James and Cameron Campbell. 1997. *Fate and Fortune in Rural China: Social Organization and Population Behavior in Liaoning, 1774–1873*. Cambridge: Cambridge University Press.
- Lee, James and Emiko Ochiai. 1998. "Social organization and demographic behavior in Eurasia, 1750–1900: A reassessment of metageography," paper presented to the Eurasian Population and Family History Project Conference on Nuptiality and Family Formation in Eurasia, Beijing.
- Lee, James and Saito Osamu (eds.). Forthcoming. *Abortion, Infanticide, and Reproductive Behavior in Asia, Past and Present*. Oxford: Oxford University Press.
- Lee, James and Wang Feng. 1999. *One Quarter of Humanity: Malthusian Mythology and Chinese Realities, 1700–2000*. Cambridge, MA: Harvard University Press, forthcoming.
- Lee, James, Wang Feng, and Cameron Campbell. 1994. "Infant and child mortality among the late imperial Chinese nobility: Implications for two kinds of positive check," *Population Studies* 48(3): 395–411.
- Lee, James, Wang Feng, and Ruan Danching. 1999. "Nuptiality among the Qing nobility: 1640–1900," in Liu et al.
- Li Bozhong. Forthcoming. "Duotai, biyun yu jueyu: Song Yuan Ming Qing Jiangzhe diqu de jieyu fangfa jiqi yunyong yu chuanbo" (Abortion, contraception, and sterilization: Birth control methods and their dissemination in Song-Yuan-Ming-Qing Jiangsu, and Zhejiang), in Ding Yizhuang, Guo Songyi, and James Lee (eds.), *Hunyin yu Jiating: Dongxi bijiao shi* (Marriage and family: East-West comparative histories). Beijing: Peking University Press.

- Liu Jingzhen. 1994a. "Shazi yu niying: Songren shengyu wenti de xingbie chayi" (Killing sons and drowning daughters: Sex differentials in Song fertility), *Zhongguo lishi xuehui shixue jikan* (The quarterly of the Chinese Historical Association in history studies) 26: 99–106.
- . 1994b. "Songren shengzi buyu fengsu shitan: jingjixing liyou de tansuo" (A preliminary study of the Song practice of infanticide and neglect: The economic rationales), *Dalu zazhi* (Mainland journal) 88(6): 19–41.
- . 1995a. "Cong huitaide baoying chuanshuo kan Songdai funu de shengyu wenti" (An examination of women's childbearing during the Song dynasty from the stories of punishment for infanticide and abortion), *Dalu zazhi* (Mainland journal) 90(1): 1–15.
- . 1995b. "Han Sui zhijian de 'shengzi buju' wenti: Liuchao shengyu lisu yanjiu zhiyi" (Infanticide and neglect between the Han and Sui dynasties: A study of human fertility during the Six Dynasties), *Bulletin of the Institute of History and Philology* 66: 747–812.
- Liu, Ts'ui-jung. 1978. "Chinese genealogies as a source for the study of historical demography," *Studies and Essays in Commemoration of the Golden Jubilee of the Academia Sinica* (June): 849–870.
- . 1981. "The demographic dynamics of some clans in the lower Yangtze area, ca. 1400–1900," *Academia Economica Papers* 9(1): 115–160.
- . 1985. "The demography of two Chinese clans in Hsiao-shan, Chekiang, 1650–1850," in Susan B. Hanley and Arthur P. Wolf (eds.), *Family and Population in East Asian History*. Stanford: Stanford University Press, pp. 13–61.
- . 1992. *Ming Qing shiqi jiazhu renkou yu shehui jingji bianqian* (Lineage population and socioeconomic changes in the Ming and Qing periods). Taipei: Institute of Economics, Academia Sinica. 2 vols.
- . 1995a. "Demographic constraint and family structure in traditional Chinese lineages, ca. 1200–1900," in Harrell 1995, pp. 121–140.
- . 1995b. "Historical demography of South China lineages," in Harrell 1995, pp. 94–120.
- Liu, Ts'ui-jung, James Lee, David Reher, Osamu Saito, and Wang Feng (eds.). 1999. *Asian Population History*. Oxford: Oxford University Press.
- Luther, Norman Y., Griffith Feeney, and Zhang Weimin. 1990. "One-child families or a baby boom? Evidence from China's 1987 one-per-hundred survey," *Population Studies* 44(2): 341–357.
- Macfarlane, Alan. 1978. *The Origins of English Individualism: Family, Property, and Social Transition*. Oxford: Oxford University Press.
- . 1986. *Marriage and Love in England: Modes of Reproduction 1300–1840*. Oxford: Basil Blackwell.
- . 1987. *The Culture of Capitalism*. Oxford: Oxford University Press.
- . 1997. *The Savage Wars of Peace: England, Japan and the Malthusian Trap*. Oxford: Basil Blackwell.
- Malthus, Thomas Robert. 1986. *The Works of Thomas Robert Malthus*. 8 vols. E. A. Wrigley and David Souden (eds.). London: William Pickering.
- Matras, Judah. 1965. "The social strategy of family formation: Some variations in time and space," *Demography* 2: 349–362.
- McAlpin, Michelle. 1983. *Subject to Famine: Food Crises and Economic Change in Western India, 1860–1920*. Princeton: Princeton University Press.
- McEvedy, Colin and Richard Jones. 1978. *Atlas of World Population History*. New York: Penguin Books.
- National Committee for Adoption. 1989. *Adoption Factbook, United States Data, Issues, Regulations and Resources*. Washington, DC: The National Committee for Adoption.
- Notestein, Frank W. and Chiao Chi-ming. 1937. "Population," in Buck 1937, vol. 1, pp. 358–399.

- Official Statistics of Sweden. 1997a. *Population Statistics, Part 4, Vital Statistics*. Stockholm: Swedish Census Bureau.
- . 1997b. *Swedish Immigration Board, Asylum-seekers and Residence Permits Awarded*. Stockholm: Swedish Census Bureau.
- Schofield, Roger. 1989. "Family structure, demographic behaviour and economic growth," in John Walter and Roger Schofield (eds.), *Famine, Disease and the Social Order in Early Modern Society*. Cambridge: Cambridge University Press, pp. 279–304.
- Solinger, Dorothy, J. 1999. *Contesting Citizenship in Urban China: Peasant Migrants, the State, and the Logic of the Market*. Berkeley and Los Angeles: University of California Press.
- Song Jian and Jing-yuan Yu. 1985. *Renkou kongzhi lun* (Population control theory). Beijing: Kexue chubanshe.
- Song Jian, Chi-hsien Tuan, and Jing-yuan Yu. 1985. *Population Control in China: Theory and Applications*. New York: Praeger.
- State Statistical Bureau. 1986. *China In-Depth Fertility Survey (Phase-I), Principal Report*. 2 vols. Beijing: Department of Population Statistics, State Statistical Bureau.
- . 1987. *1982 Population Census of China, One-Percent Household Sampling*. 4 vols. Beijing: Department of Population Statistics, State Statistical Bureau.
- . 1993. *Tabulations of the 1990 Population Census of the People's Republic of China*. 4 vols. Beijing: China Statistical Publishing House.
- . 1997. *1995 Quanguo 1% renkou chouyang diaocha ziliao* (Data of 1995 national population sample survey). Beijing: Zhongguo tongji chubanshe.
- Statens Statistiske Bureau (State Statistical Bureau of Denmark). 1905. *Befolkingsforholdene I Danmark, 1 Det 19. Aarhundrede* (The population of Denmark during the nineteenth century). Copenhagen: Statens Statistiske Bureau.
- Statistisk Sentralbyrå (Central Bureau of Statistics of Norway). 1980. *Folketeljinga 1801* (Population census, 1801). Oslo: Norges Offisielle Statistikk B 134.
- Statistiska Centralbyran (National Central Bureau of Statistics of Sweden). 1969. *Historisk statistik for Sverige. Del I. Befolkning. Andra upplagan. 1720–1967* (Historical statistics of Sweden. Part I. Population. Second edition. 1720–1967). Stockholm.
- Telford, Ted A. 1990. "Patching the holes in Chinese genealogies: Mortality in the lineage populations of Tongcheng County, 1300–1880," *Late Imperial China* 11(2): 116–136.
- . 1992a. "Covariates of men's age at first marriage: The historical demography of Chinese lineages," *Population Studies* 46(1): 19–35.
- . 1992b. "Marital fertility in the Ming–Qing transition: Tongcheng County, 1520–1661," manuscript.
- . 1994. "Family and state in Qing China: Marriage in the Tongcheng lineages, 1650–1850," in *Jinshi jiazou yu zhengzhi bijiao lishi lunwen ji* (A comparative history of the state and family). Taipei: Academia Sinica, Institute of Modern History, pp. 921–942.
- . 1995. "Fertility and population growth in the lineages of Tongcheng County, 1520–1661," in Harrell 1995, pp. 48–93.
- Triandis, Harry C. 1995. *Individualism and Collectivism*. Boulder: Westview Press.
- United Nations. 1984. *Demographic Yearbook*. New York.
- . 1992. *Demographic Yearbook*. New York.
- . 1998. *World Population Prospects: The 1996 Revision*. New York.
- Waltner, Ann. 1995. "Infanticide and dowry in Ming and early Qing China," in Anne Behnke Kinney (ed.), *Chinese Views of Childhood*. Honolulu: University of Hawaii Press, pp. 193–218.
- Wang, Feng. 1996. "A decade of the One-Child policy: Achievement and implications," in Alice Goldstein and Wang Feng (eds.), *China: The Many Facets of Demographic Change*. Boulder: Westview Press, pp. 97–120.
- . Forthcoming. "The rise of abortion in modern China," in Lee and Saito forthcoming.
- Wang Feng and James Lee. 1998. "Adoption among the Qing nobility and its implications for Chinese demographic behavior," *History of the Family* 3(3): 411–428.

- Wang Feng, James Lee, and Cameron Campbell. 1995. "Marital fertility control among the late imperial Chinese nobility: Implications for two types of preventive check," *Population Studies* 49(3): 383–400.
- Wang Feng and Nancy B. Tuma. 1993. "Changes in Chinese marriage patterns during the twentieth century," *International Population Conference, Montreal 1993*, Vol. 3, pp. 337–352.
- Will, Pierre-Etienne and R. Bin Wong, with James Lee (eds.). 1991. *Nourish the People: The State Civilian Granary System in China, 1650–1850*. Ann Arbor: University of Michigan, Center for Chinese Studies.
- Wilson, C. 1984. "Natural fertility in pre-industrial England, 1600–1799," *Population Studies* 38(2): 225–240.
- Wolf, Arthur P. 1985. "Fertility in prerevolutionary rural China," in Susan B. Hanley and Arthur P. Wolf (eds.), *Family and Population in East Asian History*. Stanford: Stanford University Press, pp. 154–185.
- Wolf, Arthur P. and Chieh-shan Huang. 1980. *Marriage and Adoption in China, 1845–1945*. Stanford: Stanford University Press.
- Wrigley, E. A. 1986. "Introduction," in Malthus 1986, Vol. 1, pp. 7–39.
- Wrigley, E. A., R. S. Davies, J. E. Oeppen, and R. S. Schofield. 1997. *English Population History from Family Reconstitution 1580–1837*. Cambridge: Cambridge University Press.
- Wrigley, E. A. and R. S. Schofield. 1981. *The Population History of England, 1541–1871: A Reconstruction*. Cambridge, MA: Harvard University Press.
- Yang, C. K. 1959. *Chinese Communist Society: The Family and the Village*. Cambridge, MA: The M. I. T. Press.
- Yao Xinwu and Yin Hua. 1994. *Zhongguo changyong renkou shuju ji* (A collection of basic data on China's population). Beijing: Zhongguo renkou chubanshe.
- Zeng Yi. 1989. "Is the Chinese family planning program 'tightening up'?" *Population and Development Review* 15(2): 333–337.
- Zhao Wenlin and Xie Shujun. 1988. *Zhongguo renkou shi* (Population history of China). Beijing: Renmin chubanshe.
- Zhao Zhongwei. 1997a. "Long-term mortality patterns in Chinese history: Evidence from a recorded clan population," *Population Studies* 51(2): 117–128.
- . 1997b. "Demographic systems in historic China: Some new findings from recent research," *Journal of the Australian Population Association* 14(2): 201–232.
- . 1997c. "Deliberate birth control under a high-fertility regime: Reproductive behavior in China before 1970," *Population and Development Review* 23(4): 729–767.
- Zheng Zhenman. 1992. *Ming Qing Fujian jiazuo zuzhi yu shehui bianqian* (Lineage organization and social change in Fujian Province during the Ming and Qing Dynasties). Changsha: Hunan Jiaoyu chubanshe.