

It has been controversial whether this new technology has been advantageous to large-size farmers. In Thailand the adoption of the new technology has seemingly been carried out in irrigated areas irrespective of farm size because small-size farmers who do not own power tillers can hire them. Fujimoto clarifies the existence of economies of scale, and at the same time the diseconomies of scale have emerged only among large-size farmers in Suphan Buri (pp. 170–71). In my view, this implies that if technological innovation prevails such as the use of combine harvesters, large-size farmers can enlarge their farm management. However, the fragmentation of rice fields and the fluctuation of the rice price are obstacles to large-size farm management and need to be taken into consideration.

The second issue is the change in the labor input pattern of rice farming using the new technology. There is a dispute whether introduction of high-yielding varieties is labor saving technology. Because farmers in Thailand can now double crop and must put more fertilizers and insecticides, this new technology requires more labor despite the use of power tillers. But since the 1980s the increase in the wage rate because of the labor shortage during the peak agricultural season has induced farmers to adopt labor-saving techniques. Somporn points out that pre-germinated direct seeding techniques have led to a labor saving in rice production, but this saved labor has not been utilized in rural off-farm employment (p. 300). This is true; however, the labor market should not be analyzed only within the context of the rural areas. It also suggests that industrialization in urban areas has absorbed the rural labor force which means that the wage rate at the factory affects the wage rate of hired agricultural labor. One issue overlooked in this book is an analysis of hired labor and the labor from the villages that has gone to work in urban areas. The results of my field research conducted in the village in Suphan Buri in 1991 showed that 28 per cent of household heads in the village engaged in hired labor. This topic needs further study. (Shigeki Higashi)

Demographic Transition in China: Fertility Trends since the 1950s by Peng Xizhe, Oxford, Clarendon Press, 1991, xiv+323 pp.

One of the real achievements of this new book is to have carried out an extensive survey on China's fertility and produced findings which are both informative and useful. Peng has used abundant materials to organize and analyze the demographic transition in China, especially the fertility trends, particularly those in the different regions, and the determinants of these trends, during the forty years following the founding of the People's Republic of China in 1949.

Demographers such as Ronald Freedman have suggested that a declining fertility in developing countries may come about when there is economic development above a certain level, a low mortality rate, a tendency toward small families, the establishment of efficient networks in local society, and along with these the accessibility to systematic government and private family-planning programs and contraceptive measures.¹ Peng

¹ See, for example, Ronald Freedman, "Theories of Fertility Decline," in *Fertility and Mortality: Theory, Methodology and Empirical Issues*, ed. K. Mahadevan with P. J. Reddy and D. N. Naidu (New Delhi: Sage Publications, 1986).

states that in the broad sense this classic theory of demographic transition is applicable to China's demographic transition, but it is not particularly appropriate in the narrow sense, for although the mortality rate has fallen as the standard of living has risen since 1949, the fall in China's fertility which came at a relatively early stage of modernization was the result of the government's forceful birth control policy and its effective family-planning program. Thus in broad terms China's demographic transition has not come about as the result of a natural process; it has been induced from above. While there had been spontaneous efforts at birth control before the onset of the government's program, these were implemented privately and confined to some of the urban social classes. The general fall in fertility has been undoubtedly due to the forceful birth control program carried on by the government, one where the costs of contraception and other birth control services have been borne by the government. Peng does not go into the methods of family planning, but abortion and even sterilization have been available in China by choice and at times by force and these certainly have contributed to the decline in fertility.²

Peng states that the family-planning program has succeeded in post-1949 China largely because of the particular nature of the country's social structure and value system that have been consolidated after the establishment of the PRC. However, influences of China's traditional culture and customs should not be wholly disregarded in this respect and it must be admitted that its authoritarian political culture partly contributed to the success of the program even if to a lesser extent. After liberation in 1949, there was a great variety of mass movements that the majority of the people participated in, these being regarded as one of the most effective methods for bringing about the formation of the new society. The author states that this collective participation of the masses plus strong government control brought about the successful implementation of the family-planning program. However, this program was not implemented uniformly over the whole country. The central government's population policy was used only as a guideline which local governments were supposed to follow when they devised their own methods which accorded with local conditions, and where necessary local governments gave due consideration to the concerns of ethnic minorities, an approach which was another reason for the program's success.

The book is divided into the following seven chapters: Chapter 1, Introduction; Chapter 2, The Development of Provincial Family-Planning Programmes; Chapter 3, Determinants of China's Fertility Transition; Chapter 4, National Trends in Fertility and Nuptiality; Chapter 5, Fertility Transition in Urban China; Chapter 6, Provincial Patterns of China's Rural Fertility Transition; and Chapter 7, Conclusion. The heart of the book lies in chapters 3, 5, and 6. The rest of this review will briefly summarize and comment on these chapters. But first let me give a brief account of the survey framework as discussed in the Introduction.

Chapter 1 provides an overview of the movement and change in China's population since 1949 in the twenty-eight provinces (with the exclusion of Tibet). The emphasis is that demographic transition has not happened uniformly over the country, rather there have been great differences among the provinces. Regional differences in the level of socioeconomic development and in the spread of the family-planning program

² Susan Greenhalgh, "Shifts in China's Population Policy, 1984-86: Views from the Central, Provincial, and Local Levels," *Population and Development Review*, Vol. 12, No. 3 (September 1986), p. 491; Zhongguo-jihua-shengyu-nianjian-bianji-wei-yuanhui, ed., *Zhongguo jihua shengyu nianjian 1986* [China's yearbook of family planning, 1986] (Beijing: Renmin-weisheng-chubanshe, 1987), p. 398.

have very much affected the timing of fertility transition in the different regions. Peng analyzes these differences in regional fertility, the primary data used in this analysis coming from the One-Per-Thousand National Survey of Fertility of Women conducted by the State Family Planning Commission in 1982. The survey was directed at women between the ages of fifteen and sixty-seven which enabled the author to derive from the data a history of the reproductive behavior of Chinese women since the 1950s.

Chapter 3 takes up the determinants of fertility trends using the socioeconomic variables of educational level, location of residence, and occupation. These are analyzed using the log-linear model. Fertility differentials in four different female age groups (35, 40, 45, and 50+) are calculated for each socioeconomic variable, which then are utilized to show the relative effects of each variable on fertility. However, as the author himself has admitted, fertility is influenced by social, economic, cultural, and environmental determinants, but only indirectly. It is directly determined by the "intermediate variables" as summarized by Ronald Freedman in his study of fertility, or John Bongaarts's "proximate determinants," which are concerned with contraception, abortion, breast-feeding, and other such bio-demographic determinants.³ Therefore, it is unfortunate that due to a lack of data, Peng was unable to carry out the analysis of the bio-demographic determinants. Such an analysis would have produced interesting results, for there is a high rate of contraception practiced in China, as well as a high rate of abortion (as in postwar Japan), which are seen as contributing considerably to the decrease in fertility. Basically I do appreciate the author's efforts; nevertheless, it seems to me that to statistically analyze the relationship between regional fertility differentials and socioeconomic factors, the provincial-level data is too crude for analyzing an area as large as China. More highly explainable results would have been obtained if cross-section data at the lower administrative level had been applied, even if this consisted of only recent annual figures.

The results of a statistical analysis using the socioeconomic variables show that educational and occupational (being a peasant, worker, cadre, housewife) differentials have had a great impact on fertility, but while their impact on fertility is diminishing year by year, the influence of location of residence has been increasing over the years. This is particularly true of the difference between rural and urban areas in the number of ever born children. The figures show that the younger the woman's age the bigger the difference. Among thirty-five-year-old women, those living in urban areas have 30 per cent fewer ever born children than those living in rural areas, while among women fifty years old and older the difference drops by half to 16 per cent. This is because the younger the age of a woman the more reproductive years she still has remaining; but it is also due to the expansion over the years of family planning, much more so in urban rather than rural areas, and in the eastern coastal areas rather than in the western inland areas.

From an analysis of the cost and benefit of having children, the cost exceeds benefit in urban areas while it is the opposite in rural areas. The author explains that this is the cause for the difference in fertility rates between urban and rural areas. In urban areas there is little benefit in having many children because of housing problems, the costs of raising and educating children, and the variety of employment opportunities

³ Ronald Freedman, "Fertility Developments," in *The World Fertility Survey: An Assessment*, ed. J. Cleland and C. Scott (London: Oxford University Press, 1987); John Bongaarts, "A Framework for Analyzing the Proximate Determinants of Fertility," *Population and Development Review*, Vol. 4, No. 1 (March 1978).

available to women. In the villages the benefit of children for security in old age and for the labor force, particularly since economic reforms, outweighs the cost.

Chapter 5 analyzes fertility transition in urban regions in individual provinces and compares its features across the provinces; Chapter 6 does the same with reference to rural regions. During the 1950s and 1960s there was little difference in urban and rural fertility rates in China, but since the 1970s a difference has appeared. Also there emerged a widening gap in fertility rates among the provinces since the 1950s. The fall in urban fertility started with Shanghai. It then began to occur in other large cities; then the process began to propagate through the eastern seaboard provinces, and from there to the inland provinces. The Shanghai urban area achieved its fertility transition by 1964 ahead of all other urban areas in the country; this transition was achieved in Inner Mongolia and Jiangxi provinces only by 1979, the last urban areas in the country. As of 1981 no rural areas in the twenty-eight provinces had yet achieved fertility transition; however these areas were showing a downward trend much like that of the urban areas.

The age of first marriage is one of the determinants of fertility and it shows a wide range of differences from province to province. The provincial differences for such marriages in the rural areas have been increasing since the 1950s while in the urban areas the greatest difference was seen around 1960. Thereafter the difference in the urban areas began shrinking. The difference for first marriages in the rural areas in 1981-82 ranged from the early marriages at ages 18-19 among the ethnic minorities in the northwestern region of Qinghai Province to the late marriages at ages 23-24 in the rural areas of Tianjin, Beijing, Shanghai, and Shandong Province. In the urban areas for the same years the age for first marriages in Yunnan and Heilongjiang provinces was 23; for all other provinces it was 24, showing that late marriages have become established in the urban areas of China.

An analysis of the number of children per woman as a percentage of total live births shows that from 1970 onward the percentage of one-child families steadily increased, making up by far the largest share in 1981. However in 1984, perhaps because of the relaxing of the one-child policy, the percentage of one-child couples declined somewhat, especially in the urban areas of the inland provinces, and with the exception of a few urban areas like Shanghai and Tianjin, an increase can be perceived in the percentage of families with two, three, and more children. The relaxing of the one-child policy in 1984 was intended specifically for the villages where rural couples would be allowed to have a second child only if their first were a daughter and this caused the family real hardship. However another result was that in urban areas too the number of families with two and more children tended to increase, a fact which indicates that this partial change in policy caused a great deal of difficulty for family-planning officers at the local level.

An analysis of the demographic determinants for declining fertility shows that in China it is largely due to a decrease in marital fertility that has lowered the present fertility rate. (In contrast, in Japan it is primarily the late marriage that has caused the same effect.) Also an analysis of the trends in age-specific fertility rates for women under twenty years of age and over thirty years of age shows that the fertility rate for both groups is low, indicating that the lower birth rate is also attributable to the concentration of births among women in their twenties.

As is clear from the above discussion, this new book provides a detailed statistical analysis primarily of fertility in China's demographic transition. To date there have been very few studies on China's birthrate that have provided comprehensive analysis

of the trends at the provincial level and in the urban and rural areas, that make extensive use of statistical and formal demographic methods and multi-variate analysis, and that provide detailed statistical charts of the trends and determinants of fertility and the process of their propagation from one region to another. The author's efforts at undertaking all these are to be highly commended. However, before closing this review, let me add a few requests which I would like the author to respond to in his future studies. The first point concerns the fact that Peng makes few references to the effects of mortality on China's demographic transition. To be sure the author himself states at the beginning of the book that its primary objective is to undertake an analysis of fertility. Nevertheless, one of the major causes for the regional differences in fertility transition is the difference in the rate of mortality, and for this reason Peng should have touched more on this topic. Statistics on mortality require the complete and accurate registration of the population, and such statistics are problematic in China. Nevertheless, the population censuses of 1982 and 1990 make it possible to analyze the mortality rates by age for the urban and rural areas of each province.

The second point is related to the updating of data. Following the survey of fertility in 1982, there were fertility and population surveys carried out in 1985, 1987, 1988, and 1990. Those in 1985 and 1988 were to survey people's awareness of the government's population policy and were carried out by the State Statistical Bureau of the PRC. When Peng updates the data in his next work, I would recommend that it have far more comprehensive inclusion of mortality rate statistics. When that new, updated study is published, this reviewer will certainly be among the readers. Having said all these, I want to conclude by saying that Peng has done highly commendable work in this present study.

(Yasuko Hayase)