

# Tibetan Fertility Transitions in China and South Asia

GEOFF CHILDS

MELVYN C. GOLDSTEIN

BEN JIAO

CYNTHIA M. BEALL

IN THIS ANALYSIS we show that recent fertility transitions among Tibetans living in the Tibet Autonomous Region of China and in exile in South Asia are remarkably similar in terms of timing and magnitude. This finding is intriguing considering that—although the people have common geographical and ethnic origins—they have lived under sharply different political, economic, and social conditions since the 1960s.

## The study populations, data, and methods

Research on Tibetan demography began in the 1970s with micro-level anthropological studies of polyandry and village-level population processes in the Himalayan hinterlands of Nepal and India (e.g., Goldstein 1976; Beall and Goldstein 1981; Levine 1988). Recently China's censuses and sample surveys have opened the door for macro-level demographic analyses of Tibetan societies in the Tibet Autonomous Region and neighboring provinces of China. This emerging body of research, undertaken primarily by demographers and sociologists (e.g., Zhang 1989; NPCO 1992; Ma 1996), has for the most part adopted a comparative perspective by showing, for example, how Tibetan fertility rates differ from national levels or from rates for China's Han majority. Meanwhile, very little demographic research has been conducted among Tibetan exiles, a population of roughly 120,000 individuals scattered across Nepal and India (c.f. Bhatia, Dranyi, and Rowley 2002). A major impediment has been a dearth of reliable data, a problem that has been alleviated by two recent surveys conducted by the Tibetan exile government. Other than the official summary and abridged data tables from

one of these surveys (Planning Council 2000a, 2000b), these data have not been subjected to thorough analysis.

### The Tibet Autonomous Region

The Tibet Autonomous Region, a vast, arid, high-altitude area of western China, is one of the most sparsely populated and least developed regions in the country. Roughly half of China's ethnic Tibetans live in the region, while the others inhabit the neighboring provinces of Qinghai, Gansu, Sichuan, and Yunnan. According to China's census the population of the Tibet Autonomous Region in 2000 is roughly 2.62 million, among whom 2.43 million (nearly 93 percent) are ethnically Tibetan. Most of the non-Tibetan population is comprised of Han Chinese migrants (158,570). In China's demographic parlance the "population in Tibet" refers to all residents of the Tibet Autonomous Region regardless of ethnicity, whereas the "Tibetan population" refers to all ethnic Tibetans in China regardless of where they live (Guo 1996). Here we are concerned only with the population of Tibetans living in the Tibet Autonomous Region.

We rely on two sets of data to examine fertility trends in the region. The first set was gathered as part of a four-year study on the impact of China's reform policies on rural Tibet (see Goldstein et al. 2002). Thirteen villages were selected from four rural townships (*xiang*) in three counties (*xian*) in two of the regions's seven prefectures. The villages are located in Lhundrup and Medrogungka Counties of the Lhasa Municipal Region, and in Panam County of Shigatse Prefecture. A survey was conducted that included every household in the 13 villages; a total of 5,590 individuals were enumerated. In addition, a separate survey elicited data on reproductive histories and contraceptive use among most women aged 18 and older ( $n = 1,584$ ).

The own-children method, a reverse-survival technique designed to estimate age-specific fertility rates and total fertility rates (TFR) in the absence of detailed data on reproductive behavior (see Cho, Retherford, and Choe 1986), was employed to gain a longitudinal perspective on fertility in these 13 villages. Data requirements for applying the own-children method are the following: (1) all children aged 0–14 years whose mother is identified, classified by age and mother's age; (2) all children aged 0–14 whose mother is not identified, classified by age; (3) all women aged 15–64 years, classified by age; (4) an estimation of child survivorship; and (5) an estimation of female adult mortality.

The first three requirements were met using data from the fertility and household surveys. The own-children method is sensitive to the misreporting of children's ages. To enhance data reliability, the surveyors asked both the numerical age and the animal sign corresponding to each individual's year of birth. The Tibetan calendar operates according to a 60-year cycle that

consists of five (the number of elements) twelve-year cycles (the number of animal signs). Knowing both the stated age and the animal sign of birth allows one to make direct correspondences with the year of birth according to the Western calendar. The accuracy of the own-children method can also be compromised by underenumeration if many children do not live in the same households as their mothers. Most children in this rural setting reside in their natal households, but to ensure accuracy the researchers used the reproductive history survey (which contains data on the whereabouts of all living children) to link any nonresident children with their mothers.

No mortality data are available for the research areas, so the fourth and fifth data requirements were met by matching Coale–Demeny (1983) model life tables with what is known about mortality in Tibet during the 1980s and 1990s. The infant mortality rate for Tibetans in 1989–90 was roughly 90 per thousand live births, and life expectancy at birth was about 60 years (Zhang and Zhang 1994). This corresponds with the Coale–Demeny South Level 17 model life table. Because the own-children method is not very sensitive to mortality estimation errors (Cho, Retherford, and Choe 1986: 45–47), we are confident that the total fertility rate estimates are reliable.

The second data set is from published volumes on the Tibet Autonomous Region from China's 2000 census, which includes calculations of age-specific fertility rates and total fertility rates at both the aggregate and county levels (Tibet Autonomous Region census 2002). We present census data on Lhundrup, Medrogungka, and Panam (the counties where the villages in the first data set are located) in order to contextualize the village data for the Tibet Autonomous Region.

## Exiles

China asserted administrative control over Tibet following a period of de facto independence lasting from 1911 to 1950 (Goldstein 1989). In 1959 a failed rebellion against China's rule led to the flight into exile of the Dalai Lama, Tibet's former secular and ecclesiastical leader. An estimated 100,000 people followed him and were resettled throughout India and Nepal. The Dalai Lama, who until recently headed the exile government, established his headquarters in the former British hill station of Dharamsala, which became the spiritual and administrative center of the exile community. There, the exiles set up the Central Tibetan Administration, a government in exile. In addition to disseminating political information, the administration oversees health, educational, and employment services for the scattered exile communities.

For most of the existence of the exile communities, little was known about their demographic profile. The situation has been clarified by two recent surveys. The Tibetan Demographic Survey (Planning Council 2000a,

2000b), conducted in 1998, was an attempt to fully enumerate the exile population living in India and Nepal. The survey counted 85,147 Tibetans living in India, 13,720 in Nepal, and an estimated 10,000 others living mostly in North America and Europe (Planning Council 2000a). The Socioeconomic Survey (Planning Council 2001), conducted in 2001, was a follow-up to the demographic survey that included only a selected sample of the exile population ( $n = 5,189$ ) living in settlements throughout India.

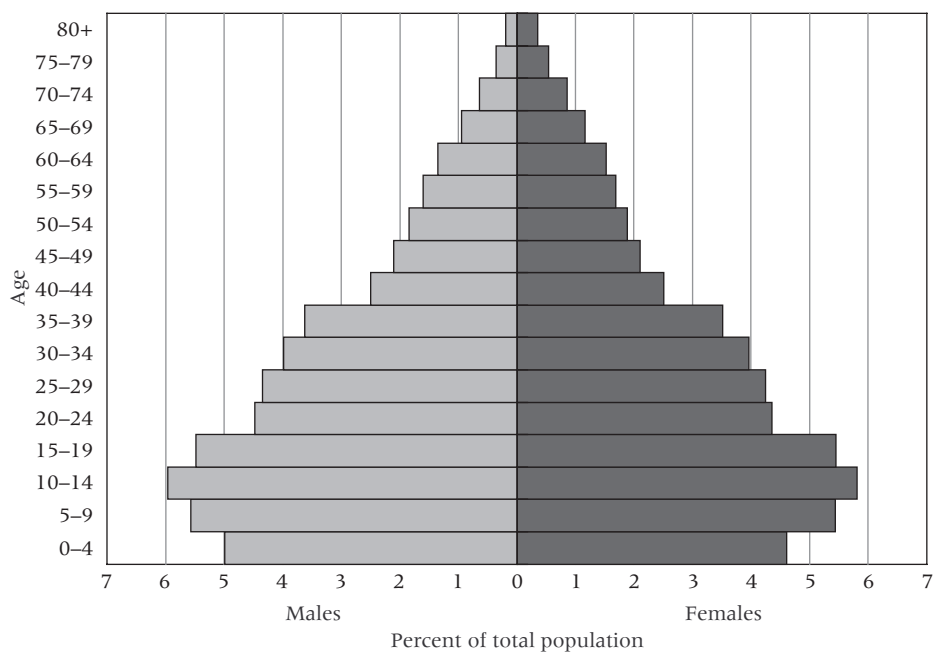
We make occasional reference below to the 1998 demographic data set but rely primarily on the 2001 socioeconomic survey for fertility estimations because the data contained therein are more detailed and amenable to demographic analysis. We used the own-children method to estimate fertility over the 15-year period preceding the survey. The first three data requirements for employing the own-children method were easily met because mothers in the socioeconomic survey could be linked with their children. Although many children reside at boarding schools, they were recorded on the survey as members of their parents' household. The accuracy of age reporting was also assured by asking both the numerical age and birth sign of each person. Life tables constructed using 2001 data estimated life expectancy at birth to be 65 years among exiles, which was the figure we used in the application of the own-children method.

## Tibetan fertility transitions

Age–sex compositions of the Tibetan populations provide the first indication that fertility transitions are underway. The population pyramids for all Tibetans in the Tibet Autonomous Region (Figure 1) and in the counties of Lhundrup, Medrogungka, and Panam (Figure 2) reveal that the largest cohort is 10–14 years old, after which the 5–9 and 0–4 year age cohorts decline in size. The largest cohort in the 13 villages in the Tibet Autonomous Region (Figure 3) is 5–9 years old, which is also followed by a smaller 0–4 year age cohort. The general shapes of the pyramids and the relative sizes of the younger cohorts give us the first clue that these populations experienced high fertility during the 1980s followed by fertility declines.

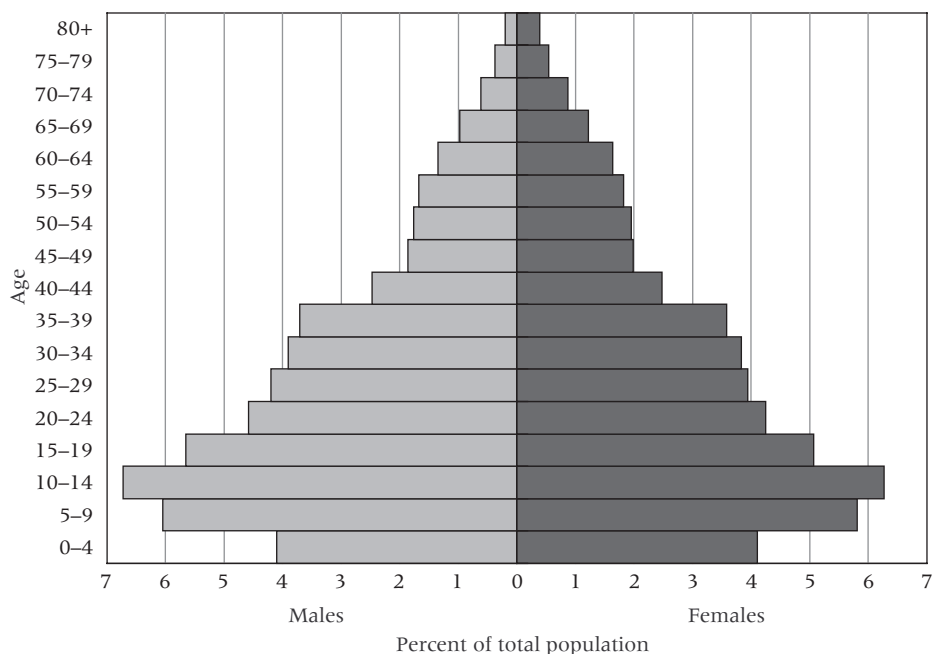
The age–sex composition of the exile population is more complex (Figure 4). The relatively large size of the cohort aged 15–29 is attributable in part to previously high levels of fertility but is also a reflection of migration trends during the 1990s when many young people left Tibet to join schools or monasteries in exile. Thirty percent of all exiles aged 15–29 were born in Tibet (Planning Council 2000b), with males outnumbering females by more than three to one. Nevertheless, hypothetically deducting those who were born in Tibet from the population does not change the result that the younger cohorts are progressively smaller. The rapidly shrinking cohorts below age 10 years indicate that a fertility transition was underway during the 1990s.

**FIGURE 1 Age-sex pyramid for Tibetans in the Tibet Autonomous Region, 2000**



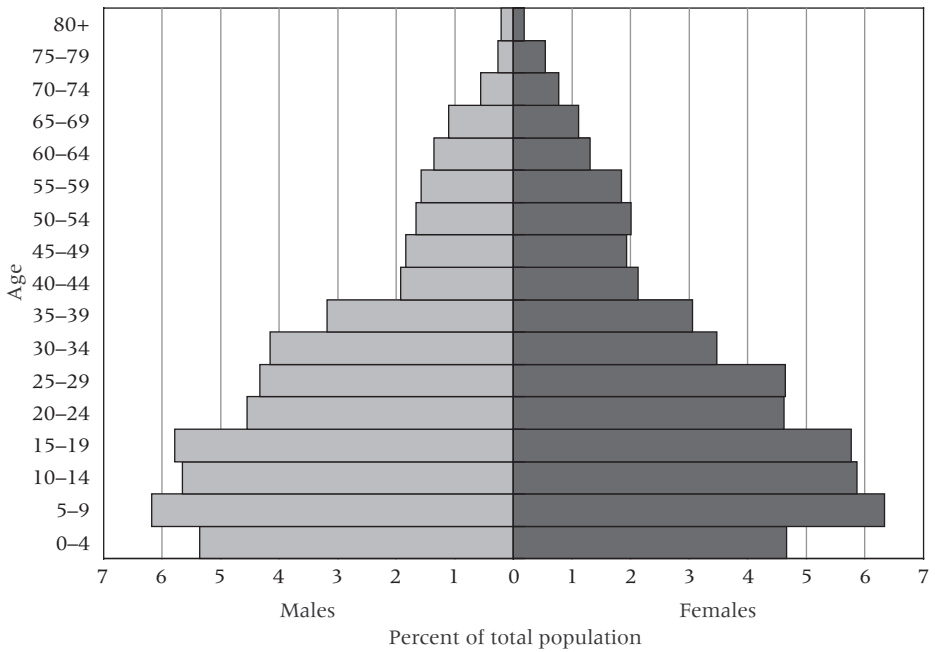
NOTE: Total population size = 2,427,168.  
 SOURCE: Tibet Autonomous Region census 2002: 148.

**FIGURE 2 Age-sex pyramid for Lhundrup, Medrogungka, and Panam counties in the Tibet Autonomous Region, 2000**



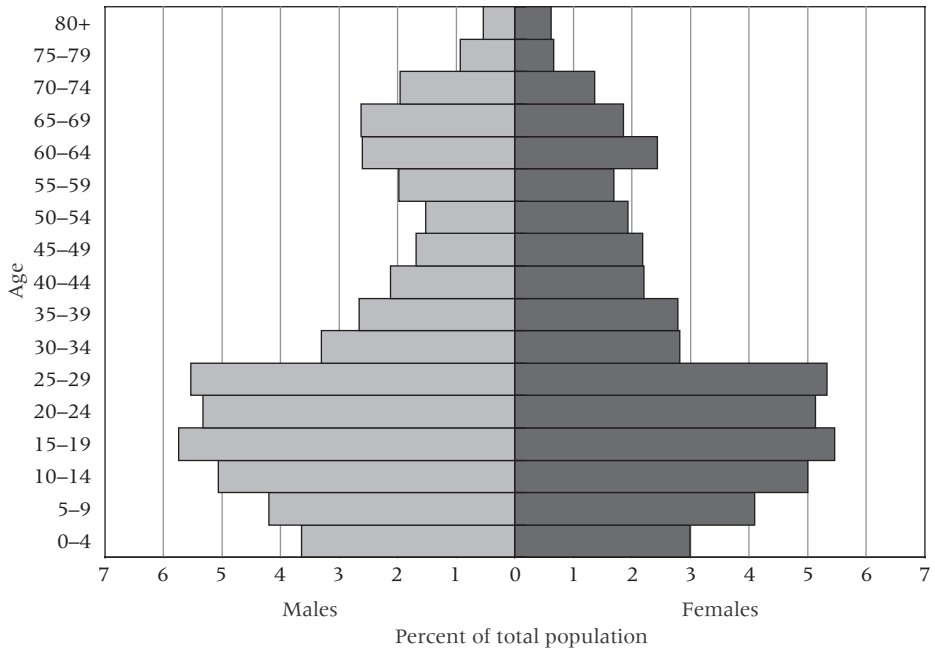
NOTE: Total population size = 129,926.  
 SOURCE: Tibet Autonomous Region census 2002: 78-101.

**FIGURE 3 Age-sex pyramid for 13 villages in the Tibet Autonomous Region, 1998**



NOTE: Total population size = 5,590.  
SOURCE: Goldstein, Beall, and Jiao 1998.

**FIGURE 4 Age-sex pyramid for sample of Tibetan exiles in India and Nepal, 2001**

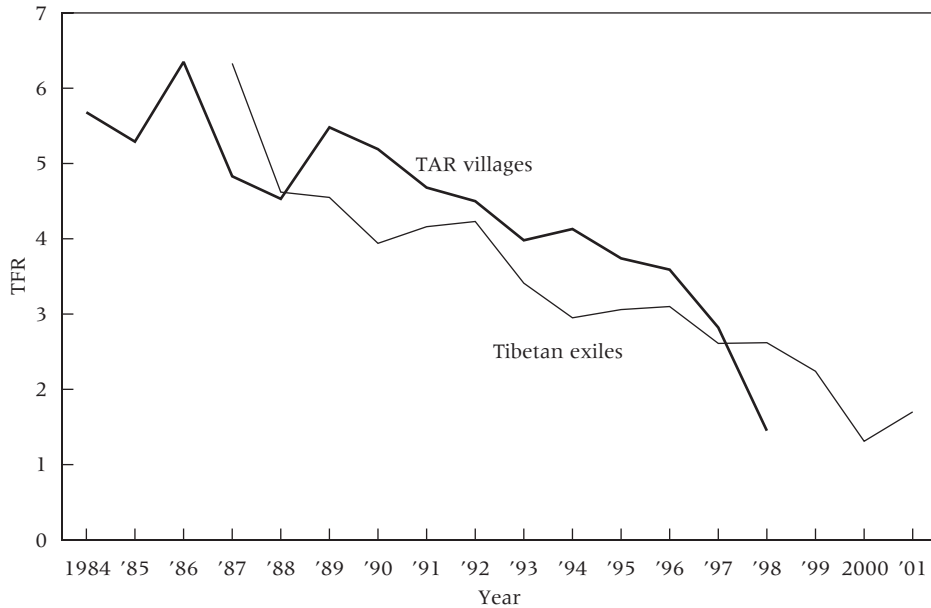


NOTE: Total population size = 5,144.  
SOURCE: Planning Council 2001.

TFR estimates generated by the own-children method permit us to compare fertility trends over the past 15 years (Figure 5). Both the exile and the village populations display evidence of rapid fertility declines. In the 13 villages the TFR declined from a high of 6.4 births per woman in 1986 to under 2 births per woman in 1998. The decline is similar to fertility trends throughout the Tibet Autonomous Region during the intercensal period of 1990 to 2000 when the estimated TFR dropped from 4.2 births per woman (Shi and Yang 1992) to 1.9 births per woman (Tibet Autonomous Region Census 2002). A possible explanation for why fertility for all of the Tibet Autonomous Region is lower than in the sampled villages (with the exception of 1998) is that the village survey did not include towns or urban areas, where birth planning regulations are stricter. For example, 1999 TFRs for the cities of Lhasa, Shigatse, and Chamdo were 1.1, 0.8, and 0.9 respectively (Tibet Autonomous Region Census 2002: 884–887).

A comparable fertility trend is evident among Tibetan exiles, whose TFR declined from a high of 6.3 births per woman in 1987 to 1.7 by 2000. The trend is remarkably similar in both magnitude and timing to that which occurred in villages of the Tibet Autonomous Region. In both cases the analysis shows a steady decline followed by a sharp drop of roughly one birth per woman per year just prior to the time the surveys were conducted. In the

**FIGURE 5 Total fertility rates among residents of 13 villages in the Tibet Autonomous Region (TAR) and Tibetan exiles in India and Nepal, 1984–2001**



SOURCES: Goldstein, Beall, and Jiao 1998; Planning Council 2001.

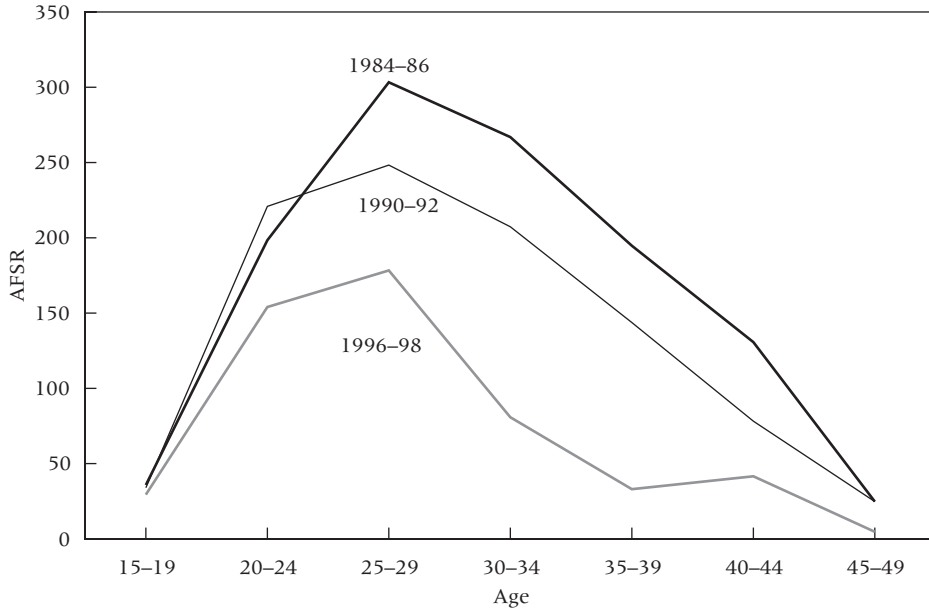
case of exiles, the TFR rebounded a bit, perhaps indicating that an abnormally low number of births occurred in 2000 for some unknown reason. In the case of the 13 villages, the analysis shows a rapid decline in the TFR from 3.6 to 1.5 births per woman in a span of two years (1996–98). A direct calculation of fertility using data from the reproductive history survey confirms the low TFR for 1998. This may have been an abnormal year, as evidenced by the fact that the 1998 TFR of 1.5 for the villages is considerably lower than the 1999 averages of 2.1 births per woman for Lhundrup, Medrogungka, and Panam Counties (Tibet Autonomous Region Census 2002). The sudden drop may also reflect the increased attention to which these villages were subjected by birth planning authorities. Birth planning campaigns increased in the mid-1990s throughout the Tibet Autonomous Region, making contraception more widely available. Fines for couples having excess children were common in Lhundrup County from 1993 on, and in Panam County a lottery was introduced to allocate birth quotas in 1996. Although penalties could be meted out to those who gave birth without permission, the authorities were lax in their enforcement (Goldstein et al. 2002; see also Greenhalgh 1993). Nevertheless, the increased emphasis on birth planning, along with emerging parental concerns over the cost of raising children (Goldstein et al. 2002), may be responsible for the rapid fertility decline.

Figures 6 and 7 present a longitudinal perspective on age-specific fertility rates for villages in the Tibet Autonomous Region and for Tibetan exiles. The pattern for the 13 villages displays evidence of a transition from a natural fertility pattern to a controlled fertility pattern. Natural fertility implies that women reproduce throughout the duration of their fertile period; fertility is moderated primarily through timing of marriage and birth spacing. The controlled fertility pattern that emerges in 1996–98 reflects parity-dependent stopping behavior within marriage, that is, couples reach a targeted number of children and then use modern methods of contraception to prevent further conceptions or births (Coale and Trussell 1974; Knodel 1977). The sharp decline in age-specific fertility rates immediately after the peak reproductive years of 25–29 is evidence that a behavioral shift has occurred. The rates for 30–34-year-olds and 35–39-year-olds dropped from 267 per thousand and 195 per thousand during 1984–86 to 81 per thousand and 33 per thousand during 1996–98. The same trend is evident, albeit less pronounced, among the Tibetan exiles.

One major difference between the Tibetan villages and the exiles is seen among 20–24-year-olds. In the earlier period this age group had relatively high fertility, a situation that persists in the villages but not among exiles. The diverging pattern is probably attributable to marriage timing. The singulate mean age at marriage among exiles in 2001 (27.9 years) is roughly two years higher than among villagers in 1998 (25.8). Consequently, a much higher percentage of 20–24-year-old women are married in the villages (33 percent) than among Tibetans in India or Nepal (15 percent). If

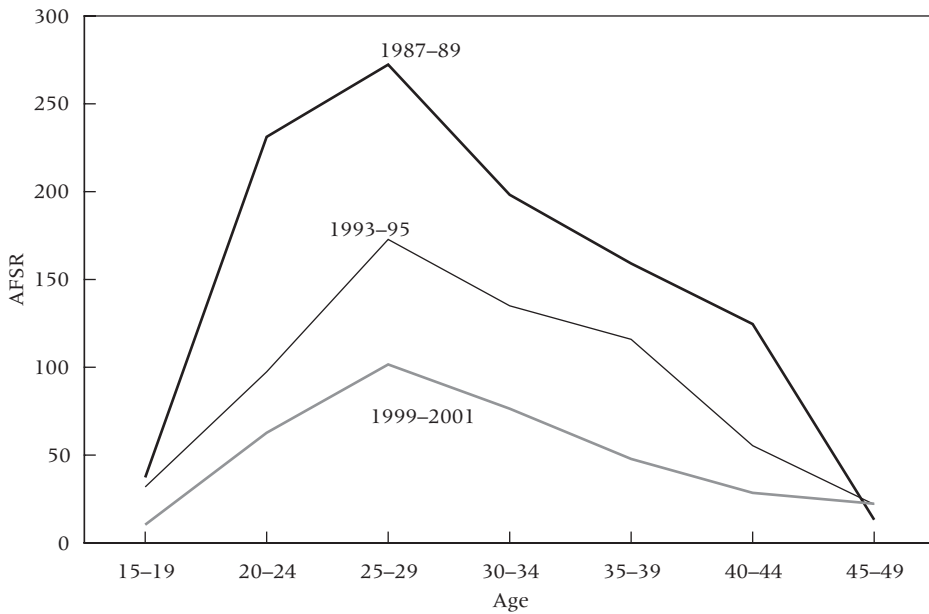


**FIGURE 6 Female age-specific fertility rates for three time periods between 1984 and 1998 among residents of 13 villages of the Tibet Autonomous Region**



SOURCE: Goldstein, Beall, and Jiao 1998.

**FIGURE 7 Female age-specific fertility rates for three time periods between 1987 and 2001 among Tibetan exiles in India and Nepal**



SOURCE: Planning Council 2001.

the age at marriage has risen faster among women in exile than among women in the Tibet Autonomous Region, then this would account for some of the difference in the most recent patterns in age-specific fertility rates.

## Discussion

The evidence presented suggests that a pan-Asian fertility transition has occurred among Tibetans living under disparate socioeconomic and political conditions. The trends are remarkably similar in both timing and magnitude, moving from relatively high fertility of approximately six births per woman in the mid to late 1980s (we have no data to infer what the levels may have been before this time) to the achievement of below-replacement fertility by the end of the twentieth century. The phenomenon warrants attention because, beyond a common ethnic identity and religion, these populations have very few socioeconomic similarities. For example, polyandry is still practiced in the villages of the Tibet Autonomous Region that were surveyed (about 17 percent of married women are in polyandrous marriages), whereas polyandry among exiles is rare and most likely on its way to disappearance (c.f. Grent 2002). Villagers have low educational levels: for example, in one of the townships studied only 11 percent of the population in 1990 had completed some primary schooling, and by 1998 only 9 percent had completed six years of school (Postiglione n.d.). In comparison, primary school education is nearly universal for Tibetan women in exile, and many pursue higher degrees at technical schools or universities (Planning Council 2000a). Most Tibetans in the villages are self-employed, relying on agriculture and animal husbandry to make a living, although wage labor opportunities have increased in recent years. In contrast, only a minority of exiles are engaged in agriculture. Most women in exile pursue vocations as nurses, salespeople, small business owners, and administrators.

One thing the two populations do have in common is a high level of knowledge about, and access to, modern means of birth control. On the basis of patterns in age-specific fertility rates, which show all the characteristics of movement from natural to controlled fertility, we can infer that contraceptive use was a major proximate determinant in the fertility declines. Although the Central Tibetan Administration has no family planning policy and has remained more or less silent on the issue, the majority of young women in exile were born and raised in India, a country that has had a family planning program since the 1950s (Panandiker and Umashankar 1994). India's programs have certainly influenced Tibetan exiles' ideology about reproduction and ideal family size and have resulted in affordable and readily available contraceptive methods. However, the precise level of contraceptive use is difficult to ascertain because many women in the socioeconomic survey did not respond to the question about methods they had ever used. Among married

women aged 20–49 years who were asked this question ( $n = 420$ ), 21 percent did not respond while another 38 percent said they had never used any method. Therefore, among the married women who were asked the question, at least 41 percent had ever used contraception, 37 percent of whom had undergone tubal ligation.

The high percentage of nonusers revealed by the survey (38 percent) is surprising in light of the low total fertility rate. The reason for the incongruity is that it is difficult to obtain reliable information from surveys on contraceptive use among exiles. Until recently leaders in the exile community advocated pronatalism as a nationalistic responsibility to ensure that Tibetans survive as an ethnic group (Goldstein 1978; Childs n.d.). Contraceptive use was deemed incompatible with that objective. Second, considerable moral ambiguity surrounds the issue of contraception, in part because it is often conflated with abortion, which is an unequivocal sin in the eyes of Tibetan Buddhists. Therefore, it is likely that many contraceptive users refrained from admitting their practices in face-to-face survey interviews conducted by employees of the exile government (Childs n.d.).

Tibetans in the Tibet Autonomous Region live in a country notorious for its draconian birth planning policy. The Chinese state has placed increasing emphasis on birth control in the Tibet Autonomous Region (Goldstein et al. 2002), especially since the 1990s when demographic data revealed large disparities in fertility and population growth between ethnic minorities and the majority Han (e.g., Zhang 1990, 2000; Yang and Zhu 1993). In the 13 villages sampled in the Tibet Autonomous Region, a high percentage of married women aged 20–49 years ( $n = 661$ ) reported having heard of China's most common birth control methods, namely sterilization (90 percent), the pill (88 percent), abortion (83 percent), and the IUD (79 percent). Forty-two percent of this sample responded that they are current users, among whom 33 percent had undergone tubal ligation. The majority of those who had undergone sterilization had done so between 1995 and 1997, a time when many women in the study area were urged by birth planning officials and local government workers to undergo the procedure. The focus of such campaigns was on women who already had three or more children (Goldstein et al. 2002). Although the data on birth control require further analysis, the similarities between exiles and villagers in the Tibet Autonomous Region are noteworthy.

### Further questions

That Tibetan societies both in China and in exile in South Asia have undergone fertility transitions is not surprising. The Tibet Autonomous Region is part of China, a country where population control is inextricably coupled with the national agenda of economic development. Exile society is charac-

terized by important correlates of fertility decline such as rising affluence and increasing levels of female education. What is surprising, however, is that the transitions are so similar in both their magnitude and their timing.

We do not suggest that the parallel fertility transitions are somehow related. The populations are too far removed from each other, both geographically and in their underlying socioeconomic conditions, to surmise that the parallel trends are anything but coincidental. A number of questions remain unanswered: Why are the tempo and magnitude of these fertility declines so similar? What are the causal mechanisms that induced such rapid declines, and how do they differ between the populations? What roles did governments and other institutions play? Finally, what new directions will both populations take now that they have attained low levels of fertility?

---

## Note

Geoff Childs thanks Kunchok Tsundue of the Central Tibetan Administration for facilitating research on the demography of exile communities and for his permission to use the data from the 2001 socioeconomic survey; and Namgyal Chonzom for logistical assistance in Dharamsala, India. Financial support for this work was provided by Washington University's

Department of Anthropology and its International and Area Studies Program. Support for research by Melvyn Goldstein, Ben Jiao, and Cynthia Beall in Tibet was provided by the Henry Luce Foundation and Case Western Reserve University and was conducted in collaboration with the Tibet Academy of Social Sciences, Lhasa, Xizang, China.

## References

- Beall, Cynthia and Melvyn Goldstein. 1981. "Tibetan fraternal polyandry: A test of sociobiological theory," *American Anthropologist* 83(1): 5–12.
- Bhatia, Shushum, Tsegial Dranyi, and Derrick Rowley. 2002. "A social and demographic study of Tibetan refugees in India," *Social Science and Medicine* 54: 411–422.
- Childs, Geoff. n.d. "Namas (*mna' ma*) and nyelus (*nyal bu*): Marriage, fertility, and illegitimacy in Tibetan societies," in P. Klieger (ed.), *Tibetan Identity and Change: Along the Margins*. Leiden: Brill (forthcoming).
- Cho, Lee-Jay, Robert D. Retherford, and Minja Kim Choe. 1986. *The Own-Children Method of Fertility Estimation*. Honolulu: East-West Center.
- Coale, Ansley J. and Paul Demeny. 1983. *Regional Model Life Tables and Stable Populations*. Second Edition. New York: Academic Press.
- Coale, Ansley J. and T. James Trussell. 1974. "Model fertility schedules: Variations in the age structure of childbearing in human populations," *Population Index* 40(2): 185–258.
- Goldstein, Melvyn C. 1976. "Fraternal polyandry and fertility in a high Himalayan valley in northwest Nepal," *Human Ecology* 4(2): 223–233.
- . 1978. "Ethnogenesis and resource competition among Tibetan refugees in South India: A new face to the Indo-Tibetan interface," in J. Fisher (ed.), *Himalayan Anthropology: The Indo-Tibetan Interface*. The Hague: Mouton, pp. 395–420.
- . 1989. *A History of Modern Tibet, 1913–1951*. Berkeley: University of California Press.
- Goldstein, Melvyn C., Cynthia M. Beall, and Ben Jiao. 1998. "Household Survey." Unpublished.

- Goldstein, Melvyn C., Ben Jiao (Benjor), Cynthia M. Beall, and Phuntsok Tsering. 2002. "Fertility and family planning in rural Tibet," *The China Journal* 47(1): 19–39.
- Greenhalgh, Susan. 1993. "The peasantization of the one-child policy in Shaanxi," in D. Davis and S. Harrell (eds.), *Chinese Families in the Post-Mao Era*. Berkeley: University of California Press, pp. 219–250.
- Grent, Nellie. 2002. "Polyandry in Dharamsala: Plural-husband marriage in a Tibetan refugee community in northwest India," in P. Klieger (ed.), *Tibet, Self, and the Tibetan Diaspora*. Leiden: Brill, pp. 105–138.
- Guo Daping. 1996. "China's Tibetan population and population in Tibet," *China Population Today* 13(2): 7–8.
- Knodel, John. 1977. "Family limitation and the fertility transition: Evidence from the age patterns of fertility in Europe and Asia," *Population Studies* 31(2): 219–249.
- Levine, Nancy E. 1988. *The Dynamics of Polyandry: Kinship, Domesticity and Population on the Tibetan Border*. Chicago: University of Chicago Press.
- Ma Rong. 1996. *Xizang de renkou yu shehui* [Population and society of Tibet]. Beijing: Tongxin chubanshe.
- NPCO [National Population Census Office under the State Council and the Population Census Office of the Tibetan Autonomous Region]. 1992. *Dang dai Zhongguo Xizang renkou* [Tibetan population in China today]. Beijing: Zhongguo zangxue chubanshe.
- Panandiker, V. A. Pai and P. K. Umashankar. 1994. "Fertility control and politics in India," *Population and Development Review* 20(Supplement): 89–104.
- Planning Council. 2000a. *Tibetan Demographic Survey 1998: Summary Report*. Dharamsala: Planning Council, Central Tibetan Administration, Gangchen Kyishong.
- . 2000b. *Tibetan Demographic Survey 1998: Tabularized Data*. Dharamsala: Planning Council, Central Tibetan Administration, Gangchen Kyishong.
- . 2001. "Socioeconomic Survey." Unpublished.
- Postiglione, Gerard A. n.d. "School access and equity in rural Tibet," in E. Hannun and A. Park (eds.), *Education in Rural China*. Forthcoming.
- Shi Jianhua and Yang Shuzhang. 1992. "Fertility in the Tibet Autonomous Region," in *Dang dai Zhongguo Xizang renkou* [Tibetan Population in China Today]. Beijing: Zhongguo zangxue chubanshe, pp. 266–282.
- Tibet Autonomous Region Census. 2002. *Xizang Zizhiqu 2000 nian renkou pu cha zi liao*. Beijing: Zhongguo tongji chubanshe.
- Yang Shuzhang and Zhu Hezhong. 1993. "China's ethnic groups: Fertility change in five Autonomous Regions," *China Population Today* 10(4): 8–14.
- Zhang Tianlu. 1989. *Xizang renkou de bianqian* [The changing population of Tibet]. Beijing: Zhongguo zangxue chubanshe.
- . 1990. "Growth of China's ethnic population must be brought under control," *China Population Newsletter* 7(5): 8–9.
- . 2000. "Ethnic population: A problem to reckon with in the drive to open up the West," *China Population Today* 17(2-3): 25–26.
- Zhang Tianlu and Zhang Mei. 1994. "The present population of the Tibetan nationality in China," *Social Sciences in China* 15(1): 46–65.

