Chinese Demography: The State of the Field
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As recently as one decade ago, there was no "field" of Chinese demography. There were virtually no demographers of China and little available data. It is fair to say that China was at once the largest and the least known of any human population.

The change has been sudden. New sources of data now place China among the better-documented national populations. Publications on Chinese population have boomed. In consequence, we can now speak of a field of Chinese demography, although it is hardly in a steady "state." We can only outline the explosion of demographic research that is continually expanding and refining our understanding of Chinese population today and in the past. This outpouring of data and knowledge provides unprecedented opportunities for the study of Chinese society and offers unusual challenges to our understanding of comparative population dynamics.

In the past, domestic politics in the People's Republic of China precluded any serious study of population within China. The rise of what the Chinese now call "leftist" population theory in 1958 effectively banished demography from the Chinese social sciences. Even after strong population control measures were adopted in urban areas in 1963 and in rural areas in 1971, the anti-intellectual climate continued to discourage demographic research. What little information existed was considered secret.

The unavailability of empirical information stunted the study of contemporary Chinese demography outside of China. Foreign analyses were reduced to exercises in extrapolation from contradictory data of uncertain origin. Most attention, therefore, was focused on historical data largely from the early twentieth century (e.g., Barclay 1954; Barclay et al. 1976; Tauber 1973; Wolf and Huang 1980), and,

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from the island province of Taiwan, the only major Chinese population then open to demographic research.¹

As with so much else, recent political developments in China underlie the abrupt change. The reformers who arose in 1978 rejected Maoist orthodoxy and embraced economic pragmatism and empiricism. China has thus swung away from an attitude of hostility to “Malthusian” theories to the adoption of birth control policies unprecedented in human history for their goals, methods, and accomplishments. At the same time, China’s government has modernized its demographic data collection apparatus, established new institutions for training and research, and made public a broad range of demographic information.

A spectacular rise in demographic publications since 1979 reflects the recent government interest in population problems and the consequent growth of the field. Figure 1 tabulates the annual number of Chinese newspaper and journal articles in Chinese demography over forty years from 1949 to 1988. The rate of publication has been highly discontinuous; a short spate of articles during the late 1950s, a long silence during the 1960s and 1970s, and an ongoing eruption beginning in 1979. The number of articles rose, on average, from fourteen a year during the first thirty years (1949 to 1978), to over 400 a year during the next five years (1979 to 1983), to nearly 1,000 in 1985. Although the number of annual publications has since dropped to between 500 and 600, this decline largely reflects a decline in the number of popular articles in newspapers and magazines. By contrast, since 1985 the number of scholarly books on Chinese demography has increased from a handful to several hundred. In the last ten years, China has published twenty times more on population than in all preceding thirty years combined.

Most of these Chinese publications, however, served largely nonacademic educational purposes in support of the family planning policy. Indeed, according to a recent survey of demographic research in the People’s Republic of China, even most academic work also is concentrated largely on population policy and implementation, especially family planning, aging, and urbanization (Greenhalgh 1990). While Chinese demographers have also made several important contributions to formal theory and mathematical demography (Song et al. 1985; Zeng 1986), this article will generally ignore these achievements as well as most of the voluminous policy literature. Instead, we focus largely on social demography, that is, the intersection of demography and social sciences sometimes known as “population studies.”

**Institutional Growth**

in the People’s Republic of China

The institutional structure of demography that has emerged in the last ten years is a mix of old and new. The major central government organizations are the State

¹The foregoing remarks do not apply to Taiwan where, in demography as in other respects, recent history has diverged from that of the rest of China. For more than two decades, Taiwan has been the best-documented and most-studied case of demographic transition of any contemporary developing area. The analysis of demographic change in contemporary Taiwan has been and continues to be important to the understanding of demographic processes and to the study of Chinese society. In this article we restrict our discussion of Taiwan to the period before 1949. See the publications and citations in Renkou xuekan (Journal of Population Studies), a publication of the Population Studies Center at National Taiwan University, for population studies on contemporary Taiwan.
Figure 1. Demographic Articles in Newspapers and Journals 1950–1988


Statistical Bureau (Guojia tongjiju), founded in 1952, especially the department of population statistics (renkou tongjiisi), and the State Family Planning Commission (Guojia jibua shengyu weiyuanhui), which was elevated to ministry status in 1981. Moreover, beginning in 1979, the State Education Commission established twenty-one university-affiliated population research institutes and the Chinese Academy of Social Science established a Center of Population Research.² Many provincial universities and academies followed suit. In 1978 there was only one population research institution; now there are sixty-three—forty in universities and twenty-three in the social science academies (Greenhalgh 1990; P. Peng 1989).

Initially, the lack of trained demographers in China severely constrained demographic research. Most scholars in the population institutes came from a wide variety

²These are research institutes established with support from the United Nations Fund for Population Activities (UNFPA). They are located at Anhui University, Beijing College of Economics, Beijing University, East China Normal University, Fudan University, Hangzhou University in association with Zhejiang Medical University, Harbin Medical University, Hebei University, Jilin University, Lanzhou University, Liaoning University, Nanjing University, Nankai University, People's University, Sichuan University, Wuhan University, Xiamen University, Xi'an Jiaotong University, Xinjiang University, Yunnan University and Zhongshan University. See Greenhalgh 1990 for a detailed discussion of these population institutes, their research agendas, and the role of UN assistance in their development.
of disciplines including biology, computer science, economics, ethnography, geography, mathematics, and medicine. Almost none were educated as demographers. This situation is changing. Many universities now train demographers at the undergraduate and beginning graduate level, and several universities (Huadong, Renmin, and Xi'an Jiaotong) offer a Ph.D. program in demography. At present, such training is still highly technical. There has been relatively little emphasis in Chinese publications on the use of demographic measures and methods for social science research. The Chinese have used sophisticated formal models and quantitative techniques principally in population projection, a complement to the planned fertility policy.

International support, largely under United Nations' auspices, has played an important role in the rapid growth of Chinese demography (Greenhalgh 1990). The major beneficiaries have been the State Statistical Bureau, the State Education Commission, and the Chinese Academy of Social Sciences. The United Nations has provided training through sponsored visits and intensive classes taught by foreign demographers, as well as financial aid for equipment, books, and graduate fellowships abroad. To date, more than one hundred Chinese graduate students have enrolled in population centers in the United States on UN and other fellowships. The Association of Chinese Population Students of America currently has 125 members of whom seventy-four are students from the People's Republic of China. Over fifty students have returned to China from the United States and elsewhere, where they are playing important roles in the new population institutes.

Contemporary Demography

New and newly released data, in particular the 1982 census and the 1982 fertility survey, have illuminated the demographic history of the first three decades of the PRC. Recent censuses and major sample surveys have updated our knowledge into the late 1980s. At the same time, the discovery and release of large quantities of historical population records promises to open a new era of quantitative studies to rival developments in European and Japanese population history. We turn first to new sources of data on contemporary demography.

New Data: If there is a single turning point in Chinese demography, it is the census of 1982. This census was not only the largest population survey ever undertaken, it appears to be among the most accurate. Such success is a testimony to the hierarchy of statistical workers that extends from the center down to local levels, as well as to the Chinese ability to organize and motivate grass-roots participation. Moreover, unlike the earlier censuses of 1953 and 1964, the results of the 1982 census were published in a timely fashion. Although detailed provincial tabulations have yet to be systematically released, a superb population atlas with county-level data (State Council Population Census Office et al. 1987), and a one-percent sample tape of the census are now available to foreign researchers. The value of the census

3The Association of Chinese Population Students in America publishes a newsletter, edited by Yang Xiushi et al. of Brown University, and meets in conjunction with the annual meeting of the Population Association of America (PAA). The PAA China Group also publishes a semi-annual newsletter, China Population Research, edited by Susan Greenhalgh of the Population Council and Nancy Riley of the East-West Population Institute, on recent developments in the field.

4The one-percent sample tape from the 1982 Third Chinese Population Census is distributed by the Chinese Statistics Archives at the University of Illinois at Chicago in collaboration with the China Statistical Information and Consultancy Service Center.
was enhanced by the simultaneous publication of single-year age structures from the 1953 and 1964 censuses (State Council Population Census Office et al. 1982, 1983, 1985). Analysis in conjunction with earlier data indicate that the 1982 census is among the most accurate in the history of census taking.  

A second source of data, the National One-per-Thousand Fertility Survey of 1982, has been equally significant (China Population Information Center 1984; Coale 1984). The Chinese State Family Planning Commission conducted this survey largely to monitor progress in the birth-planning program, as well as to investigate recent fertility history. To this end, the commission collected birth and contraceptive histories from 310,000 women between the ages of 15 and 67 in 815 rural brigades and urban neighborhoods. These data have illuminated national fertility changes that stretch back to the 1940s.

The ongoing "in-depth provincial fertility surveys" conducted by the State Statistical Bureau should prove to be of even greater importance. The One-per-Thousand Survey contained little information on the socioeconomic background of the female respondents. The in-depth fertility surveys, by contrast, include information on menstruation, marriage, coital frequency, childbirth, breastfeeding, contraceptive use, attitude towards family-planning policies, and socioeconomic characteristics of women aged 15 to 49, their households, and communities. To date, the State Statistical Bureau has surveyed nine provinces: Shanghai, Hebei, and Shaanxi in 1985; and Beijing, Gansu, Guangdong, Guizhou, Liaoning, and Shandong provinces in 1987 with a sample size of several thousand women per province. Although the detailed results of these in-depth surveys are not yet published, data tapes are available to foreign researchers.  

The Chinese also have conducted a number of other large-scale demographic surveys. In 1987, the State Statistical Bureau conducted a one-percent intercensus population survey, repeating the 1982 census questionnaire with additional questions on migration. In 1988, the State Family Planning Commission followed up the 1982 One-per-Thousand Survey with a Two-per-Thousand Survey of over 500,000 women. Other central government organizations also surveyed such specialized populations as the elderly and urban migrants with interesting results (Ma and Wang 1988; Tian 1988; Xiong 1988). The Handicapped Survey of 369,816 households in 1987, for example, produced an estimate of 51.6 million handicapped,  

A post-enumeration survey of 972 production teams and urban neighborhood groups yielded an estimated net census error of 0.015 percent for the population count, an unprecedented low error (Li Chengru 1986). Although there are grounds for skepticism that the error rate could be truly this low—a rate 100 times higher would still be good—there is nonetheless independent evidence that the census data is of superb quality. Ansley Coale of Princeton University, using death rates derived from survival between the 1982, 1964, and 1953 censuses, and fertility rates derived from the independently conducted 1982 fertility survey, constructed a population for 1982 implied by these birth and death rates. He then compared this population at each age to population enumerated by the 1982 census. The agreement between the two independent sources of data is, in Coale's view, "extraordinary" (Coale 1984:18–22).

Data tapes are available through the Dynamic Data Base of the International Statistical Institute (ISI), The Hague. State Statistical Bureau (SSB) Department of Population Statistics 1986 describes these surveys and the preliminary results of the first phase. An international conference on both phases was held in Beijing in February 1990. The conference papers are scheduled for joint publication in Chinese by the SSB and in English by the ISI.

Provincial tabulations of the 1987 one-percent census are found in a thirty-volume series, Zhongguo 1987 nian renkou chouyang diaocha ziliao (China's 1987 1% population sample census data), edited by the Statistical Bureau and Population Survey Office of the respective provinces and published by the Statistical Publishing House, Beijing.
that is, 5 percent of China's population (Li Rongshi 1988). Finally, in addition to
these demographic surveys, there also have been a number of health surveys, par-
ticularly in the area of cancer research.\footnote{These include the 1975 Cancer Survey which investigated cancer deaths among a study
population of 841,670 in twenty-nine provinces (Ministry of Public Health Cancer
Prevention Research Office 1980), the 1984 national sample survey of smoking which surveyed
519,600 persons in over 200 selected counties and cities (Central Patriotic Health Movement
Committee and Ministry of Health 1988), and a recent project to monitor over 300 variables
on nutrition and life-style for some 6,000 people in sixty-five counties over a period of ten
years (Chen et al. 1990).}

Chinese demographers already have begun to compile these data in a number
of provincial and economic statistical yearbooks, local gazetteers, and the series of
provincial volumes collectively called Zhongguo renkou (China Population Mono-
graphs).\footnote{See Lively 1987 for a partial listing of these yearbooks and compendia; the most
important of which are the Zhongguo renkou nianjian (Population Yearbooks of China).
China Financial & Economic Publishing House 1988 is an English-language summary
volume of the Zhongguo renkou (China Population Monographs) series. Many of these
publications have been subvented by the United Nations Fund for Population Activities.}
With thirty-two projected volumes—one for each province and major
municipality (including Hong Kong and Macao)—this series is the most ambitious
academic project produced to date by the population research institutes. Each vol-
ume includes successive chapters on population history, fertility, mortality, migra-
tion, geography, urbanization, age structure, labor, marriage, household structure,
family planning, eugenics, and population projections. The quality and timely
production of this series is a testimony to the vigorous revival of demography in
China today.

\textit{New Findings:} These rapid achievements have already produced a remarkably
clear picture of China's recent demographic history. Ten years ago, even the size
of China's population was not known to within 100 million of the actual number.
Now, not only the size, but the timing of China's demographic transition can be
fixed with considerable precision. China first experienced a transition from high to
low mortality between 1950 and 1965, and a relatively later transition from high
to moderate fertility between 1963 and 1980. Figure 2 depicts the decline in crude
death rates from slightly over 20 per thousand in the early 1950s to less than 10
per thousand by the late 1960s; the later decline in crude birth rates from over 35
per thousand in 1950, to approximately 20 per thousand in 1980; and the tempo-
rary inversion of vital rates during the three famine years from 1959 to 1961.
Ongoing collaborative analyses of the one- and two-per thousand survey data by
American and Chinese scholars, largely at the East West Population Institute, have
produced detailed reconstructions of spatial and temporal variation from these broad
trends especially in marriage and fertility (Arnold and Liu 1986; Cho et al. 1986;
Coale and Chen 1987; Feeney and Yu 1987; Feeney et al. 1989; Freedman et al.
1988a and 1988b; Lively 1989; Lively and Freedman 1990; Lively et al. 1990;
Wang 1988a; and Wang et al. 1990).

The mortality transition was early and rapid. Infant mortality fell from over
200 per thousand in 1950 to around 50 per thousand today (Zhou et al. 1989).
Life tables constructed from the three censuses imply that life expectancy for males
rose from 42.2 years in the 1953–64 period to 61.6 in the 1964–82 period (Coale
1984:67). By 1980, life expectancy was 69 years, implying a rate of improvement
of 1.5 years of life expectancy per year since 1949, a rate matched only by a few
smaller populations in the world (Banister 1987; Banister and Preston 1981:107–
108). High levels of government investment in public health produced this rapid
Figure 2. Crude Birth and Death Rates: 1949–1989


progress (Jamison et al. 1984). Recent data suggest that mortality has continued to decline during the last ten years, especially in such remote provinces as Gansu and Guizhou (Banister 1990).

Changes in the causes of death reflect Chinese success in public health. The primary causes of death today—cancers, cerebrovascular and heart diseases—parallel those of advanced economies which have completed their "epidemiologic transition" from infectious to degenerative diseases (Rong and Li 1986). Further advances in life expectancy, which presumably require a shift toward curative medicine, will come more slowly and at much greater cost.

At the same time, the magnitude of the famine of 1959–1961 also reveals the scale of recent Chinese failures. Various estimates attribute 20 to 30 million deaths and another 20 to 30 million births delayed or averted due to the famine (Ashton et al. 1984; Coale 1984; Peng 1987). Although weather played a role, the crisis was largely the product of political and economic policies connected with the Great Leap Forward (Lardy 1987; Peng 1987). Provincial data indicate that the famine's depredations were widespread. Sichuan and Anhui were particularly hard hit, while the provinces along the northern frontier and the south China coast emerged comparatively unscathed. Demographic data, moreover, reveal that the famine profoundly disrupted fundamental social institutions across large areas. In rural north China, for example, ten successive cohorts of females failed to attain prefamine levels of primary education (Lavely et al. 1990). By virtually any demographic criterion, the Great Leap Forward produced one of the greatest disasters in human history.

Fertility did not decline monotonically until after the Great Leap Forward. But once Chinese birth rates fell, they did so more rapidly than in any other large population. Both urban and rural fertility were high in the 1950s. The Total Fertil-
Population Rate (TFR)—the number of children a woman would bear in her lifetime if she experienced at each age the fertility rates of a given year—averaged 6.5 before plunging during the famine years 1959–61. Following a post-famine fertility boom, urban fertility began a rapid decline in 1963 in response to a government campaign to limit births. Rural fertility remained high, beginning a sustained decline in 1971 in response to the "wanxishao" (later, longer, fewer) campaign. Between 1970 and 1980, rural fertility declined 60 percent, an unprecedented rate for any large population. Given the poverty of rural China, the low level of fertility achieved—a rural TFR below 3.0 since 1979—is extraordinary.

Concern and speculation that recent economic reforms have undermined the birth control program are largely unfounded. A 20-percent rise in the crude birth rate between 1984 and 1987 was due mainly to changes in age composition and marriage patterns, specifically the effect of large cohorts born after the famine entering childbearing ages, and a rise in the proportion of women marrying at young ages. Figure 3 describes the period parity progression ratio, that is, the proportion of women at each parity (number of births) who continue to have children. As we can see, although a relaxation of the birth planning policy since 1984 caused an increase in the proportion of women who had a second child from 63 percent in 1984 to 77 percent in 1987, the proportion of women who had a third or later child continued to decline. In consequence, the TFR only rose from 2.4 to 2.5 (Feeney et al. 1989; Luther et al. 1990).

Finally, these new data enable us to measure geographic mobility in contemporary China with some precision. Indeed, since permanent residence in China must be registered with the Public Security Bureau, these registers are a unique resource for the study of contemporary migration. Recently released data have already provided the broad dimensions of geographic mobility at the national level over the past four decades (Ren 1988; Wei 1988). We can distinguish three major periods: first, a decade of high urban and rural-bound migration (almost 50 migrants per thousand) that began in the early 1950s, but was abruptly cut off at the conclusion of the Great Leap Forward in 1962; then over two decades of low, largely rural-bound migration (20 per thousand) from 1963 to 1984; followed by a recent resurgence of largely urban-bound migration in the late 1980s. These migrations have substantially altered the ethnic and urban geography of some areas. In Xinjiang, for example, migration boosted the Han population from 7 percent in 1949 to 40 percent today. In cities throughout China, more than one-third of all current permanent urban residents in China are immigrants, half from other cities and half from the countryside (Chun 1988).

Nevertheless, these migration rates are low relative to other comparable populations, a testimony to the efficacy of urban grain rationing begun in 1954, and mandatory household registration begun in 1951 and completed in 1958 (Tien 1973).

10 According to the respective volumes of Zhongguo renkou (China Population Monographs), the ethnic proportions of most other frontier provinces changed far less. Qinghai, where the number of Han increased from 48 percent in 1949 to 60 percent in 1985, is the only other such extreme example. By contrast, in Tibet the number of Han increased from 1 percent in 1950 to 3 percent in 1964 and 4 percent in 1984. In Inner Mongolia, the proportion of Han even declined slightly from 85 percent in 1949 to 84 percent in 1985.

11 Comparable migration rates from contemporary Taiwan, for example, are an order of magnitude higher: 225 per thousand for males and 239 per thousand for females (Taiwan Department of Civil Affairs 1971). In Taiwan, as on the Mainland, any permanent relocation requires a change of registration. Neither the Taiwan nor the Mainland figures therefore include unregistered migrants.
Through these two institutions, the state, in response to the famine following the Great Leap Forward, deliberately froze the urban proportion of the population for almost twenty years. Although detailed national migration statistics are still sparse, information from urban registration reveals a net migration rate into cities from 1951 to 1960 of 30 per thousand; a net migration rate out of cities from 1961 to 1965 of 18 per thousand; and a net migration rate back into cities of 8 per thousand from 1971 to 1977 and 14 per thousand from 1978 to 1986 (Ren 1988). In consequence, although China's urban population doubled from 11 percent in 1950 to 20 percent in 1960, the urban proportion fell below 20 percent in the early 1960s and remained there until 1980 (Chan 1988). For two decades, China provided a unique example of industrialization without urbanization.
Historical Demography

New Data: New data as well as new methods have also begun to illuminate China's earlier historical demography. In consequence, the annual rate of publication in population history has increased from less than two articles between 1949 and 1979 to almost thirty articles between 1979 and 1984, and over fifty articles since 1985. All together, almost 500 articles and books were published on Chinese historical demography between 1929 and 1989 (Lee 1984/1990). Most are by Chinese scholars and focus on macro-level population aggregates found in standard historical sources. An increasing proportion, however, are by Western scholars who rely on new sources of micro-level data and employ new methods of micro-level analysis.

The major advances in Chinese historical demography, as in Europe, have been inspired by the discovery and analysis of nominative records. Two types of sources have been especially important. The first are genealogies which required the development of new techniques of analysis for incomplete data (Harrell 1987; Liu 1978; Telford 1986 and 1990). The second are household registers which offer more complete demographic information, but also require new methods of database analysis (Lee et al. 1990). To date, genealogical research has concentrated largely on such Inner Provinces as Zhejiang and Anhui. In contrast, work on household registers has focused on such Outer Provinces as Liaoning and especially Taiwan. Similar genealogies and household registers exist for such other places as Beijing. Moreover, many of these sources are now available in the United States (Finegan and Telford 1988). Preliminary research on such sources already has advanced our knowledge about population behavior in China to a level approaching our understanding of Japan.

New Findings: Thanks largely to Chinese scholarship, we are able to recognize the general trends in aggregate size of China's population during the last two thousand years. By the late second century A.D., China's total population was probably between 60 and 70 million people (Ge 1986). It did not fundamentally change in size until the eighth century, when population slowly rose to 100 million by the eleventh century (Ho 1970; Huang 1980); and did not rise again until the sixteenth century, when the population increased first from 100 to 150 million by the early seventeenth century and then from 150 million in the late seventeenth century to 500 million by the turn of the twentieth century (Ho 1959; Schran 1978). Finally, beginning in 1950, China's population doubled from 0.6 billion to 1.1 billion

12The major publications in population history on Anhui are Hazelton 1989 and forthcoming, and Telford forthcoming a and b. The major works on Zhejiang are Harrell 1985, Harrell and Pullum forthcoming, and Liu 1985. Liu Ts'ui-jung plans to complete by 1992 an ambitious study that will draw on over forty Ming and Qing genealogies from Anhui, Fujian, Guangdong, Jiangsu, Jiangxi, Hebei, Henan, Hubei, Hunan, Shandong, and Zhejiang. We can, therefore, look forward to fairly complete information on male births and deaths for selected areas of China over the last five hundred years. See Liu forthcoming a and b for a summary of her preliminary results on South China.


14Liang Fangzhong 1980 is a particularly comprehensive collection of all available national statistics of population and cultivated land, but see Zhao and Xie 1988 for their description of the different tax and corvée systems that produced these numbers and Bielenstein 1987 for his superb maps. Many of these numbers, of course, are extremely unreliable (Skinner 1987). For detailed bibliography on each dynastic period see Lee 1984/1990.
people today. The population problem that confronts contemporary China is the product of almost five hundred years of sustained growth. The economic implications of this long-term growth pattern are still being investigated and explored (Chao 1986; Elvin 1973; Hartwell 1990; Ho 1959; Huang 1985 and 1990; Liu 1986; Perkins 1969).

We can also distinguish the historical patterns and social consequences of Chinese migration, especially during the last five centuries. Most such movements were rural-bound and organized largely by the state, especially before 1500 (Lee 1978). Although private migration began to exceed public migration in the sixteenth century, urban-bound migration did not supplant rural-bound migration until the contemporary period. Indeed, according to estimates by G. William Skinner, the urban population (defined as residents of any community of over 2,000 persons) in the late nineteenth century was only six percent of the total population (Skinner 1977a:225). Before the twentieth century, in other words, migration largely extended and replicated a traditional agrarian society with little fundamental economic transformation. Most scholarly work on Chinese migration history has, therefore, focused on the social rather than the economic consequences of frontier settlement, especially on linguistic changes and new patterns in ethnic distribution (Lee and Wong 1991; Zhou and You 1986).

More importantly, thanks largely to Western scholarship, we now have precise vital rates for a wide variety of populations during the last four centuries. Historical demographers have already calculated birth and death rates for 100,000 people, that is, perhaps 1 of every 20,000 Chinese who lived between 1500 and 1900. At the current rate of progress, we can expect these numbers to double within the next few years. Although these populations are biased by location, time, sex, class, and sample size, such problems are inherent to most historical demography.

According to virtually all these studies, marital fertility during the last four centuries, compared to historical European populations, was moderate. The average number of recorded live births to a woman who married at age 20 and remained in an unbroken union until age 45 (TMFR) ranged between five and eight children (Barclay 1976; Coale 1985; Liu 1981 and 1983; Telford forthcoming a and b; Wolf 1985a). These marital fertility rates are comparable to total fertility rates in China during the 1950s. They are in sharp contrast to Europe, where marital fertility during the seventeenth and eighteenth centuries ranged from seven to eleven children (Wilson 1984).

Such low rates of recorded fertility were at least in part the result of infanticide. In Liaoning, for example, parents commonly used infanticide as a form of postnatal abortion through which they could control the number and sex of their children in response to a variety of social and economic circumstances (Lee et al. 1989 and 1990). While these deaths were generally not recorded and can only be inferred relative to male births and other social and economic variables, a study of neonatal mortality in the imperial clan during the eighteenth and nineteenth centuries reveals female mortality rates of 260 per thousand during the first month of life, which was, roughly, four times the male mortality rate of 70 per thousand (Campbell et al. forthcoming). Infanticide was clearly commonly practiced by the upper as well as the lower classes.

15Seventy-five thousand of these people lived on the Chinese mainland between 1400 and 1900. 25,000 lived on Taiwan between 1895 and 1945. The actual numbers of persons studied is even greater. Most genealogies include virtually no birth or death dates for females and precise birth and death dates for only one-half to two-thirds of the males (Telford 1986).
In spite of this common tradition of family planning, however, fertility varied sharply by social background, if only because the rich married earlier and died later than the poor, and consequently had more children (Harrell 1985; Telford forthcoming a). Even within marriage, polygamy and wet nursing may have contributed to higher fertility among the upper classes, while sojourning and poor health may also have depressed fertility among lower-class married women. In early twentieth-century Taiwan, for example, age-specific fertility apparently varied by 15 percent between landed and landless females (Wolf 1985a). To the extent that these factors led to different class-specific rates of population growth, they also contain broad implications about stratification and social mobility. In contrast with Europe, where "the rich got richer and the poor got children," in China, the rich chose to get children and consequently may not have become richer (Harrell 1985).

Moreover, the pattern of child and adult mortality also differed greatly by both gender and class. Although overall mortality in the eighteenth century was comparable with most historical European populations—a life expectancy at birth in the low 30s—age-specific death rates could vary by sex and class by as much as a factor of two or three, especially among children. In Liaoning, consequently, life expectancy at six months of age was seven years longer for males than for females (Anthony et al. 1988; Lee et al. 1990). In Anhui, life expectancy at birth for males was eleven years longer for gentry than for nongentry (Harrell and Pullum forthcoming; Telford 1990). In traditional China, the possibility of birth as well as that of early death reflected the social hierarchy.

Current Research: Progress and Implications

Demographic analysis, in other words, can illuminate our understanding of Chinese social structure, while analysis of social structure can elucidate how demographic decisions are made. Historical demography has already shown that marital relations between spouses varied by marriage type (Wolf and Huang 1980); and that the parental valuation of children could depend on position within the household (Lee et al. 1990). We can expect further research to advance our understanding of contemporary demographic mentalities as well as population behavior. Eventually we will understand not just how frequently individuals marry and give birth, but why. Demography will thus provide a forum where formal quantitative microanalysis can merge with the qualitative macro social sciences. Although the analysis of population trends will continue to be important, much ongoing academic research is increasingly focused on the interactions between social structure, economic change, popular customs, and individual choice. In this section, we will describe the contributions and implications of current demographic research to three scholarly disciplines—geography, anthropology, and sociology. We then conclude with an assessment of recent explanations of the Chinese fertility decline and their implications for our understanding of the relationship between state and society in China. These

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16Registration data for selected localities are available for the first half of the twentieth century, and they, too, place life expectancy in the low 30s. Chen Ta (1946) in Cheng Kung, Yunnan, found a life expectancy of 32 for the period between February 1940 and June 1944. The mortality rates recorded by Chiao, Thompson, and Chen (1938) in Jiangsu also imply life expectancy at birth of around 30. Unfortunately, these studies include no information on differential mortality rates by social class.
issues, of course, are only exemplary. There are many other significant topics (e.g.,
aging, mortality, minorities).\textsuperscript{17} We regret that we are unable to cover them all.

Geography and the Spatial Patterns
of Population Behavior

Demography is transforming our understanding of China’s cultural geography.
Although China’s regional diversity has long been recognized, spatial boundaries
have been defined largely by linguistic or material criteria rather than by social and
economic behavior. With the release of local demographic data, however, a new
cartography of Chinese society has begun to emerge.\textsuperscript{18}

Demographic data have revealed spatial variations in population behavior. Gen-
deral discrimination is a well-documented example. Historical studies have suggested
that by the sixteenth and seventeenth centuries, the lower Yangzi and Southeast
Coast regions had developed a particularly repressive cultural complex of gender
discrimination (T’ien 1988). We are now, in a crude way, beginning to take the
demographic measure of this legacy in contemporary China. Not only are rural
gender differences in literacy largest in the lower and middle Yangzi and Southeast
Coast regions, preference for males appears to be stronger in these regions as well.\textsuperscript{19}
Indeed, the high sex ratios at birth reported from these and other regions suggest
a pattern of female-selective mortality that continues to the present day. While the
expected sex ratio at birth (number of live boys born per one-hundred live girls
born) is 105 or 106 (Leridon 1977:15), the sex ratio at birth is as high as 112 in
Anhui; 110 in Guangdong, Guangxi, Henan, and Shandong; and 109 in Fujian,
Shaanxi, Shanxi, and Zhejiang (State Council Population Census Office 1982:
18–19).

The most ambitious attempt to use demographic data to identify an underlying
spatial structure to Chinese society, however, is the regional systems model prop-
bred by G. William Skinner (1977a, and 1985). Taking population density and
urbanization as indicators of the extent and shape of human interaction systems,
Skinner proposed that China’s spatial structure be conceived as a hierarchy of city-
centered regional systems culminating in nine macroregional systems. He argued
that ecology, economic conditions, social structure, and population processes varied

\textsuperscript{17}See the publication and citations in Zhongguo shaoshu minzu renkou (China’s national
minority populations), a publication of the Gansu Provincial Population Association, for
representative studies on China’s national minorities. In addition, two international confer-
cences on mortality and aging were held in Beijing in August 1988 and December 1989,
respectively. We understand that each conference will publish a set of proceedings shortly.

\textsuperscript{18}The most important example is The Population Atlas of China, which contains com-
prehensive county-level data, the first such publication for China (State Council Population
Census Office and the Institute of Geography of the Chinese Academy of Sciences 1987).
Other publications in population geography include the PRC Cancer Atlas (China Cancer
Atlas Editorial Committee 1979), the PRC Atlas of the Aged Population (Ministry of Public
Health Institute of Geriatrics 1986), and the PRC Atlas of Schistosomiasis (Qian 1985).

\textsuperscript{19}Arnold and Liu (1986) use several demographic indicators to argue a regional basis
for sex preference, but their methods have been criticized by Yu Xie (1989). The difference
in the proportion of illiterate females and illiterate males also provides a rough indicator
of the gender gap—at least in primary education. The 1982 Census found that about half of
all Chinese women 12 and over were illiterate or semi-literate, compared with 21 percent
of men. This gender gap is smallest in north and northeast China and the southern and
western frontier provinces.
Map 1. Core-periphery structure of the Upper Yangzi macroregion as of 1982, a four-way zoning based on an index giving equal weight to three variables: population density, proportion of land under cultivation, and grain yields.

systematically according to location in the core-periphery structure of the macroregion and of lower-order city-centered systems—broadly reflecting productivity and access to markets.

Skinner's conception has been influential, but a lack of suitable data has made his model difficult to apply. Critics (Sands and Myers 1986 and 1990) and defenders (Lavelly 1989; Little and Esherick 1989) have clashed over data and methods, but all have recognized that a rigorous test requires information of a finer grain. Such data are now at hand. Using county-level data and more sophisticated indexes that go beyond population density and urbanization, Skinner has undertaken an updated regionalization that assigns each county to one of four zones in the core-periphery structure of a particular macroregion and to one of five levels in lower-order city-
centered systems (Skinner 1990). The core-periphery classification for the Upper Yangzi macroregion encompassing the Sichuan Basin and outlying areas is shown on Map 1.

The preliminary results apparently not only support his initial conception, they argue for its relevance to China today. In a pilot study of the Upper Yangzi macroregion in the 1980s, a variety of economic, social, and demographic indicators vary consistently along both city-system and macroregional dimensions. Two examples, literacy and infant mortality, appear in the diagrams in figure 4. The most highly urbanized of the counties in the macroregional inner core have the lowest illiteracy and infant mortality, while the least urbanized of the counties in the far periphery have the highest illiteracy and infant mortality. Should further research substantiate Skinner’s model, a spatial dimension will become requisite for virtually any study of social structure and behavior.

Figure 4. Literacy and Infant Mortality: Differentiation through Hierarchical Regional Space, Upper Yangzi Macreregion 1982

<table>
<thead>
<tr>
<th>Macregoin</th>
<th>IC</th>
<th>OC</th>
<th>NP</th>
<th>FP</th>
</tr>
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<tbody>
<tr>
<td>Metrop.</td>
<td>84.9</td>
<td></td>
<td>84.9</td>
<td></td>
</tr>
<tr>
<td>Nodes</td>
<td>67.0</td>
<td>71.3</td>
<td>57.6</td>
<td>69.6</td>
</tr>
<tr>
<td>City Systems</td>
<td>65.8</td>
<td>61.1</td>
<td>59.1</td>
<td>(66.8)</td>
</tr>
<tr>
<td>Rims</td>
<td>71.7</td>
<td>69.8</td>
<td>66.1</td>
<td>49.9</td>
</tr>
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</table>

Pct. literate in population aged 12+

<table>
<thead>
<tr>
<th>Macregoin</th>
<th>IC</th>
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<tbody>
<tr>
<td>Metrop.</td>
<td>22.3</td>
<td></td>
<td>22.3</td>
<td></td>
</tr>
<tr>
<td>Nodes</td>
<td>37.8</td>
<td>36.7</td>
<td>44.1</td>
<td>56.8</td>
</tr>
<tr>
<td>City Systems</td>
<td>46.1</td>
<td>61.7</td>
<td>(53.7)</td>
<td></td>
</tr>
<tr>
<td>Rims</td>
<td>37.4</td>
<td>43.4</td>
<td>47.6</td>
<td>61.1 (44.2)</td>
</tr>
</tbody>
</table>

Infant mortality, 1981

These diagrams represent the spatial hierarchy characteristic of a Skinnerian macreregional system. County-level units are grouped in columns according to one of four zones in the macreregional system: inner core, outer core, near periphery, and far periphery, as shown in map 1. Rows represent the comparable structure of lower-order city centered systems, ranging from units containing the two metropolises, Chengdu and Chongqing (top row, inner core only) and other higher order cities (second row) down to counties situated at the rims of such systems (bottom row). Darker cell shadings indicate higher values of literacy and infant mortality. The diagrams show illiteracy and infant mortality to be lowest at the cores and nodes and highest at the peripheries and rims (Skinner 1990).

Anthropology and the Study of Marriage and Kinship

In anthropology, demography also has reinvigorated the study of Chinese marriage and kinship, the classic locus of Chinese studies (Freedman 1961). Anthro-
pologists in particular have invested great efforts to define both the formal kin structure and the corresponding system of behavioral norms. Demography is now providing them with a precise set of measures to analyze such human organization and behavior as well as a framework of comparison through time and space.

Recent demographic studies, for example, have confirmed and refined our understanding of formal household structure in traditional China, in particular the provinces of Liaoning and Taiwan. Although in both provinces the majority of the peasant population lived in joint family households consisting largely of married brothers or parents and married children, the domestic cycle and individual life cycle differed considerably—a product largely of different property systems (Lee et al. 1990; Wolf 1984 and 1985b). Specifically, household division occurred more frequently in Taiwan than in Liaoning, with greater rates of social mobility and social autonomy. Nevertheless, in Taiwan as well as Liaoning, the "mythological" large peasant household was a reality.

In addition, demographic analysis has revealed not only the formal structure of these large households, but also the way their hierarchical nature influenced individual demographic behavior. In Liaoning, for example, although household heads and their first-born sons married earlier and had more children than their younger brothers, they also had proportionally fewer daughters, presumably because of their need to produce heirs (Lee et al. 1990). Female infanticide in Liaoning, in other words, was practiced by the upper as well as the lower class. Hypergamy—the tendency for brides to marry up the social hierarchy—compensated for the consequent lack of upper-class females. But a large proportion of poor men had to do without. Similar analytical techniques applied to the study of lineage structures and kin relations promise equal insights about larger units of social organization.  

Demographic studies by Arthur Wolf and his colleagues also have uncovered variant social institutions which had been largely ignored by classical anthropology. The prevalence of such unorthodox marriage forms in Taiwan as minor or uxorilo-cal marriage, is a particularly well-studied example (Pasternak 1983 and 1989; Shepherd 1989; Wolf and Huang, 1980). Moreover, relying on standard demographic indices of fertility, anthropologists have been able to measure the degree of sexual passion and intimacy between spouses in these various types of marriages (Pasternak 1983; Wolf and Huang 1980). In particular, minor (little daughter-in-law) marriages were characterized by lower fertility than orthodox major marriages and were more prone to divorce. Variation in demographic, cultural, and ecological conditions has undoubtedly spawned other deviant marriage and family forms elsewhere in China (e.g., delayed-transfer marriage described by Stockard 1989), the assessment of which will continue to depend largely on the exploitation of demographic data.

Finally, demographic measures of marriage also reflect the peculiar recent history of social organization in contemporary China. Marriage ages have risen rapidly, yet divorce rates remain low. Arranged marriage has virtually disappeared, yet the use of intermediaries for introductions is still the norm. Urban mate selection became freer in the 1950s but has hardly changed since, an example of "stalled convergence" (Whyte 1988). These disparate trends seem to reflect the contradictory role

\[\text{Genealogical demography provides a unique vantage on structure and function of lineages—providing, for example, indicators of social and economic differentiation within lineages, clues to the demographic limits of lineage growth and to the timing and frequency of segmentation, to the social mobility of lineage members, and to the evolving nature of affinity alliances.}\]
of the state in modernizing marriage while actively discouraging divorce and a dating culture.

At the same time, some traditional marriage customs have evolved in unexpected ways. In rural China, for example, the demographic realities of the marriage market have produced rampant brideprice inflation and shifting spatial patterns of mate selection. Rising female marriage ages, which shrink the pool of potential brides, have probably contributed to a sharp rise in brideprices—an ironic outcome, given the government’s long-standing opposition to such exchanges (Parish and Whyte 1978). Migration controls and economic leveling within rural communities have made residence a prime attraction of a prospective husband. The resulting “spatial hypergamy” has spawned a stream of long-distance matches that has intensified the competition for brides in less-favored areas (Lavely 1991).

Sociology and the Urban-Rural Dichotomy

The study of vital rates and migration can cast light on these and other macrosociological issues. Demographic processes influence and are influenced in turn by social processes. An example is the interplay of demographic and socioeconomic factors in China’s urbanization and in shaping the particular dualism of Chinese society. The sharp urban-rural divide, an outgrowth of state efforts to control urbanization, has continuing ramifications for demographic processes and social change.

State control of population movement has been the hallmark of migration and urbanization in China until recently, and is still highly influential. Spontaneous or private migrations have always existed, particularly in the 1950s, but to an extraordinary degree, migrants have been directed by bureaucratic decrees—military resettlement programs, industrial relocations, rustications of youth and “downward transfers” of criminals and dissidents. Migration to cities in particular has been highly controlled, producing the unusual phenomenon of industrial growth in the absence of urbanization. Nonagricultural product as a percent of national income grew from 52 percent in 1962 to 64 percent in 1978, while China’s urban proportion remained unchanged.

State migration policies, in other words, unintentionally reinforced the urban-rural contradiction in Chinese society. Urban and rural areas of China are run under very different principles. Urban people work in state enterprises and organizations and are, therefore, guaranteed such benefits as health insurance, employment opportunities, and retirement pensions. Rural residents, by contrast, must depend largely on their own individual and family resources. As a result, the state is able to exercise far greater control over urban residents than rural. The resulting cleavage might be described as “one country, but two systems.”

Current fertility reflects the vast differences between urban and rural China. Surveys have repeatedly shown that, regardless of rural or urban residence, the majority of couples desire a two-child family (Wang 1989; Whyte and Gu 1987). Yet, dur-

21For a review of government-sponsored migrations to the frontier, see R. M. Li 1989. There were also “spontaneous” migrants. About five million people have migrated to Heilongjiang without government permission since the 1950s. Such movements to Inner Mongolia are estimated at two million, about half of all migrants to that province. Xinjiang, Qinghai, and Ningxia each received a million spontaneous migrants or more. It is estimated that over 80 percent of these migrants were young males. These estimates are derived from the respective provincial volumes of Zhongguo Renkou (China Population Monographs).
ing the first decade of the one-child policy, over 80 percent of urban couples stopped at one child, whereas over 90 percent of rural couples had a second child (Feeney et al. 1989; Wang 1989). Urban compliance with the one-child policy is clearly less a result of lower family-size preferences than of superior state authority in cities. The lack of siblings has enormous implications for the future sociology of urban China. This will become increasingly apparent as the only children of the 1980s mature. At the same time, the very low fertility of urban China virtually insures future employment opportunities for rural migrants.

The post-Mao reformers have already relaxed restrictions over migration and encouraged urbanization. The result has been an urbanization boom. The urban proportion of the population, which had remained steady at around 20 percent for two decades, exploded in the 1980s. By 1987 the urban proportion was reported to be 46 percent. Most of this increase was due to changes in definition of residence, but it also represented the opening of hundreds of new towns to a rising class of "third sector" nonagricultural, nonstate workers. Much of the demographic research in China on migration and urbanization debates the current policy of protecting large cities while fostering the growth of small towns, with some advocating opening both large cities and coastal areas to economic migrants (Fei et al. 1986; Zhang 1987; Zhao 1988). Whichever policy is adopted, China will never be the same. Unlike the migrations of the Maoist era, which largely maintained and reinforced social structures, the current shift of population represents a fundamental movement from an agrarian to an urban-industrial society.

Such migrations are undermining the carefully maintained distinctions between urban and rural residence. Decollectivization and market reforms have encouraged a surge of economic migrants. Cities and towns are jammed with temporary workers and itinerants, a "floating population" living outside the system of urban registration. In 1985, one in every six persons in the five largest Chinese cities was an "illegal" immigrant (Ren 1988). Given the large surplus labor pool in the countryside—estimated to be between 70 and 156 million—that is, one-third to one-half of all rural labor, these numbers seem certain to increase (Taylor 1988).

Making no claim on the state for grain, shelter, or health care, this population presents a challenge to birth planners and other state officials. At the same time, the rise of economic dualism within cities calls into question the hereditary privileges of the state sector population.

State and Society

Finally, both the causes and the consequences of the fertility decline raise important questions about the relationship between state and society in China. Is the decline

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22See Chan 1988; Goldstein and Goldstein 1985; Goldstein 1985. China's urban population rose from 19 percent in 1979 to 32 percent in 1984 and to 46 percent in 1987 (SSBDPS 1988). However, the proportion of the population holding an urban registration grew much more slowly, from 13.6 percent in 1979 to 16.1 percent in 1984 and 17.88 in 1987. Those without an urban household registration are still classified as agricultural population, despite the fact that at least a quarter of them are engaged in non-agricultural activities. The expanded definition of urban population has clearly encompassed many rural dwellers, yet the change seems well justified. In 1988, rural firms, most of them located in the newly recognized urban areas, already employed a quarter (95 million) of China's rural labor force and produced nearly 60 percent of gross agricultural production value (Wu 1988).
fueled by changes in social structure and the spread of new ideas as in other societies; or is the decline the product of social engineering, by which a paternalistic state has projected its will into the bedrooms of a vast agrarian society?

The answers, of course, are mixed. One school of thought argues that Chinese—and other populations with a Confucian heritage—possess a special aptitude for fertility control. The meritocratic values and institutions of Confucian society, in this view, endowed the Chinese with a peculiarly rational approach to family formation. A changing social and economic context has thus produced a rapid adaptation to changes in childbearing in the Chinese mainland just as it did in Taiwan, Japan, and Korea (Greenhalgh 1988b). Consonant with this theory is considerable evidence that social change played a role in the fertility decline, particularly improvements in health and the spread of education (Lavely et al. 1990; Poston and Gu 1987; Tien 1984). Moreover, fertility began to decline spontaneously, even before the initiation of government birth control programs (Lavely and Freedman 1990; Wang 1988a). Family size preferences have indeed fallen to low levels (Whyte and Gu 1987).

Another school sees the decline as a response to government fiat (Wolf 1986). In this view, people are not rational actors maximizing in relation to individual circumstances, but are pawns of a powerful state, with little scope for rational choice. Certainly, recent history would seem to substantiate this view. In the early 1970s, China established an administrative apparatus to monitor and control marriage and fertility, a system in which permission for childbearing is allocated to individual couples according to bureaucratic criteria (Chen and Kols 1982). With the advent of the one-child policy, this system was put in the service of a radical plan to hold China’s population size to 1.2 billion by the end of this century and 1.5 billion by the middle of the next century. Although the policy is not monolithic in goals or effectiveness, the one-child policy is still in force in cities and in many rural areas (Hardee-Cleveland and Banister 1988; Zeng 1989).

State intervention may also explain unusual aspects of the fertility decline—why, for example, urban fertility has remained below replacement level since 1974, and why fertility among rural illiterate women declined rapidly and virtually simultaneously with that of the more educated. Although the grip of the state is clearly weak in many rural areas, it is strong in cities. In 1987, 79 percent of urban births were first births; in major cities, the proportion was as high as 98 percent (China Population Information Center 1988). Where the state exerts control, the uniformity of behavior is striking.

State control of population, of course, has deep historical roots in China. Indeed many of the Chinese classics of administrative statecraft sought to increase nuptiality, reward fertility, prevent excess mortality, and control population movement (Wu 1986; Zhang 1982). The advocacy of universal and early marriage beginning with Mozi in the fifth century B.C. is a particularly well-documented example.23

23The earliest texts are by Mozi, who wrote: “What is hard to increase? Only people are hard to increase. But there are policies which can increase population. The former sage kings, for example, required that all men marry by the age of 19 and all women marry by the age of 14. After the kings disappeared, the people did as they pleased. Now those who want to marry early, marry at twenty. Those who want to marry late, marry [as late as] forty. The mean age at marriage is ten years older than under the sage kings. Since it takes about three years to suckle a child, we can expect at least two to three more children to survive if we were to reduce the age of marriage by ten years. Through universal early marriage, we should be able to increase population size” (Sun Yirang 1986:6.147).
Similar state policies were common throughout early Chinese history. In consequence, Chinese reproductive behavior was largely outside the locus of conscious choice, subordinated to community norms and to patriarchal authority more thoroughly than in other traditional patriarchal societies. In China, outside intervention in the bedroom is not new.

The contemporary Chinese state has continued to intervene in population processes in a way unparalleled in other societies. It has gone to unusual lengths to reduce mortality; sponsored mass migrations and controlled population movement; regulated age at marriage and the timing and number of births. Other states have intervened in population processes only on occasion, selectively, and usually ineffectively. By contrast, China's intervention has been both broad and effective.

While the draconian character of the birth-planning policy has been well publicized (Aird 1982 and 1990), it is doubtful that force alone could have achieved such results. India attempted a radical and coercive birth control policy during the emergency of 1975–77. Not surprisingly, this campaign failed. For a small and distant elite, possessing few modern, much less futuristic technologies of control and communication, to redirect the intimate behavior of 200 million families is a remarkable feat of social engineering. That China's success is seemingly unreplicable in other societies raises fundamental questions for all China scholars, as well as demographers, about Chinese social and political culture.

In the early fifth century B.C., Gou Jian, the King of Yue, for example, ordered that 'young men may not marry old women. Old men may not marry young women. If any woman remains unmarried at seventeen, her parents will be considered to have committed a crime. If any man remains unmarried by the age of twenty, his parents will be considered to have committed a crime. All pregnant women are entitled to the care of a state physician. If they give birth to a boy, they will be rewarded with two casks of wine and a boar. If they bear a daughter, they shall be rewarded with two casks of wine and a sow. Women who give birth to triplets will be provided with a wet nurse. Women who give birth to twins will be given special allowances of food' (Guo Yu 20.635–636). The Han in 191 B.C. imposed a similar punitive tax assessing all unmarried women between the ages of sixteen to twenty 240 cash or double the standard poll tax. Unmarried women between the ages of twenty-five and thirty were assessed 480 cash or quadruple the normal poll tax; and all unmarried women over thirty (if there were any) were assessed 600 cash or quintuple the normal poll tax (Han Shu 2.91).

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