# FERTILITY AND HOUSEHOLD DYNAMICS IN CHINA

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SUMMARY

A review on the cross-sectional evidences of the trends of family size, structure and its determinants in China is presented in part one of this paper. It has been recognized that the presentation of the cross-sectional evidences only fails to link the incidences of occurrences of demographic events with the population status distribution. We therefore discuss the output of a general family model which is an extension of Bongaarts nuclear family status life table. The model output gives the proportions of Chinese female's expected lifetime spent in different marital, parity, maternal status and the average duration of being a mother, being a daughter and being responsible to elderly parent(s) and young children. It also gives the distribution of family by size, number of generations in the family and marital status of the female members. One of the interesting findings is that when young people born after tremendous fertility decline reach the age of family formation, given certain proportion of parents wish to live with one of their married children, they will have a much smaller chance of forming an independent nuclear family since they have a much smaller number of siblings, thus the proportion of nuclear families will decrease. At the end of the paper, we discuss two different categories of socioeconomic factors which opperate in opposite directions concerning the desirability of co-residence. We suspect that the actual change of Chinese family structure will depend on the remarkable demographic changes as well as the two opposing socioeconomic forces.

## Fertility dynamics in China

The concept of family used in this study includes both the nuclear family and the extended family. The characteristics of the family that are considered here are demographic characteristics, such as size and composition. Family formation, an increase or decrease in family size, dissolution of the family as well as changes in family characteristics, can be called family dynamics. It is directly associated with the occurrence of demographic events. The events that are important in the study of family demography are marriage, childbearing, death of child, death of spouse (widowhood), death of parent(s), divorce, remarriage, children leaving parental home, and so on.

The purpose of this article is trying to investigate how the remarkably changing demographic factors in China could alter the female's family life course and affect the Chinese family size and structure. The following section reviews the available cross-sectional evidences on Chinese family size and structure and the demographic determinants of family dynamics in China. The two subsequent sections present new findings on the female's family life course and the perspectives of Chinese family size and structure, which are the results of application of our general family model that is an extention of Bongaarts' nuclear family status life table model. Finally, the article's principle conclusions are summarized.

## REVIEW ON THE CROSS-SECTIONAL EVIDENCE

The evidence presented in this section suggests that the average size of the Chinese family is much smaller than before the foundation of the People's Republic in 1949. The nuclear family has become a major family form, whereas the large family with married brothers living together has become rare. But the three-generation family is still one of the important family types in Chinese society.

Mortality has declined remarkably since 1949. Marriage in China has always been universal and very stable. A relatively late marriage pattern has emerged. Fertility declined dramatically after 1970. Current fertility in China is not only age-dependent but mainly parity-dependent.

## TRENDS IN FAMILY SIZE AND STRUCTURE

### The Chinese "feedback model" versus the Western "continued linear model"

In most Western societies, children leave the parental home either when they get married or when they enter college. The older parents depend financially on a pension or on social security. Children are not responsible for the financial support of their parents (of course, they may still have emotional, and possibly financial connections with their parents, even if they no longer live with their parents).

In Chinese society, however, the philosophy regarding supporting one's older parents is quite different from that of modern Western societies. Filiation has been one of the cornerstones of Chinese society for thousands of years and it is still highly valued nowadays. The philosophical ideas of filiation include not only paying respect to older generations but also the responsibility of children to take care of their parents. Both current marriage law and the current constitution of China state clearly that the children should take care of their parents.

Professor Fei Xiaotong, the well-known Chinese sociologist, recently called the Chinese model a "feedback model", which can be formulated as $F1 \rightleftharpoons F2 \rightleftharpoons F3 \rightleftharpoons Fn$ (F stands for generation, $\rightarrow$ stands for fostering, $\leftarrow$ stands for financial support for the parents). It means that generation F1 fosters generation F2, generation F2 takes care of generation F1 when F1 is old; the same relation holds between generations F2 and F3, and so on. In comparison, professor Fei called the Western model a "continued linear model" which can be formulated as $F1 \rightarrow F2 \rightarrow F3 \rightarrow Fn$, i.e. generation F1 fosters generation F2 without feedback from F2 to F1, and generation F2 fosters generation F3, again without feedback from F3 to F2, and so on (Fei Xiaotong, 1983, p. 7).

Consequently, the typical family pattern of Western society is the so-called nuclear family consisting of husband, wife and unmarried children. Nuclear families may be simply divided into husband-wife families and one-parent families. One-parent families can be divided further, according to the sex and marital status of the parent (Bongaarts, 1983a). However, the Chinese family structure is not as simple as that, since married children do not necessarily leave the parental home.

The difference between the Chinese feedback model and the Western continued linear model implies that the average Chinese family size is much bigger than the Western family size and that the proportion of families consisting of more than two generations in China is much higher than in Western society.

## Family size

Table 1 shows that the average family size in China before the establishment of the People's Republic (1949) was around 5.3. The average family size in 1953 (census figure) was 4.3 which is considerably lower than the figures before 1949. This sharp decline was mainly due to the increase in the number of families by the breaking up of some extended families, especially those of more than three generations and extended families in which married brothers live together.

However, the family size increased significantly to 4.78 in 1973. This might be due to the housing constraint (building construction was seriously disrupted during the so-called Cultural Revolution from 1966 to 1976), as a result of which some married brothers had to live together. The average family size found in the 1982 census was 4.43, which is higher than in the 1953 and 1964 censuses.

As stated in the note "The main figures from the third census of China" published by the State Statistical Bureau, the enumeration might underestimate the average family size because of the overcount of the number of families.

There are two main causes. Firstly, in so-called "urban-rural" households, that is, in families, in which some member(s) are state employees and are eligible for commercial food rationing provided by the state, whereas the other members are peasants, the same family may have two households register booklets and may thus be registered as two families. Secondly, some towns give a better supply of grain and foodstuffs to collective households; this stimulates members of certain families who actually reside at home to register separately in the collective household where they work. Therefore, the State Statistical Bureau adjusted the urban average family size from 3.84 to 3.95 through a post-census sample check. The rural average family size was not adjusted. The second factor

Table 1.     Average size of Chinese families

| Period | Source | Average family size |
|--------|--------|---------------------|
| 1911 | 1934 Economic Year Book of China | 5.17 |
| 1912 | Statistics of the Former Ministry of Interior Affairs | 5.31 |
| 1928 | Statistics of the Former Ministry of Internal Affairs | 5.27 |
| 1933 | Statistical Abstracts | 5.29 |
| 1936 | Reports of the Former Ministry of Internal Affairs | 5.38 |
| 1947 | Statistics of the Former Ministry of Internal Affairs | 5.35 |
| 1930 | A survey by prof. Li Jing Han in Ding County | 5.80 |
| 1931 | A survey of a vast area of 22 provinces by prof. J.L. Buck | 5.21 |
| 1933 | Review of data from surveys of 10 regions by prof. Chen Da | 4.84 |
| 1930-40 | A survey of birth history covering 7 regions by the population research centre of the Chinese Academy of Social Sciences | 5.58 |
| 1953 | The first census in 1953 | 4.30 |
| 1964 | The second census in 1964 | 4.29 |
| 1978 | Household statistics | 4.78 |
| 1982 | The third census in 1982 | 4.43 |

mentioned above does not seem to exist in rural areas since there are no collective households there. But the first factor might play a role. In some rural families, some members may work in the town; they may be state employees such as local administrative personnel, teachers, doctors, local shop assistants, etc. For those family members who are state employees, commercial food rationing is provided by the state and they have their own separate household register booklets, whereas the other family members (mainly wives and children) who rely on agricultural food rationing provided by local production have a different type of household register booklet. A family of this type may be registered as two. Of course, the effect is expected to be small since these kinds of families are uncommon. Nevertheless, it seems that the average family sizes taken from the censuses and vital registers are slightly understated. To support this argument, we compare the average family size found from the one-per-thousand fertility survey and those found in the 1982 census for the provinces Liaoning, Hebei and Fujian (see table 2).

It is generally expected that a well-organized survey such as China's one-per-thousand fertility survey, may, in some respects, provide more detailed and accurate data than the census. In other respects (e.g. total population and its age structure), this may not be the case. The average family size found in the one-per-thousand fertility survey is consistently higher than that found in the census for all three provinces (so far, only the average family sizes from the survey for these three provinces are available). We suppose that the survey figures are more reliable; thus the average family size by the census is slightly underestimated. The reason is that the survey interviewers were better-trained and were able to follow the instructions correctly and thus counted the true membership of each family.

Whatever the interpretation of the fluctuating figures on the average family size presented in table 1 may be, one point is clear: the current average Chinese family is much smaller compared with the 1910's, 1920's, 1930's and 1940's. The remarkable reduction in family size in the 1950's and 1960's compared with the 1940's and earlier, was obviously due to the far-reaching social structural changes which caused an increase in the proportion of nuclear families, rather than a decline in birth rates since the fertility level in the 1950's and 1960's did not decrease (the average total fertility rates was 5.44 in the 1940's, 5.88 in the 1950's and 5.68 in the 1960's). It is somewhat puzzling, however, that the average family size found in the 1982 census was higher than that recorded by the 1953 and 1964 censuses, given that fertility was dramatically reduced in 1982 (TFR was 2.48 in 1982, see Zhao Xian, 1985, p. 32). Further discussion on this phenomenon will be given in the next section.

Table 2.    Comparison of family size found in the 1982 census and
in the one-per-thousand fertility survey for three
provinces

| provinces | Average family size from | |
| --- | --- | --- |
| | 1982 census[a] | one-per-thousand fertility survey[b] |
| Liaoning | 4.1 | 4.22 |
| Hebei | 4.1 | 4.28 |
| Fujian | 4.8 | 5.02 |

Sources:  a)  SSB (1982)
b)  Lavely and Li (1985)

Although the average family sizes found in the 1953, 1964 and
1982 censuses were significantly smaller than before 1949, the
Chinese family is still much larger than the Western family. For
example, the average family size in Canada was 3.9 in 1961, 3.5 in
1971 and 2.9 in 1981. The percentage distribution of family
households by number of persons in China is also quite different
from that in Canada (figure 1).

The enormous difference between the average family size in
China and in Western countries is probably due to the difference
between the Chinese feedback model (which has led to the existence
of a certain proportion of three-generation families in Chinese
society) and the Western continued linear model, as well as a
number of other factors such as lower fertility, higher marriage
discontinuity, a better housing supply and the highly valued privacy
in contemporary Western society.

## Family structure

Table 3 shows that in 1982 the proportion of nuclear families had
increased by about 30 percentage points and multi-generation
families and joint families with married brothers living together had
sharply declined, as compared with 1930.

Such changes in family structure have a deeply rooted socio-
economic background. In old China (before the foundation of the

Figure 1. Percentage distribution of family size, China and Canada

%
30
CHINA 1982
20
15
0
1  2  3  4  5  6  7  8 +
Number of Persons

%
30
CANADA 1981
20
10
0
1  2  3  4  5  6  7  8 +
Number of Persons
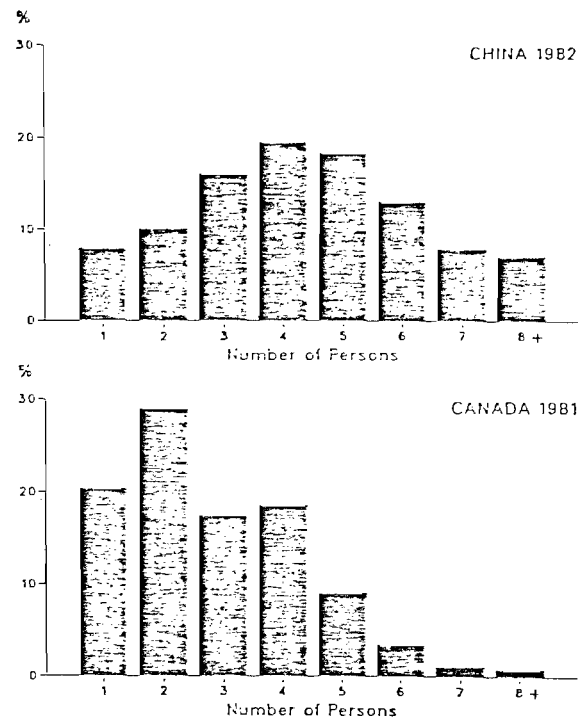
Source: Priest and Pryor, 1984, p. 15.

People's Republic), well-to-do families made every effort to uphold their large joint multi-generation families so as to safeguard the land and property they had accumulated over generations. The parents did not want their children to live separately, because they did not want their land and property to be disintegrated.

The poorer families owned very little land and scanty means of production, which were not subdividable. Under the individual ownership system and extremely low productivity levels, it appeared profitable to maintain larger multi-generation families and families in which married brothers lived together.

Following the establishment of the People's Republic of China in 1949, feudal land ownership was abolished and the land was reallocated. The former large well-to-do families were consequently split up, because they no longer owned large amounts of land, houses and property, which had previously prevented them from disintegrating. The former poorer families received more land, houses and property, as a result of which married brothers were able to live apart, and unmarried brothers were able to get married and leave

Table 3.   Percentage distribution of family types

| Period | Source | Nuclear families (including one-person families) | Three generation families and other extended families | Total |
|--------|--------|------|------|-------|
| 1930 | A survey by prof. Li Jing Han in Ding County in He Bei province[a] | 51.47 | 48.53 | 100.0 |
| 1982 | Census[b] | 81.19 | 18.81 | 100.0 |
| 1982 | 1°/oo fertility survey data from Liaoning province[c] | 80.55 | 19.45 | 100.0 |
| 1982 | 1°/oo fertility survey data from Hebei province[c] | 76.51 | 23.49 | 100.0 |
| 1982 | 1°/oo fertility survey data from Fujian province[c] | 70.03 | 29.97 | 100.0 |

Sources:   a) quoted from Ma Xia (1984).
            b) SSB (1983a).
            c) Lavely and Li (1985).

the large family. Furthermore, as a result of the cooperative movement, members of families no longer worked on the plots of their own land; instead, they worked in a production team under a unified direction and with a collective income distribution. The advantages of maintaining a large family in which married brothers live together, working for private production, was suppressed. Besides, the possible disputes between mothers and daughters-in-law or among sisters-in-law might have encouraged the division of large families.
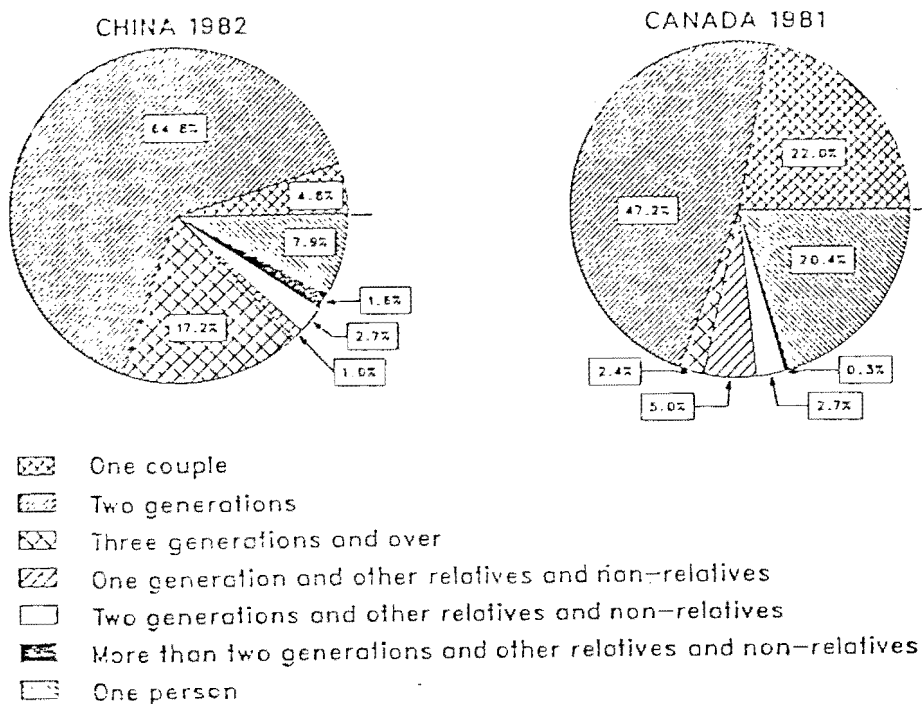
Clearly, the Chinese family has become a smaller unit and there are fewer extended families as compared with the 1930's. However, the three-generation family is still an important family type in

China. The China 1982 census data and other data sources indicate that around 20 per cent of Chinese families are three-generation, or other, extended families, which is about 7 times as much as in Canada (1981) (see figure 2).

Other recent surveys also confirm the above argument. For example, according to a recent sample survey of 2035 peasant families in the Sichuan province of China, families of more than three generations accounted for only 0.98 per cent, but three-generation families accounted for 22.26 per cent of the total (Zhao, 1985). A family survey in the five largest cities: Beijing, Shanghai, Tianjin, Nanjin and Chengdu indicates that three-generation families in those 5 cities accounted for about 20 per cent of the total from the 1930's until 1982. The increase in the proportion of nuclear families was mainly due to the significant decrease in the proportion of joint families in which married brothers live together (see table 4).

The most recent "In-Depth Fertility Surveys" in China (conducted in April, 1985 in Hebei, Shannxi provinces and Shanghai, by the State Statistical Bureau of China, and technically assisted by the

Figure 2. Percentage distribution of family by type, China and Canada



CHINA 1982

CANADA 1981

| | |
| --- | --- |
| ☒ | One couple |
| ▨ | Two generations |
| ▧ | Three generations and over |
| ▨ | One generation and other relatives and non-relatives |
| ☐ | Two generations and other relatives and non-relatives |
| ▰ | More than two generations and other relatives and non-relatives |
| ▱ | One person |

Source: Priest and Pryor, 1984, p. 23.

Research Centre of the International Statistical Institute) show that among all interviewed ever-married women, 53.6 per cent in Hebei, 54.8 per cent in Shannxi and 40.3 per cent in Shanghai live with their parents-in-law or parents (SSB, 1986). The one-per-thousand fertility survey indicates that 25.9%, 31.6% and 40.9% of all persons live in three-, or more than three, generation families in Liaoning, Hebei and Fujian provinces, respectively (Lavely and Li, 1985. p. 14).

A recent survey of 709 old persons (males over 60, females over 55) in Lanchou, a city with about 2.3 million inhabitants, indicates that 63.5 per cent of the respondents report that they would prefer to live with a married child. Note that co-residence between parents and one of their married children is usually uninterrupted; namely, most of the parents would like to have a married child living with them, even when they are active.

However, did the parents and one of their married children's wish to live together in 1981 differ very much from that in the 1950's and 1960's ? The data in table 4 show that the proportion of three-generation families remained stable from the 1950's to 1982, while the proportion of joint families with married brothers living together significantly reduced, which led to the increase of the proportion of nuclear families in the five largest cities. The direct observed data on family structure in the 1950's and 1960's at a national level are not available. We have only the census observations of average family sizes: 4.30 in 1953, 4.29 in 1964 and 4.43 in 1982. The total fertility rate in 1982 (2.48) was less than half of that found in 1950-70 (5.78). The reduction in fertility certainly decreases the family size if other factors remain unchanged. Reduced mortality, on the contrary, may increase family size. It seems unlikely that the effects of the mortality decline between 1950 and 1982 exceed the effects of such a remarkable fertility decline. Therefore, the average family size in 1982 would have been reduced if the proportion of parents and one of their married children's wish to live together significantly decreased in 1982, as compared with the 1950's and 1960's. But this was not the case. Thus we may reasonably say that the prevalence of the co-residence between parents and one of the married children remained stable from the 1950's until the early 1980's (while the proportion of families with married brothers living together is reduced). The following explanations may be given.

Firstly, the complete abolition of feudal land ownership occurred in the early 1950's. The collective mode of production emerged in the early 1950's and was completed in the mid- and late 1950's. The revolutionary change of land ownership in the early 1950's led to the disintegration of many multigeneration families, especially families in which married brothers lived together. After these revolutionary social changes in the 1950's, land ownership and the collective mode of production remained unchanged until the 1982 census. It is

Table 4.    Family types of the five largest cities in different years, China

| Years | Nuclear (including one-person) family | Three-generation families | Joint families with married brothers living together | Other | Total |
|---|---|---|---|---|---|
| -- 1937 | 64.0 | 21.7 | 8.8 | 5.5 | 100.0 |
| 1938-45 | 66.0 | 19.7 | 7.2 | 7.1 | 100.0 |
| 1946-49 | 64.0 | 21.5 | 8.8 | 5.7 | 100.0 |
| 1950-53 | 64.6 | 22.9 | 5.4 | 7.1 | 100.0 |
| 1954-57 | 64.2 | 20.4 | 7.9 | 7.5 | 100.0 |
| 1958-65 | 69.0 | 20.4 | 5.1 | 5.5 | 100.0 |
| 1966-76 | 74.1 | 18.3 | 3.9 | 3.7 | 100.0 |
| 1977-82 | 72.4 | 20.2 | 3.1 | 4.4 | 100.0 |

Note:    These data are from a family survey conducted in late 1982 and early 1983 by the Sociology Institute of the Social Academy of China and the scholars from the other research institutes. The survey covers the five largest cities in China: Beijing, Shanghai, Tianjin, Nanjing and Chengdu. The sample size is 5057 (ever married women, from 4385 different families). The above percentage distribution of family types was obtained by asking questions about the structure of the respondent's own family and the husband's family at the time of marriage. The total number of families actually inquired in this way was 9859. The survey data and the preliminary analysis have been compiled in a book entitled "Families in the Cities in China: Survey Report and Data Compilation of the Family Survey in Five Cities" written by "The Group of Research on Families in Five Cities". Shandong People's Press, 1985. Table 2.4 is a summary of two tables in this book: a) Table 102 (p. 484) "Type of respondent's own family at the time of marriage". b) Table 110 (p. 508) "Type of respondent's husband's family at the time of marriage".

therefore reasonable to believe that the dramatic changes in living arrangements, such as in the early 1950's, would not occur from the mid-1950's to the early 1980's, since no dramatic change in land ownership took place during this period. Secondly, the ethical

tradition of "respect and care for the elderly" has always played an important role, almost all old parents in rural areas depend economically on their children. This accounted for more than 80 per cent of the total population. Thirdly, in three-generation families, the grandparents may perform the house work and take care of grandchildren, or may even work in the fields or businesses if they are still active, while the middle-generation couples usually work outside, the mutual care in work and in daily life makes up for problems that may arise between the mother-in-law and daughter-in-law. Couples of two generations could cooperate well through their rational division of labor. Fourthly, housing construction in the cities and towns has not received proper attention and was not well organized during the Cultural Revolution (from the mid 1960's to the late 1970's). The severe housing shortage may counteract, to a large extent, some urban parent's preference to live apart from their married children.

In sum, compared with the 1930's, the proportion of extended families has decreased sharply, in particular large families of more than three generations or married brothers living together. But both in the countryside and in the cities, there are not only the conditions for the existence of three-generation families but also the necessity (Ma Xia, 1984, p. 15). The three-generation family is still an important family type in China. It is also true in many other Asian countries. For instance, the proportions of three-, or more than three-generation and other extended families were 25.4 22.8 and 22.1 per cent in Japan in 1970, 1975 and in 1980 respectively (Census figures, Bureau of Statistics of Japan, cited from Kobayashi and Tanaka, 1984). The proportion of extended families was 49.0 per cent in a simple random sample of 405 families near Jodhpur, Western Pajasthan, India; 32.4 per cent for 467 towns, and 19.9 per cent for 153 villages in Java; 19.6 per cent found in the 1968 national demographic survey in the Philippines, 33.2 per cent in a sample of 4900 families from the South Korean 1966 Census; 33.9 per cent in the rural areas, 25.3 per cent in the provincial urban areas and 28.3 per cent for Bangkok-Thonburi, according to a national longitudinal study of the social, economic and demographic changes in Thailand, 1968-1972 (Concepción and Felipe, 1974, p. 254).

Therefore, the model which was constructed for the sstudy of family dynamics in China, and is expected to be applicable to other Asian countries, should take into account both nuclear families and three-generation families.

## DEMOGRAPHIC DETERMINANTS OF FAMILY DYNAMICS

### Marriage

Marriage is a particularly important variable in Chinese families since births occur almost exclusively within marriage (Tien H Yuan, 1983, p. 20), and almost all women eventually get married (the percentage of women aged 50-67 remaining single in 1982 was 0.26 percent; Zhao Xuan, 1983, p. 99).

The average age at first marriage of Chinese women increased gradually between 1949 and 1970 and increased rapidly from 1970 to 1979, due to the "Wan Xi Shao" (late marriage, longer birth intervals, fewer children) family planning campaign, which emphasized late marriage and due to delayed marriages among urban school graduates who went to work in the countryside and mountain areas. Since 1980, the age at marriage has fallen slightly (see figure 3).

According to China's 1982 fertility survey, China had three marriage booms, defined as periods with a Total Period First Marriage Rate (TPFMR) exceeding 1.0. The first marriage-boom immediately followed the foundation of the People's Republic in 1949 (TPFMR=1.02). The second marriage boom was in 1962 and 1963 (TPFMR were 1.19 and 1.01, respectively) after the "Great Leap Forward" and the three-year natural calamity. The third marriage boom was in 1980, 1981 and 1982 (TPFMR equal to 1.137, 1.303 and 1.340, respectively) due to the relaxation of the restriction on age at first marriage by the New Marriage Law which took effect officially on January 1, 1981. The years in which the total first marriage rates were lowest, were 1971-1977 (TPFMR between 0.641 and 0.749), because of the restriction on age at marriage in the "Wan Xi Shao" family planning period and the relatively late marriage of urban school graduates who went to work in the countryside and mountain areas.

The universality of female's marriage in China is evident. According to Coale's estimates of the proportion of women ever married from ages 15 to 35 from 1950 to 1982 using China's one-per-thousand fertility survey data (Coale, 1984, table A-4), more than 97.5 per cent of the women were married by age 35, and for most of the cohorts the total exceeded 99 per cent.

### Fertility

The fertility level in China evolved from a fairly high level, average TFR = 6.06 in 1950-1958, via an accidental decrease (average TFR = 3.87 in 1959-1961), to a fairly high level again (average TFR = 6.12 in 1962-1970) and to a remarkable decline after 1970 (TFR was as low as 2.24 in 1980, and slightly increased to 2.63 in 1981) (see figure 4).

Figure 3.    Mean age at first marriage of Chinese females
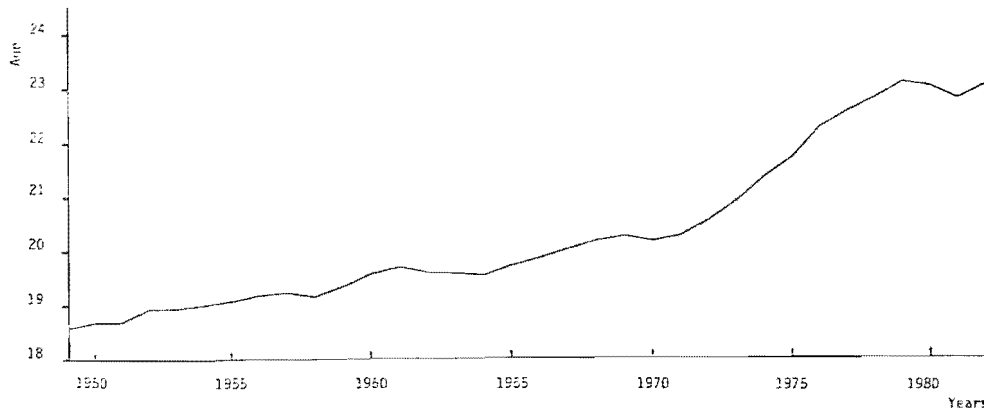


Source: Zhao Weigon and Yu Huilin, 1983, p. 115.

Figure 4.    Total Fertility Rates, Females, China, 1945-1982



Obviously, the remarkable reduction of the fertility level in China since 1971 is the result of the successful family planning programme. According to the one-per-thousand fertility survey, 69.5 per cent of all ever-married women aged 15 to 49 were using contraceptives in 1982 (Qui Shuhua et al., 1983, p. 131). China's current national fertility norm is the advocacy of one child per

couple, control of second births and resolute prevention of third births. Of course, we must keep in mind that events do not always occur as planned. The violation of birth planning norms in particular, is not uncommon in the rural areas and in some small towns or cities. The proportion of third and higher parity births has decreased remarkably, but it still accounts for a considerable percentage (see table 5).

The fertility of women in China is not only dependent on their age and marriage duration, but depends mainly on the age-parity distribution. The parity status of women is therefore essential for the demographic analysis of family formation and population change in China.

Sexual activities outside of marriage are culturally taboo. Illegal births are negligible in China. Illegitimacy does occur, but the extent of this phenomenon cannot be documented. Thus, contrary to Western society, in China it is not necessary to deal with marital status-specific fertility.

A more detailed discussion on the trend and age pattern of marriage and fertility decline in China may be found, for example, in another article (Zeng, Vaupel and Yashin, 1985)

## Mortality

It is well-known that mortality in China has been greatly reduced during the past 35 years. The mortality rate was above 20 per thousand in the pre-1949 period. It dropped to 10-18 per thousand in the 1950's and further decreased to slightly more than 7 per thousand in the early 1970's (Qian Xinzhong, 1983a). It decreased further to 6.6 per thousand in 1985.

The infant mortality rate went from 200 per thousand live births before 1949 down to 70.9 per thousand in 1957 (Qian Xinzhong,

Table 5.  Percentage distribution of births by parity, 1970, 1977, 1981

| Year | First births | Second births | Third and high parity births | Total |
|------|------|------|------|------|
| 1970 | 20.73 | 17.06 | 62.21 | 100.00 |
| 1977 | 30.86 | 24.59 | 44.55 | 100.00 |
| 1981 | 46.57 | 25.35 | 28.08 | 100.00 |

Source:  Song Yuanjie et al. (1983), p. 56.

1983a). According to China's one-per-thousand fertility survey, the infant mortality rates in 1980 and 1981 were 36.5 and 36.9 per thousand, respectively (Yang and Dodd, 1985). Life expectancy of China's population increased from 47 years in 1950 to 67.9 years in 1981 (66.4 years for males, 69.35 for females) (Jiang Zhen-hua et al., 1984, p. 5).

Mortality affects fertility, since a reduction of mortality allows more women to survive into childbearing age (enlarging the number of births) and increases the insurance of surviving children (reduces people's motivation to have more children to guarantee the desired number of surviving children).

## Widowhood, divorce and remarriage

China's 1982 national census shows that the proportions widowed and divorced are very low (see table 6). The proportions widowed and divorced among women of childbearing age were 1.05 per cent and 0.20 per cent, respectively, and the proportions among women of the high potential fertility age group 15-34 were even smaller (0.15 per cent and 0.16 per cent, respectively). The recent In-Depth Fertility Surveys conducted in 1985 show that the proportions of both divorced or separated women were low: 0.1, 0.3 and 0.4 per cent among all ever-married women of childbearing age in Hebei, Shaanxi provinces and Shanghai municipality, respectively. The proportions widowed among all ever-married women of childbearing age were 0.5, 0.6, 1.0 per cent in Hebei, Shaanxi and Shanghai, respectively.

It is well-known that divorce has long been culturally out of favour in China. During the 10-year turmoil of the so-called Cultural Revolution (1966-76), the legal system in China was seriously underminded and political life was entirely disrupted. Some lower-level courts did not even accept divorce cases. Hence, the number of divorces dwindled (Li Ning, 1985, p. 18). The restrictive policy on granting divorce has been relaxed by the New Marriage Law which took effect officially on January 1, 1981 and placed more emphasis on the emotional basis for a happy marriage. The number of divorces granted jumped from about 113,600 in 1979 to 187,000 in 1981 (Li Ning, 1985, p. 18 and Encyclopedic Yearbook of China, 1981, p. 644) to 427,000 in 1982 (SSB, 1983b, p. 5). The number of divorces granted in 1982 was four times as great as in 1979. However, if we take into account the population increase, the divorce level in 1982 was not above the average level found for the years between 1950 and 1980 although the total number of divorces granted in 1982 (427,000) was higher than the average number of divorces granted between 1950 and 1980 (400,000) (Li Ning, 1985, p. 18).

Officially published remarriage rates for Chinese women are not yet available. Nevertheless, some relevant information from censuses or surveys indicated indirectly that remarriage rates in China are relatively high.

First, we know that the proportions currently widowed are very low (see table 6), whereas mortality in China is only (relatively) low as compared with other developing countries but is not low compared with developed countries. Thus a logical inference is that remarriage rates must be high.

Secondly, as found by Coale (1984, p. 55), the difference between the ratios of currently married to ever-married women aged 20 to 45 in 1982 and in 1929-31 is very small (see table 7). The surprisingly small difference in these ratios, despite the very substantial difference in mortality, implies that the higher incidence of widowhood in 1929-31 must have been offset by a high rate of remarriage by widows. It also implies that remarriage rates have been more or less stable.

Table 6.    Percentage distribution of marital status, females, 1982

| Age | Single | Married | Widowed | Divorced | Total |
|------|--------|---------|---------|----------|-------|
| 15-19 | 95.62 | 4.33 | 0.00 | 0.04 | 100 |
| 20 | 75.13 | 24.72 | 0.02 | 0.13 | 100 |
| 21 | 62.53 | 37.20 | 0.03 | 0.14 | 100 |
| 22 | 48.64 | 51.15 | 0.04 | 0.17 | 100 |
| 23 | 33.16 | 66.60 | 0.06 | 0.18 | 100 |
| 24 | 20.96 | 78.77 | 0.08 | 0.19 | 100 |
| 25 | 12.01 | 87.65 | 0.11 | 0.23 | 100 |
| 26 | 6.77 | 92.87 | 0.14 | 0.23 | 100 |
| 27 | 3.69 | 95.91 | 0.17 | 0.23 | 100 |
| 28 | 2.17 | 97.36 | 0.21 | 0.26 | 100 |
| 29 | 1.37 | 98.12 | 0.25 | 0.26 | 100 |
| 30-34 | 0.68 | 98.56 | 0.47 | 0.28 | 100 |
| 35-39 | 0.28 | 98.19 | 1.22 | 0.29 | 100 |
| 40-44 | 0.19 | 96.65 | 2.87 | 0.30 | 100 |
| 45-49 | 0.18 | 93.33 | 6.16 | 0.42 | 100 |
| 15-34 | 44.10 | 55.63 | 0.15 | 0.16 | 100 |
| 15-49 | 31.61 | 67.14 | 1.05 | 0.20 | 100 |

Source:    SSB, 1983a.

Table 7.  Ratios of currently married to ever-married women by age, 1929-31, 1982

| Year | Age | | | | |
|------|-------|-------|-------|-------|-------|
|      | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 |
| 1982 | 0.986 | 0.977 | 0.960 | 0.933 | 0.888 |
| 1929-31 | 0.981 | 0.968 | 0.953 | 0.916 | 0.860 |

Source:  Coale (1984, p. 55)

Why are remarriage rates high and stable ? The absence of strong religious beliefs prohibiting remarriage is probably one of the explanations. Although Confucianism opposed remarriage, most poor widows or divorcees could not live up to the Confucian ideal because of economic constraints --both for themselves and for their small children-- as a result of which they were not able to live without a husband. After the founding of the People's Republic, remarriage was encouraged by the Chinese authorities, in an effort to abolish the feudal ideal of preventing widows or divorcees from remarrying. Remarriage may be on the decline, due to an increased economic independence of women in the state of marriage dissolution. But the above-mentioned effects are usually very gradual and they may be cancelled out partly since they counteract each other.

## LIFE COURSE ANALYSIS

One limitation with the kind of cross-sectional evidence we have just reviewed is that it gives only the population status distribution or demographic rates in a certain period of time. It fails to link the incidences of occurrences of demographic events with the population status distribution. Moreover, aggregate cross-sectional data cannot yield estimates of either the proportions of a typical lifetime spent in different status categories or the average duration of different stages of family life course, both are important indicators of a deeper demographic analysis on family dynamics.

Based on Bongaarts' innovative work, I extended his nuclear family status life table model (Bongaarts, 1983b) into a general

family model with the adoption and elaboration of the marker concept suggested by Brass (1983). The extended model can be used to perform in-depth analysis on family life course and to investigate the family system of both nuclear and three-generation families. The readers who are interested in the methodological derivation of Bongaarts' nuclear family model and Zeng's extended general family model are referred to Bongaarts (1983b) and Zeng (1986a, 1986b). The computer program used for this analysis is called "FAM" developed by the author (Zeng, 1986c).

A description of the data for the family status life table analysis to be presented below, can be found in Appendix A. We prepared two major different sets of inputs, namely, observed or estimated demographic rates for 1981 and average rates for 1950-70.

A family status life table can be approached from two different perspectives. The first views the family status life table as a description of the life course, or life history, of members of a cohort. We call this approach a life course analysis of a cohort. The second approach views the family status life table as a description of a stable population in which the input fertility, mortality and nuptiality regimes prevail. We may call it a stable population analysis of the family. This section presents the findings of life course perspectives and the next section deals with stable population perspectives.

Although the picture of the family life course presented in this section is not true for any real birth cohort, the results do answer a set of interesting "what if" questions: what would a fictitious cohort member's family life history have looked like if the demographic conditions in 1981 had persisted throughout their lives? What would their family life history have looked like if they had experienced the average demographic conditions in the period 1950-1970? How do the family life histories under 1981, and under 1950-1970 conditions differ? What can we learn from those differences? In the following sections we present the findings of a life course analysis with respect to marital status, childbearing and adulthood as a daughter and as a mother, respectively.


MARITAL STATUS

Population-based measures

This section gives measures of marital status at age x by the status at birth (age 0) of the cohort members. Since all the cohort members can only be in the never-married state at age 0, the life expectancies calculated by the initial status at birth refer to an average member of the entire population studied. We therefore call it a "population-based measure of life expectancy".

a. Universal marriage

It is well known that marriage is universal in China (see for example Coale, 1984; Zeng et al., 1985). However, period policies or other socioeconomic factors affect the timing of first marriages and may sometimes result in an extremely low Total Period First Marriage Rate, TPFMR (e.g. 0.707 in 1965) or an extremely high TPFMR (e.g. 1.19 in 1962 and 1.30 in 1981). When we transform the observed reduced events of first marriage into occurrence/exposure rates which take the population at risk into account, and if we integrate these rates into life tables, reasonable intensities of first marriage of synthetic cohorts for different periods result. For both family status life tables of 1981 and 1950-70, the proportions never-married at age 35 are all less than 0.5 per cent. In other words, more than 99.5 per cent of Chinese women get married before the age of 35. The intensity of first marriage is almost equal to one (see figure 5).

b. The effects of increasing age at marriage on marital status distribution

Figure 5 and figure 6 show the remarkable effects of increasing age at marriage on marital status distribution. By age 20, 82.3 per cent of Chinese women have not yet got married according to the 1981 family status life table ; according to the 1950-70 table this was only 40 per cent.

Figure 5.  Proportion never-married according to the family status life tables
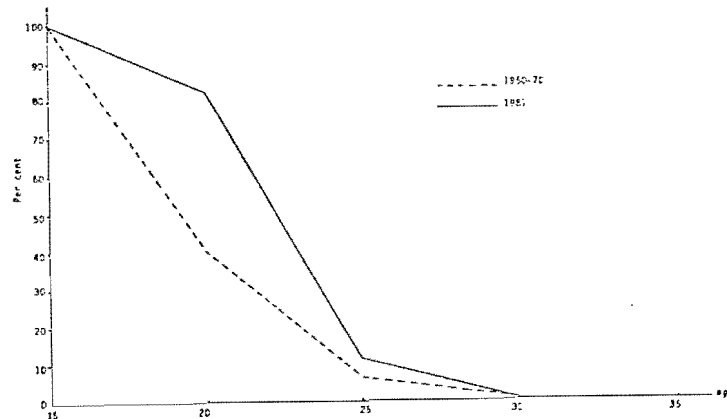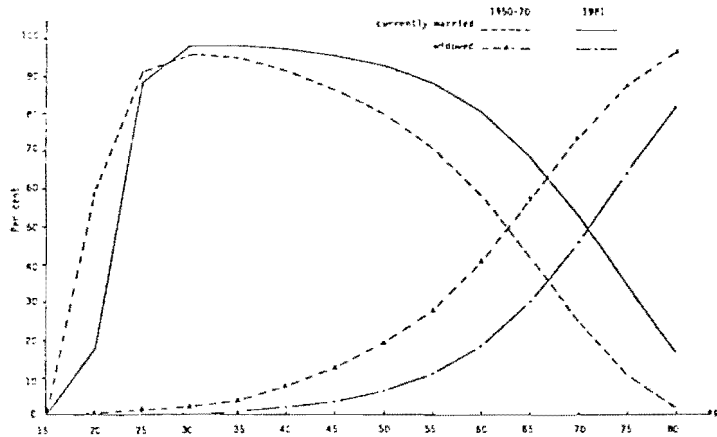
Figure 6.    Proportion currently married and widowed according to the family status life tables



A girl who survives to age 15 is expected to live in the never-married status for 7.3 years under the 1981 rates as opposed to 4.9 years according to the 1950-70 rates. A girl who survives to age 15 could expect (according to the 1981 family status life table) to spend about 49 per cent more time as an unmarried woman, as compared with the 1950-70 schedule; the difference is obviously due to the increased mean age at marriage, given that marriage is universal in both periods (figure 7).

Figure 7.    Expected duration spent in different marital states beyond age 15 according to the family status life tables, China, 1950-70, 1981
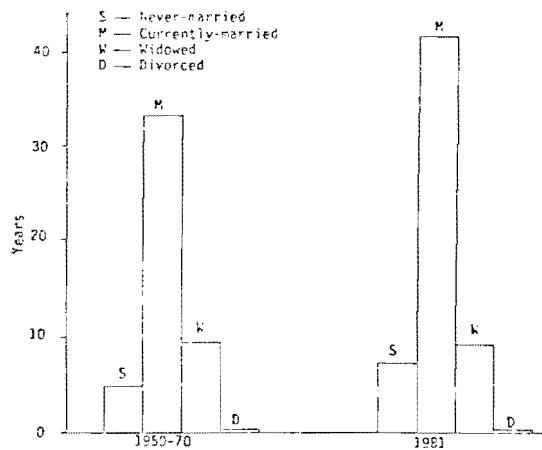
c. The effect of declining mortality on marital status distribution
   Given the stable remarriage rates, the proportion widowed is
   higher at all ages according to the 1950-70 schedule than in
   1981, due to higher mortality in 1950-70 (see figure 6).
   A girl who survives to age 15 could expect to live 15.8 per cent
   of the rest of her life in the widowed status under the 1981
   rates, but 19.8 per cent under the 1950-70 conditions. Under the
   1981 conditions, a girl who survives to age 15 could expect to
   enjoy 8.3 years more in marital life than under the 1950-70
   conditions, although on average she marries 3 years later (figure
   7). This fortunate change has been brought about by a
   tremendous decline in mortality, given the low divorce rate in all
   periods.

d. Stable marriages
   According to the 1981 and 1950-70 family status life table, the
   proportion divorced women is below one per cent at all ages. A
   girl surviving to age 15 could expect to live 0.29 years - 0.50 per
   cent - of the rest of her life in the divorced state under the 1981
   rates. A 15 year-old-girl could expect to live 0.36 years - 0.75
   per cent - of the rest of her life in the divorced state under the
   1950-70 rates. The percentage of marriages ending in a divorce
   are 4 and 6 per cent under the 1981 and 1950-70 rates,
   respectively.
   It is clear that the divorce rates are very low for both periods.
   The reason for it being higher in the period 1950-70 than in 1981,
   is given in the section of cross-sectional evidence.

e. Comparison with selected Western countries
   Table 8 shows very large and interesting differences in the
   patterns of marital change between China and three selected
   Western countries: the United States, white and black (1975-80),
   Belgium (1977) and the Netherlands (1976-80). Parallel measures
   have been drawn from Espenshade (1985) for the United States,
   Wijewickrema et al. (1983) for Belgium, and from the CBS (1984)
   for the Netherlands.
   In China, marriage is much more stable than in the West. The
   life expectancy in the divorced state of American white and
   black (1975-80), Belgian (1977) and Dutch (1976-1980) females,
   was about 25, 32, 9 and 14 times as large as that of Chinese
   females, respectively. In China, the proportion of years women
   spend in the married state is remarkably higher than  in the
   West.
   The proportions of American, Belgian and Dutch women who are
   still never-married at age 50, are about 10, 19 and 35 times as
   high as that of Chinese women, respectively (source: U.S.A.,
   Krishnamoorthy, 1979; Belgium, Wijewickrema et al., 1983; The
   Netherlands, CBS, 1984). This is probably due to the fact that
   marriage is much more important in Chinese society than in the

Table 8. Female life expectancy at birth (and percentage) decomposed by marital status in selected countries according to the life tables

| Marital status | China 1950-70 | | China 1981 | | USA (white) 1975-80 | | USA (black) 1975-80 | | Belgium 1977 | | The Netherlands 1976-80 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| i | $e_i(0)$ | % | $e_i(0)$ | % | $e_i(0)$ | % | $e_i(0)$ | % | $e_i(0)$ | % | $e_i(0)$ | % |
| Never-married | 16.5 | 32.3 | 21.1 | 30.5 | 26.0 | 33.8 | 34.5 | 47.1 | 25.1 | 33.8 | 30.2 | 38.6 |
| Currently-married | 26.6 | 52.2 | 39.2 | 56.6 | 34.5 | 44.9 | 22.1 | 30.2 | 39.5 | 53.1 | 35.2 | 45.0 |
| Widowed | 7.6 | 15.0 | 8.7 | 12.5 | 8.9 | 11.6 | 7.2 | 9.8 | 7.1 | 9.5 | 8.8 | 11.2 |
| Divorced | 0.3 | 0.6 | 0.3 | 0.4 | 7.5 | 9.8 | 9.5 | 12.9 | 2.7 | 3.6 | 4.1 | 5.2 |
| Total | 51.0 | 100. | 69.3 | 100. | 76.8 | 100. | 73.4 | 100. | 74.4 | 100. | 78.4 | 100. |

Source: U.S.A., Espenshade (1985),
Belgium, Wijewickrema et al. (1983)
The Netherlands, CBS (1984)

West, and that cohabitation outside of marriage has become increasingly popular in the West in the past decade.

## Marital status-based measures

Sometimes people are very much interested in investigating how life expectancy at age x varies among people who are in different states at an age other than 0, without referring to the person's initial status at age 0. For instance, the time spent in the married state by widowed people of age 20, say, is obviously shorter than that of married people of the same age. How big this difference is, and how widowed people differ from divorced people depends on how popular remarriage is, and on the extent to which remarriage by widows differs from remarriage by divorcees. Calculating the life expectancy by marital status of the cohort member at a given age (greater than the minimum age at marriage) is therefore very useful when exploring those differences. We call it a "marital status-based measure of life expectancy".

Table 9. shows an interesting difference in status-based life expectancy between women who are in different marital states at age 20. The proportion of life spent in the married state of a 20-year-old widow is about 90 per cent of that of a 20-year-old married woman. The proportion of life spent in the married state of women who are divorced at age 20 is closer to that of women who are married at age 20. It shows again that remarriage, especially among divorcees, is quite common in contemporary China. The proportion of future life spent in the widowed state is significantly higher for a widowed 20-year-old woman than for any other woman of age 20. Similarly, the proportion of future life spent in the divorced state is much higher for a divorced 20-year-old woman than for any other woman of the same age. This is understandable since widows and divorcees need some time to choose a new spouse and to prepare remarriage.

Table 9. also compares the Chinese female's marital status-based life expectancies at age 20 with parallel measures of Belgian and Dutch females. A never-married 20-year-old Belgian or Dutch woman may expect to remain unmarried for a longer period of time. This is, to a large extent, due to the fact that a girl in the West is more likely to delay marriage and/or to opt for cohabitation rather than marriage.

A widowed or divorced 20-year-old Belgian or Dutch woman is expected to spend a much larger share of the rest of her life in the widowed or divorced state than her Chinese counterpart. Women in the West, who lose their husbands due to widowhood or divorce, have a big chance of remaining widowed or divorced because they are likely to be economically independent (through employment or social

Table 9. Percentage distribution of female life expectancy at age 20 by marital status at age 20, in selected countries

| Marital status | Country and period | Marital status at age 20 | | | |
|---|---|---|---|---|---|
| | | Never-married | Currently married | Widowed | Divorced |
| NEVER-MARRIED | China, 1950-70 | 6.9 | - | - | - |
| | China, 1981 | 5.7 | - | - | - |
| | Belgium, 1977 | 14.8 | - | - | - |
| | The Netherlands, 1976-80 | 21.7 | - | - | - |
| CURRENTLY MARRIED | China, 1950-70 | 70.5 | 77.0 | 69.6 | 71.0 |
| | China, 1981 | 76.6 | 82.1 | 75.8 | 77.1 |
| | Belgium, 1977 | 68.3 | 81.3 | 58.3 | 73.3 |
| | The Netherlands, 1976-80 | 56.9 | 73.8 | 30.5 | 52.1 |
| WIDOWED | China, 1950-70 | 21.9 | 22.2 | 29.6 | 22.1 |
| | China, 1981 | 17.2 | 17.3 | 23.7 | 17.3 |
| | Belgium, 1977 | 13.4 | 14.6 | 38.8 | 14.3 |
| | The Netherlands, 1976-80 | 14.7 | 17.2 | 66.3 | 15.8 |
| DIVORCED | China, 1950-70 | 0.7 | 0.8 | 0.7 | 7.0 |
| | China, 1981 | 0.5 | 0.6 | 0.5 | 5.7 |
| | Belgium, 1977 | 3.3 | 4.1 | 2.9 | 12.2 |
| | The Netherlands, 1976-80 | 6.6 | 9.0 | 3.2 | 32.0 |
| TOTAL | China, 1950-70 | 100.0 | 100.0 | 100.0 | 100.0 |
| | China, 1981 | 100.0 | 100.0 | 100.0 | 100.0 |
| | Belgium, 1977 | 100.0 | 100.0 | 100.0 | 100.0 |
| | The Netherlands, 1976-80 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Belgium, Wijewickrema et al. (1983)
The Netherlands, CBS (1984)

security benefits) and she may be influenced by the trend toward greater individualism and thus prefer to live alone. A young Chinese widow or divorcee mainly relies on remarriage to solve the difficulties of loneliness or economic constraint.

Another interesting question is: how many years can a 55-year-old (retirement age for women in China) currently married female expect to spend in the married or widowed state during the rest of her life ? How does it differ from the chance for a 55-year-old widow ? Table 10. provides the answers to these questions.

Under the 1950-70 rates, a 55-year-old currently married woman is expected to spend 56.8% and 42.8% of the rest of her life in the currently married state and widowed state, respectively. The fractions of life spent in the currently married and widowed states for a currently married 55-year-old woman under the 1981 rates are 64.0% and 35.7%, respectively, which differs considerably compared with the 1950-70 situation. Both period life tables show that a 55-year-old widow would expect to spend more than 97 per cent of the rest of her life in widowhood.

Table 10. Percentage distribution of female life expectancy at age 55 by marital status at age 55, females, China

| Marital status | period | Marital status at age 55 | | | |
|---|---|---|---|---|---|
| | | Never-married | Currently married | Widowed | Divorced |
| Never-Married | 1950-70 | 100.0 | 0. | 0. | 0. |
| | 1981 | 100.0 | 0. | 0. | 0. |
| Currently married | 1950-70 | 0. | 56.8 | 2.3 | 12.5 |
| | 1981 | 0. | 64.0 | 2.7 | 14.6 |
| Widowed | 1950-70 | 0. | 42.8 | 97.7 | 9.9 |
| | 1981 | 0. | 35.7 | 97.3 | 8.7 |
| Divorced | 1950-70 | 0. | 0.4 | 0. | 77.6 |
| | 1981 | 0. | 0.3 | 0. | 76.8 |
| Total | 1950-70 | 100.0 | 100.0 | 100.0 | 100.0 |
| | 1981 | 100.0 | 100.0 | 100.0 | 100.0 |

CHILDBEARING

## Parity distribution

Figure 8 compares the parity distributions according to the 1981 and 1950-70 family status life tables. For 1981, only 6.6 per cent of 20-year-old women have given birth to a child and very few women (0.05 per cent) have given birth to more than one child by age 20. These figures are 24.2 per cent and 6.2 per cent, respectively, for 1950-70. This is obviously due to early marriage before 1970 and the increased age at marriage in 1981.

At age 50, the end of the childbearing life span, 13.9 per cent would have given birth to only one child; 37.2 per cent to two children; 26.8 per cent bear three children; 13.0 per cent bear four children and only 7.8 per cent give birth to more than four children if a cohort experienced the 1981 nuptiality and fertility conditions. However, if the 1950-70 nuptiality and fertility conditions would prevail, the picture would have been totally different: 3.9 per cent give only one birth, 5.2 per cent give two births, 7.7 per cent bear three children, 12.6 per cent bear four children and the vast majority --67.3 per cent-- give birth to more than four children, 22.4 per cent of all 50-year-old women have had 8 or more deliveries.

From figure 9 it is very clear that the woman's childbearing behaviour has changed remarkably. The expected time spent in parity 2 constitutes the largest (31.1%) percentage of a woman's life after age 15; 17.0 per cent of her life is spent in parity 1, 20.8 per cent in parity 3 and only 4.8 per cent in parity 5 or higher according to the 1981 rates. However, under the 1950-70 conditions, a woman would spend 45.0 per cent of her life in parity 5 or higher and about 7.4 per cent and 7.0 per cent in parity 1 and parity 2, respectively.

The proportion of childless women is 1.44% under the 1981 rates and 3.36% under the 1950-70 rates. These figures are consistent with the China census and survey observations (e.g. the in-depth fertility surveys conducted in 1985 show that the proportions of women aged 45-49 who have never given birth to a child are 1.6 per cent, 0.8 per cent and 2.9 per cent in Hebei, Shaanxi provinces and Shanghai municipality respectively, see SSB, 1986, p. 22). According to a widely used standard pattern of sterility estimated by Henry (1965), the proportion of sterility is about 3 per cent at age 20 and 5 per cent at age 25. If Henry's estimates are true for the Chinese population, the percentage of childless women revealed by the original data and the life tables are underestimated for 1981. However, we did not adjust the observed data for three reasons. Firstly, we believe that some primarily sterile women who have adopted a child may declare a birth instead of an adoption since they do not want the child to know that it has been adopted.

Figure 8.    Per cent distribution by parity and by age according to
the family status life tables, China, 1950-70, 1981
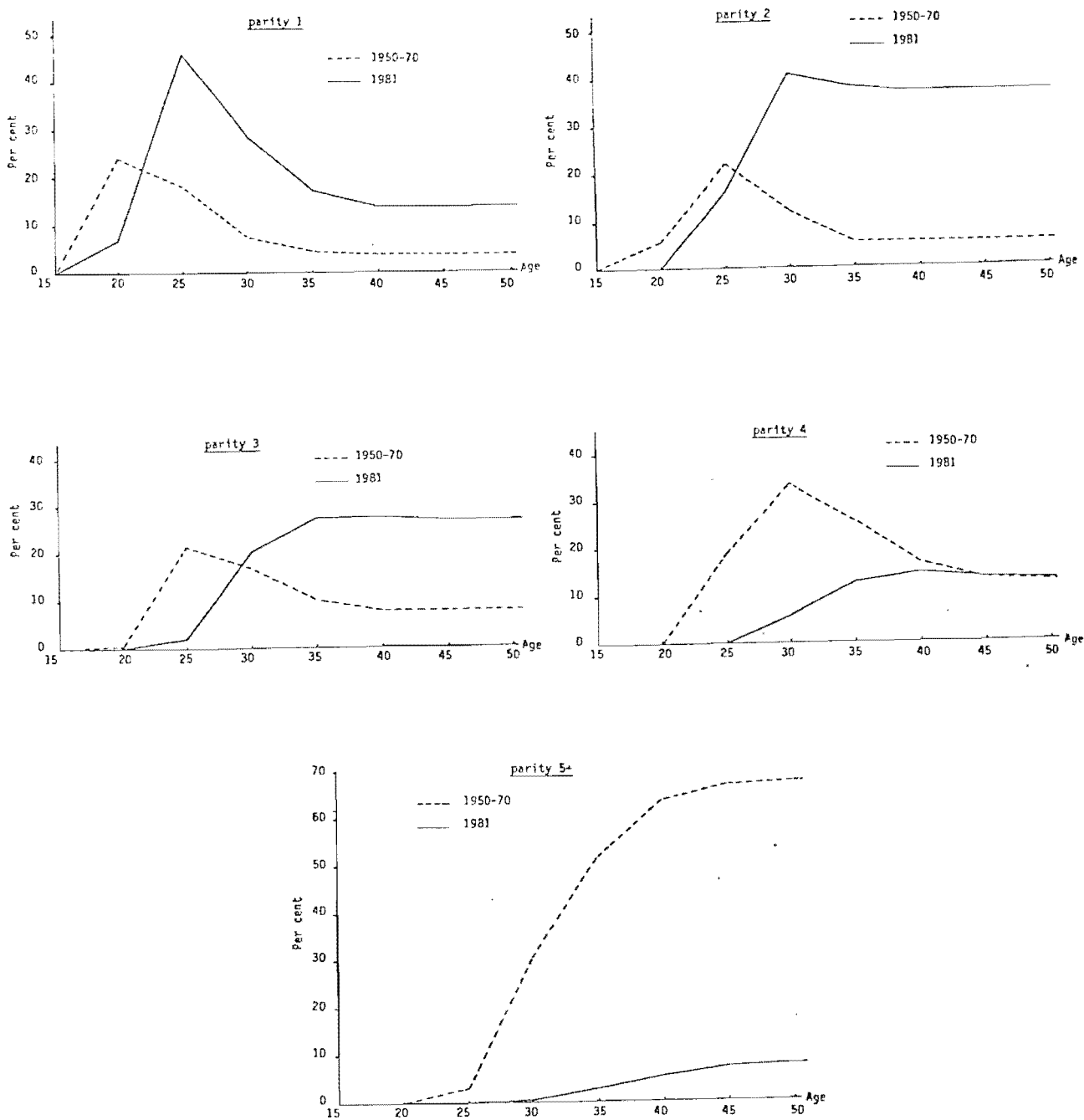
Secondly, the purpose of this study is to investigate the family structure rather than fecundity or sterility. We are interested in knowing how many children a woman actually has, rather than in knowing whether or not she is the children's biological mother. Thirdly, the error introduced by such possible misdeclarations is most likely too small to affect the results of overall fertility.

**Potential for further fertility reduction**

All the indicators in figure 8 and figure 9 show that: (1) fertility patterns of Chinese females have altered considerably since 1970. The changing fertility patterns are characterized by a remarkable decline in the number of births of higher parity, and an increase in the age at marriage and at childbearing; (2) if the 1981 birth level and pattern would persist, the majority of Chinese women would, at the end of their childbearing period be of parity 2 or less than two (52.5 %); 47.5 per cent would be of parity 3 or higher, which is about three times as high as that of women of parity 1. Although this figure is almost half of that found in 1950-70, it shows that a further reduction of fertility can be achieved by reducing the proportion of births of order three or higher. If one would bring

Figure 9. Expected durations spent in the never-married and parity status (0, 1, 2, ...) beyond age 15, according to the family status life tables, China, 1950-70, 1981
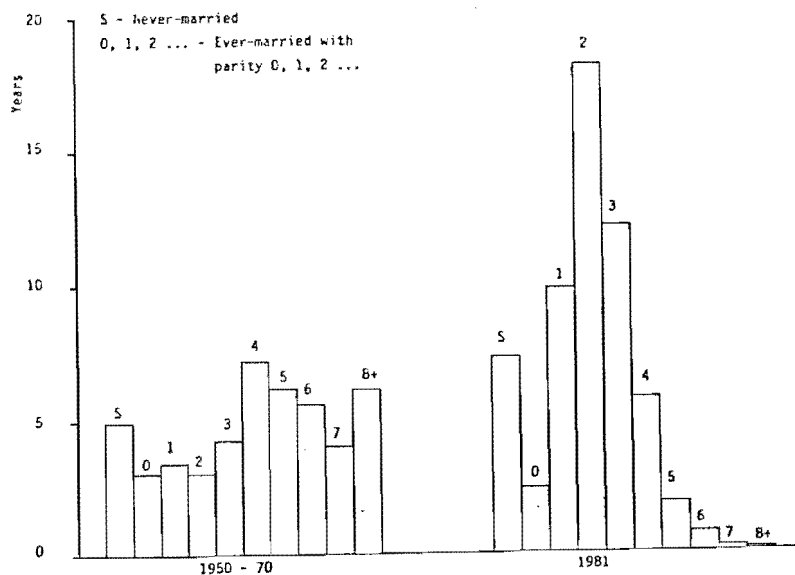
would bring down the proportion of women of parity higher than three at age 50 to zero, if the proportion of women of parity three is reduced until it is equal to that of parity one, namely 13.9 per cent, and if the proportions of women of parity zero and parity one at age 50 remains unchanged, then the total fertility rate will be reduced to 2. Therefore, more attention should be given to reducing birth rates of order three or higher, as emphasized by Chinese demographers.

Another important instrument by which Chinese fertility and population growth can be further slowed down, is to increase the mean age at childbearing and the spacing of children (Bongaarts and Greenhalgh, 1985, pp. 602-606). As Lesthaeghe predicted in a study on nuptiality policies 13 years ago (he took the Chinese case as a very important example in his paper), the increased mean age at

first marriage has played a prominent role in slowing down population growth (Lesthaeghe, 1973). China's one-per-thousand fertility survey shows clearly that an increase in the mean age at marriage has lowered the period fertility (see, for example, Coale, 1984).

The current mean age at marriage is already relatively high in urban areas and some advanced rural areas. It is neither realistic nor reasonable to ask young people to get married at a very late age. But early marriage is still not uncommon in many rural areas. The 1981 family status life table shows that 17.8 per cent of the life table cohort members are married before age 20 if 1981 conditions prevail. The in-depth-fertility survey conducted in 1985 shows that in Shaanxi province almost one-fifth of the young women are still married before the legal marriage age. The age at marriage reported as being best by 30 per cent of the Shaanxi women is lower than the legal age (SSB, 1986, p. 17-18). Hence, a further increase in the mean age at childbearing may be achieved through reinforcing publicity for late marriage, particularly in rural areas and monitoring the interval between first marriage and first birth and subsequent birth intervals.

### Number of children ever born versus number of children surviving and its policy implications

The parity distributions at each age reflect the timing and level of fertility. However, because of mortality, the number of children ever born is not equal to the number of surviving children. Figure 10 shows how the declined mortality from 1950-70 to 1981 affects the number of surviving children. The improvement is very impressive. For instance, if the fertility schedule and mortality observed in 1950-70 were experienced by a cohort, 17.1 per cent of the 35-year-old women who had given birth to only one child would have no surviving child. This figure would be 5.4 per cent if the cohort members experienced fertility and mortality as observed in 1981; with the 1950-70 regimes, 2.8 per cent of all 35-year-old women of parity 2 would have no surviving children due to the death of both children. This figure is 0.3 per cent if the 1981 regimes apply. Age 35 is not the end of the reproductive life span. Those who have given birth to only one or two children and whose only child, or both children, died, could have another child if they so desired and are still able to do so.

Let's now look at the 65-year-old women, who need someone to look after them. If the cohort members experienced the fertility and mortality regimes observed in 1950-70, 28.3 per cent of those who have given birth to only one child and 7.8 per cent of those who have given birth to two children would have no surviving children when

they reach age 65. At this age the percentage of childless women who have given birth to only one child would be 9.2, and those who have given birth to two children would be 0.8 per cent, if they experienced the fertility and mortality rates observed in 1981.

Figure 10. Per cent distribution by parity and number of surviving children at age 35 and 65
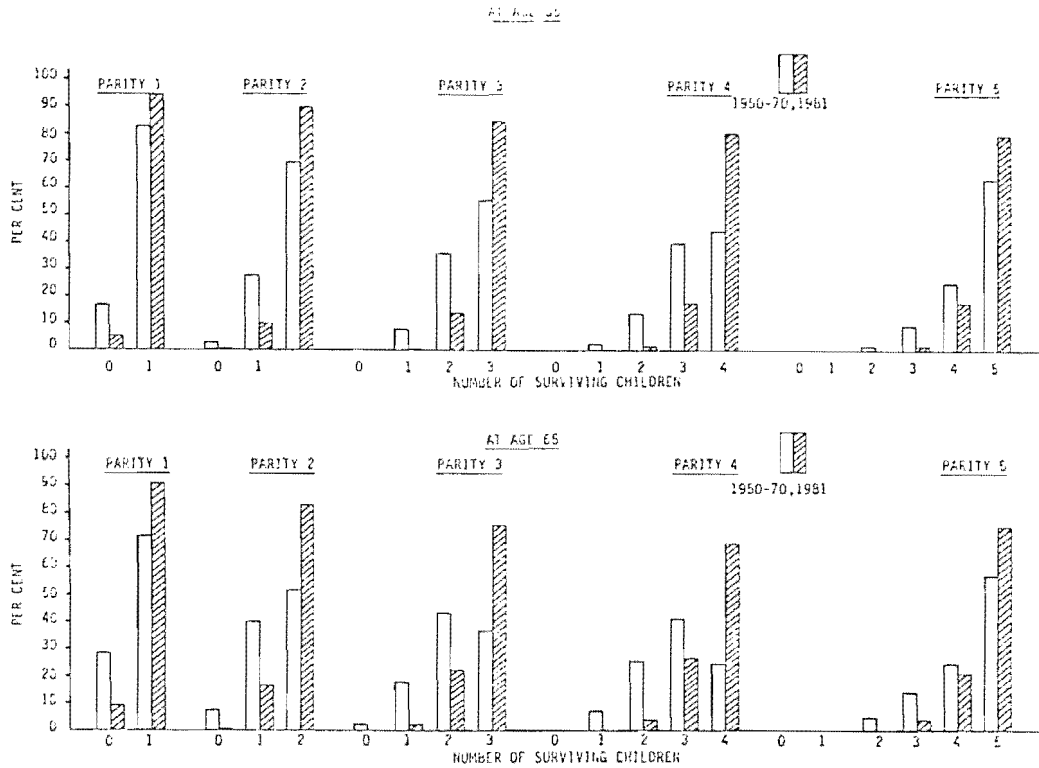


The above results are based on the assumption that fertility depends on parity, marital status and age but not on the number of surviving children. This may overestimate the proportion of women who have no surviving children because the fertile women who lost their children may have a greater probability of bearing an additional baby than the average woman of the same parity and age. Nevertheless, these results demonstrate to some extent the relationship between mortality and number of surviving children. This is important in societies in which the elderly depend on their

children, such as in the rural areas of China. If mortality is high, a substantial proportion of women who have ever given birth to only one child, would have no surviving children in old age. (If the child dies at a young age of the mother, the mother may try to have another baby. If the child dies when the mother is in her late thirties or forties, or older, the mother's chance to bear another baby may be very small or even zero). Although some women may adopt a child, it is still a heavy socioeconomic burden for society, since many couples do not wish to adopt a child after having lost their own child, or alternatively, there may not be enough children for adoption. However, if the mortality level is low, the situation is much better. Comparing the implications of the 1981 and 1950-70 demographic conditions, table 11. shows the improvement upon the survivorship of children due to declining mortality.

At present, mortality levels in China vary considerably from one region to another. The difference between the highest and the lowest life expectancies found in all provinces and municipalities of China, is about 10 years (Jiang Zhenhua et al., 1984, p. 7). These differences are undoubtedly much larger between the remote local areas and the South-Eastern coastal areas. Therefore, different birth planning policies are required for different localities. In other words, the policy advocating one child per couple in areas in which mortality is high cannot be strictly adhered to as this would create unfavourable socioeconomic situations where substantial proportions of couples have no surviving children care for them in old age.


## ADULTHOOD AS A DAUGHTER AND AS A MOTHER

Every society defines, by custom as well as by law, what parents should do for their children, what they can expect from their children, and what children can expect from their parents (Menken, 1985, p. 475; Watkins et al., 1984, p. 4). In all societies, parents have the obligation to rear their children until their children become economically independent. Adult children, on the other hand, have the obligation to take care of their elder parents either economically or emotionally. In rural China, which accounts for about four-fifths of the total Chinese population, almost all elderly parents are economically dependent on their children. Even among the urban population, where the pension system has been introduced, filiation is still one of the cornerstones of society, and a great majority of the elderly enjoy living together with one of their married children. Both in rural and urban areas, married children who do not live with their parents maintain very strong ties - either economic or emotional - with their parents (see for example, Liu Yin, 1985, p. 10). Therefore, it would be extremely interesting to find answers to the following questions: given the fertility and

mortality regimes, what is the proportion of women who are likely to have surviving parent(s) and how many surviving children will she have; how long will she be obliged to care for her elderly parent(s) over 65, and for how many children under age 18 or 5 will she have to care? Sections 10.3.1, 10.3.2, 10.3.3 and 10.3.4 provide the answers to these questions.

### Adulthood as a daughter

Figure 11 shows the percentage distribution of women who have a surviving biological mother. Under the 1981 mortality and fertility conditions, 0.7 per cent of all girls aged 5, and 4.8 per cent of all women aged 20 have lost their biological mother. These figures are much higher if the 1950-70 mortality and fertility conditions prevail

Figure 11.  Per cent distribution of women with surviving mother according to family status life tables, China, 1950-70, 1981 and the United States, 1900, 1960, 1980.
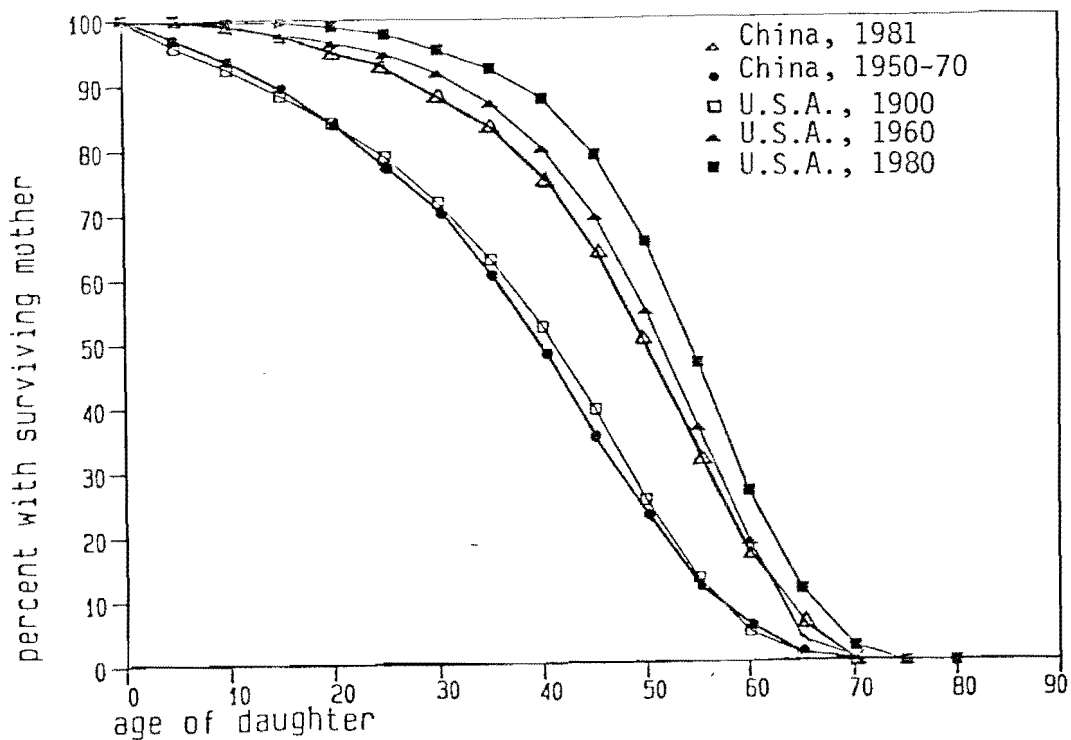


Source:    for the United States, see Menken (1985, p. 477)

namely 2.6 and 15.7 per cent, respectively. At age 35 and 50, the proportion of women who have a biological surviving mother is about 83 per cent and 49 per cent, respectively, if they experienced the 1981 regimes. Under the 1950-70 regimes, about 60 per cent and 23 per cent have obligations toward a surviving mother when they reach age 35 and 50, respectively. The 1981 demographic conditions raise the adult cohort members' obligation toward a surviving mother, simply as a result of the prolongation of the life span in China.

As a daughter, a woman not only has the obligation to care for her surviving mother, but also for her surviving father. By combining the survivorship of mother and father, we calculate the cohort members' adult years as a daughter of at least one surviving parent and both surviving parents. Under the 1981 rates, a girl who survives to age 15 would spend about 10.2 years more with at least one surviving parent than under the 1950-70 rates. A 15-year-old girl would expect to spend about 10.5 years more with both parents alive for the rest of her life under the 1981 rates than under the 1950-70 rates (see figure 12). In order to compare the relative obligation as a daughter under 1950-70 and 1981 rates, the percentages of life time beyond age 15 spent with a surviving mother, surviving parent(s) alive and parent(s) older than 65 are also shown in figure 12.

It demonstrates clearly that under the 1981 rates an average adult woman will spend a larger fraction of her life time with a responsibility toward her parent(s) than under the 1950-70 rates.

For comparison, we also present the percentage distribution with a surviving mother from the 1900, 1960 and 1980 U.S. family status life tables and the expected adult years as a daughter from the 1960, 1980 U.S. family status life tables (Menken, 1985, pp. 477-478). The 1981 curve for China is a bit lower than the 1960 U.S. curve. The 1950-70 curve for China almost coincides with the 1900 U.S. curve. China's 1981 level is a little below the level of the United States in 1960, while China's 1950-70 level is about the same as the level of the United States in 1900.

This means that approximately the same achievement was reached in a period of 60 years (1900-1960) in the U.S. as in a period of about 20 years in China (1950-70 to 1981). Notestein pointed out in 1964: "Today, the death rates in the newly developing countries are declining from three to five times the speed with which they moved through the similar levels in Europe's 19th century." (Notestein, 1969, p. 352). Our findings from looking at the mother's survivorship coincides with the argument Notestein put forward 22 years ago.

Figure 12.  Expected adult years (lived beyond age 15) as a daughter according to the family status life tables, China, 1950-70, 1981 and the United States, 1960, 1980
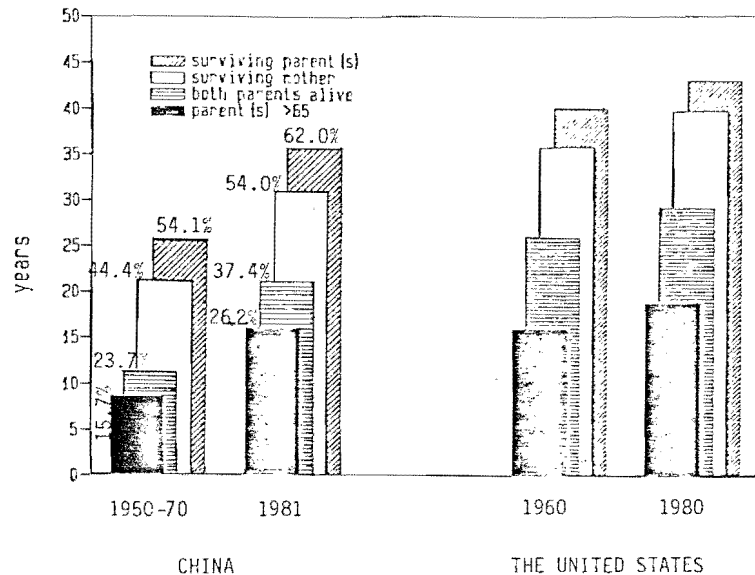


Note:  The percentages are obtained through dividing the expected adult years as a daughter by the total life expectation at age 15.

Source:  for the United States, see Menken (1985, p. 478)

## Adulthood as a mother

The fertility decline in China reduces the adult woman's burden by reducing the number of children she has to care for.

Figure 13 depicts the sharp decline in the percentage of women with at least three surviving children from 1950-70 to 1981. If the 1950-70 fertility level had not been checked, about 80 per cent of women aged 40-50 years would have had at least 3 surviving children. Small children and teenagers need food, clothing and an educational investment. Young adult children have to be prepared for marriage and childbearing, which, in Chinese society, has traditionally been an important duty of parents. The fact that so many middle-aged adults have a very heavy burden of child rearing is also felt by society. By contrast, the fraction of women aged 40-50 years with at least three surviving children would be reduced to about half of that found under the 1950-70 rates if the 1981 conditions were to prevail.

Figure 13. Per cent distribution of women with at least three surviving children according to the family status life tables, China, 1950-70, 1981.
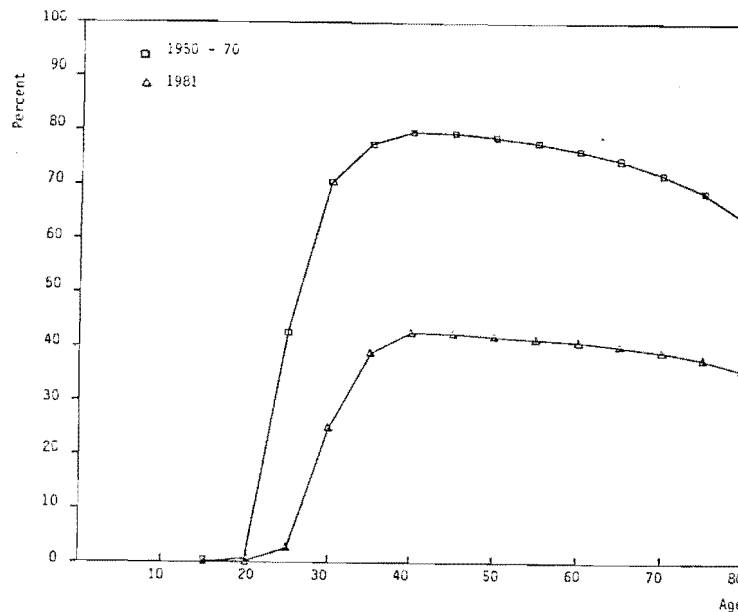


## Adulthood as both a daughter and a mother

We will now look at the combination of a woman's responsibility to a surviving mother and to surviving children.

If the 1981 regimes were to prevail, 31.9 per cent of the 35-year-old women would have a surviving mother and three or more surviving children; 6.6 per cent would have no surviving mother but three or more surviving children; these figures would be 46.3 per cent and 31.0 per cent, respectively, if the cohort followed the 1950-70 demographic conditions (see table 11). For women, the burden of bearing a large number of children has obviously been alleviated by reducing fertility since 1970.

## Responsibility to dependents

So far, we have discussed the distribution of surviving parent(s) and the number of surviving children, disregarding the parent's and children's ages. This is not sufficient for the purpose of studying the demographic implications on the cohort members' responsibility to the dependents since only elderly parents (say, over 65 years) and

Table 11.    Percentage distribution of women as a daughter and as a mother by number of surviving children according to the family status life table, China, 1950-70, 1981

| Age period | | With surviving biological mother and surviving children | | | | | | | Without biological surviving mother but with children | | | | | | | Total |
| | | Number of surviving children | | | | | | | Number of surviving children | | | | | | | |
| | | Total | 0 | 1 | 2 | 3 | 4 | 5+ | Total | 0 | 1 | 2 | 3 | 4 | 5+ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 1981 | 99.26 | 99.26 | 0. | 0. | 0. | 0. | 0. | 0.74 | 0.74 | 0. | 0. | 0. | 0. | 0. | 100.0 |
| | 1950-70 | 97.39 | 97.39 | 0. | 0. | 0. | 0. | 0. | 2.61 | 2.61 | 0. | 0. | 0. | 0. | 0. | 100.0 |
| 20 | 1981 | 95.19 | 89.03 | 6.12 | 0.05 | 0. | 0. | 0. | 4.81 | 4.50 | 0.31 | 0. | 0. | 0. | 0. | 100.0 |
| | 1950-70 | 84.32 | 60.77 | 19.26 | 3.95 | 0.32 | 0.01 | 0. | 15.69 | 11.31 | 3.58 | 0.73 | 0.06 | 0. | 0. | 100.0 |
| 35 | 1981 | 82.90 | 2.25 | 17.14 | 31.65 | 21.14 | 8.87 | 1.85 | 17.10 | 0.46 | 3.54 | 6.53 | 4.36 | 1.83 | 0.38 | 100.0 |
| | 1950-70 | 59.89 | 2.61 | 3.91 | 7.07 | 12.43 | 14.48 | 19.38 | 40.12 | 1.75 | 2.62 | 4.74 | 8.33 | 9.70 | 12.99 | 100.0 |
| 50 | 1981 | 49.03 | 1.26 | 8.81 | 18.30 | 12.12 | 5.47 | 3.07 | 50.98 | 1.31 | 9.16 | 19.03 | 12.60 | 5.69 | 3.19 | 100.0 |
| | 1950-70 | 22.72 | 1.04 | 1.44 | 2.28 | 3.36 | 4.15 | 10.45 | 77.28 | 3.55 | 4.88 | 7.74 | 11.44 | 14.11 | 35.55 | 100.0 |
| 65 | 1981 | 6.59 | 0.20 | 1.28 | 2.46 | 1.58 | 0.70 | 0.38 | 93.41 | 2.85 | 18.11 | 34.80 | 22.37 | 9.86 | 5.42 | 100.0 |
| | 1950-70 | 1.62 | 0.08 | 0.12 | 0.20 | 0.28 | 0.32 | 0.62 | 98.38 | 5.10 | 7.54 | 12.12 | 16.86 | 19.10 | 37.66 | 100.0 |

young children (under 18 years old) deserve particular care. Therefore, we look at the expectation of life at age 15 as a daughter of elderly parent(s), as a mother with children under 18 years old, and at a combination of the two, i.e. as a daughter of elderly parents and a mother of young children. In other words, we look at a 15-year-old girl and ask the following question: in her remaining lifetime, how many years will she spend, on average, as a daughter of elderly parents or as a mother of young children.

The time spent with at least one parent over 65 increased from 7.6 years under the 1950-70 rates to 15.3 years under the 1981 rates (this figure was about 16 years under the 1960 U.S. rates and 19 years under the 1980 U.S. rates). Obviously, we experience the deaths of our parents at ever later ages: they are with us longer and longer. Our own children will have us with them even longer. Since the years spent with at least one elderly parent has increased significantly, the burden on adult children has become much heavier.

Again, for cohort members who survive to age 15, figure 14a shows the average number of years, or expectation of life, as mothers with children of different ages. The number of years spent with at least one child of age less than 5 and with at least one child of age less than 18 are all higher under the 1950-70 rates than under the 1981 conditions. This is the result of the high fertility in 1950-70: women started to bear children at an earlier age and stopped at a later age. However, the number of years spent with living child(ren) of whatever age under the 1950-70 conditions is significantly smaller than in 1981. This is due to the fact that mothers lived for shorter periods of time in 1950-70 than in 1981, given the very low childlessness in both periods.

Comparing the Chinese case with parallel measures in the United States, we found that, although the mortality level in the U.S. in 1980 was significantly lower than that in China in 1981 (U.S. female $e_0$=78.1 in 1980 and female $e_0$=69.3 for China in 1981), the number of years spent with at least one surviving child by a Chinese woman in 1981 was about 7 years longer than that of American women in 1980. This is because a much smaller proportion of women become a mother in the U.S. (about 75 per cent, Menken, 1985, p. 476) than in China (about 98 per cent, taken from China's 1982 census observation as well as from our model output).

The years spent with at least one surviving child may be used as an indicator of a woman's responsibility to the subsequent generation. A better indicator should also take into account the number of surviving children. For instance, given that the 1981 fertility level is about 45 per cent of that in 1950-70, the number of years spent with at least one surviving child - whatever the age - according to the 1981 table is 8 years more than in 1950-70. One may thus be misled by only comparing years spent with at least one surviving child in two different periods.

Figure 14a.    Expected adult years (beyond age 15) as a mother
               according to the family status life tables, China,
               1950-70, 1981 and the United States, 1960, 1980
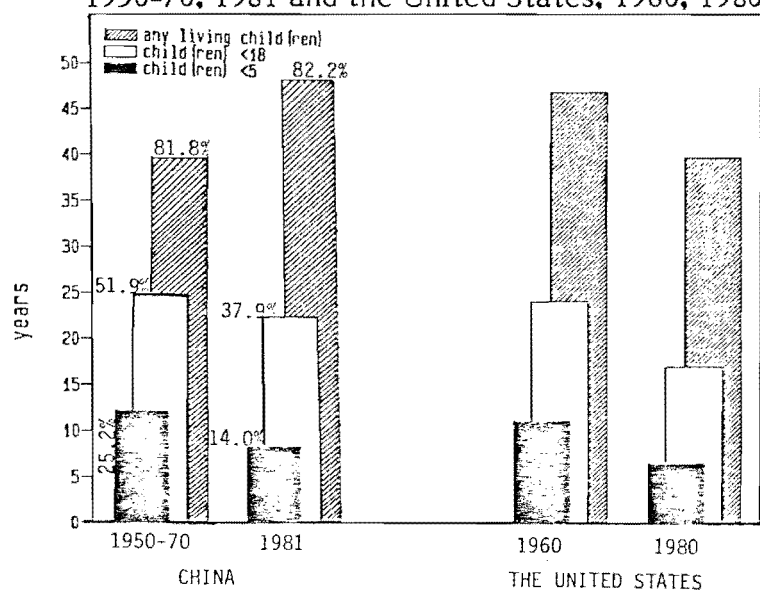


Source: for the United States, see Menken (1985, p. 479)

Figure 14b    Expected adult years as a mother by number of
              surviving children according to the family status life
              tables, China, 1950-70, 1981
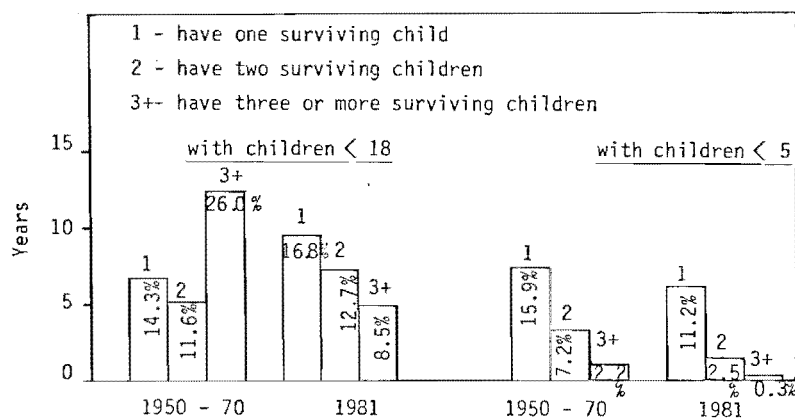


Note:    The percentages in the figures 14a and 14b are
         obtained through dividing the expected adult years
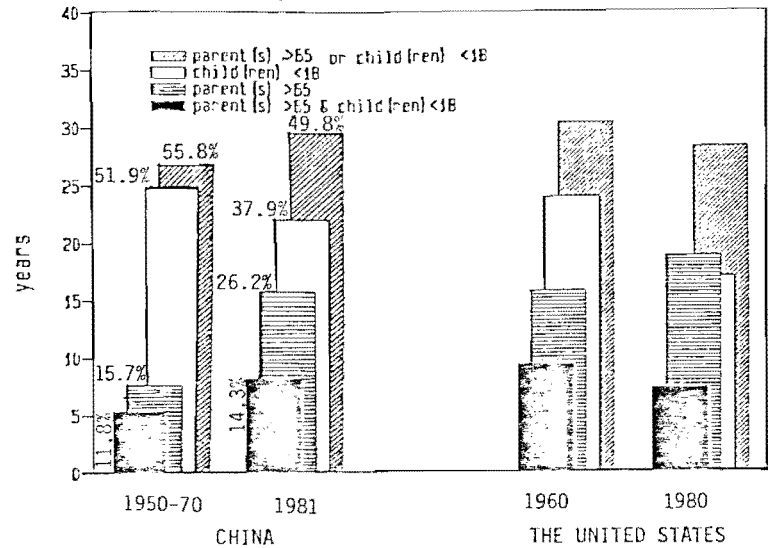         as a mother by the total life expectancy at age 15.

Therefore, we must also look at the fractions of time spent with different numbers of surviving children, which is presented in figure 14b (Menken's paper does not give the measures of the number of children). Under the 1950-70 rates, a cohort member surviving to age 15 is likely to spend about 25.1 years with at least one child under 18 years old, 50 per cent of which would be spent with more than two children; about 12 years with at least one child under 5, 9 per cent of which would be spent with more than two children. The figures based on the 1981 demographic conditions are: about 22 years with at least one child under 18 years of age, 22 per cent of which would be spent with more than two children; about 8 years with at least one child under 5, only 2 per cent of which with more than two children. Having more than two children under 18 or under 5 at the same time, is really a heavy burden for any family. This unfavourable situation had fortunately improved in 1981 as compared to 1950-70.

The years with responsibilities to elderly parent (s) (over 65) and young children (under 18) simultaneously have been called the years of overload (Menken, 1985, p. 479). The number of years of overload, disregarding the number of young children, is lower under the 1950-70 rates than under the 1981 conditions due to the higher mortality level found in 1950-70 (see figure 15). Of the overload years, under the 1950-70 rates, the fraction of time spent with more than two young children is, however, 1.6 times as high as that under the 1981 rates. The smaller fraction of time spent with a very heavy overload (with parent(s) over 65 and more than two children under 18) under the 1981 conditions is, of course, the result of the remarkable fertility decline after 1970.

In figures 14a, 14b, 15a and 15b, we also present the percentages which are obtained through dividing the corresponding adult years of responsibility to dependents by the total life expectancy at age 15. After this standardization, the results also show clearly: the burden from old parents would be significantly increased while the burden from young children would be remarkably reduced if a woman experienced 1981 rates compared with the 1950-70 rates. This has, as we discussed before, resulted from the prolongation of the life span and the tremendous fertility decline since 1970.

It is interesting to note that although the absolute number of adult years of responsibility to parent(s) over 65 or children under 18 is smaller under the 1950-70 rates than under the 1981 rates, its percentage share of total life expectancy beyond age 15 is larger under the 1950-70 rates (56%) than under the 1981 rates (50%). The percentage share of responsibility to parent(s) over 65 and to three or more children under 18 simultaneously is about two times as high under the 1950-70 rates as that found under the 1981 rates. This finding shows that the 1981 demographic conditions were more

Figure 15a.   Expected adult years (beyond age 15) of responsibility to dependents according to the family status life tables, China, 1950-70, 1981 and the United States, 1960-1980



Legend:
- parent(s) >65 or children <18
- children <18
- parent(s) >65
- parent(s) >65 & children <18

55.8%
51.9%
49.8%
37.9%
26.2%
15.7%
14.3%
11.8%

1950-70    1981        1960    1980
CHINA              THE UNITED STATES

Source:       for the United States, see Menken (1985, p. 480)

Figure 15b.   Expected adult years of responsibility to parent(s) over 65 and to different numbers of children under 18 according to the family status life tables, China, 1950-70, 1981



1 - with 1 child under 18
2 - with 2 children under 18
3+- with 3 or more children under 18

3+
6.2%
1
2.9%
2
2.7%
1
6.4%
2
4.7%
3+
3.2%

1950 - 70                    1981
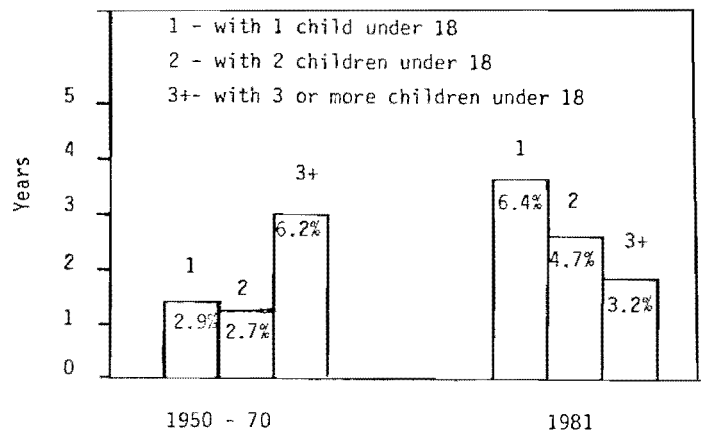
Note:        The percentages in figures 15a and 15b are obtained through dividing the expected adult years of responsibility to dependents by the total life expectancy at age 15.

favourable than the 1950-70 conditions, in terms of reducing the burden of dependents.

In sum, the number of years of responsibility to dependents is the balance of mortality and fertility. The longer the life expectation, the heavier the burden from older parent(s); the larger the number of children surviving per woman, the heavier the burden from young children. The family status life table provides a nice instrument to measure this responsibility to dependents.

## THE PERSPECTIVES OF CHINESE FAMILY SIZE AND STRUCTURE

We have reviewed the trends of Chinese family size and structure in section one. As stated earlier, this cross-sectional evidence fails to link the incidences of occurrences of demographic events with the proportion distribution of family size and structure. It cannot depict the relation between undergoing changes in demographic factors and the family size and structure. Fortunately, the results derived from the family status life tables presented below clearly clarify how the changing demographic factors affect the family size and structure.

How do changing fertility and mortality affect family size, family type and family composition? This interesting research question has received considerable attention from demographers in the past (see, for example, Coale, 1965; Burch, 1970; Ryder, 1974; Goodman, Keyfitz and Pullum, 1974; LeBras, 1978; Krishnamoorthy, 1980; Martin and Culter, 1983; Brass, 1983; Bongaarts, 1983; Watkins et al., 1984; Menken, 1985).

Most of these model simulations gave the average family size of different types based on the assumption of stability or stationarity of demographic conditions. Although real demographic conditions are never perfectly stable or stationary, the model output does help one to obtain a better understanding of the topic. Firstly, the implications of a set of period demographic rates are clearly shown. By comparing different implications of different rates one can better understand how changes of demographic rates affect family size and family structure. Secondly, by inputing the observed rates to a life table model, we can obtain some very useful summary measures which are more impressive and interpretable. The purpose of the  life table model in the context of a stationary or stable population is neither to assume that the population in question would remain stationary or stable, nor to predict the future for this population. It is only a good tool to pick out the implications of observed rates and to translate the massive rates into a number of more impressive and interpretable measures.

Our new simulations give us more insights by demonstrating not only the average family size but also the frequency distribution by family size, type and composition. This chapter presents the findings.

We have recognized that the cross-sectional observations of family size and structure at one point in time are generally not equal to the life table output using period rates as input, because the period cross-sectional observation consists of many cohorts' past experiences and the period life table output is "what would be" if a synthetic cohort experienced the observed period rates. Nevertheless, we compare the family size, type and its distribution from the 1981 and 1950-70 family status life tables together with the parallel measures from the 1982 census, whenever available. The purpose of this treatment is to facilitate some kind of check: to see whether the model output is plausible and to receive a better understanding through comparison.

The profile of the 1950-70 and the 1981 family status life tables, do not reflect the real family structure in those two periods since the Chinese population in 1950-70 and 1981 was not stable at all. Again, however, "comparing what would be if 1950-70 conditions remained stable", with "what would be if 1981 conditions remained stable", we can gain a better understanding of how demographic change may bring about changes in family structure.

In short, we are neither assuming that the 1950-70 and 1981 rates will remain constant nor predicting the future of the Chinese family size and structure. What we are doing is trying to use the tool of a family status life table to ascertain the effects of tremendous changes in demographic rates on family size and structure. At the same time, we are trying to gain insight into how Chinese family size and structure will evolve.


FAMILY SIZE

Comparison between the 1982 census observations and the 1950-70 life table output

The observed average family sizes were 4.78 in 1973 and 4.43 in 1982. The average family size from the 1950-70 life table is 4.90 and 4.37 from the 1981 life table model (see table 12). The fractions of 1, 2 and 5-person families from the 1950-70 family status life table models are more or less close to those found in the 1982 census observation. The proportion of two- and three-person families from the 1950-70 family status life table is significantly smaller, whereas the proportion of families of more than 5 persons is significantly higher than those of the 1982 census (figure 16a, 16b, 16c). This model output seems to be plausible simply because fertility greatly declined from 1970 to 1982. Young couples in 1982

have a much smaller number of children compared with the situation in 1950-70. The proportions of three-and four-persons families in the 1982 census have significantly increased since more young couples who are not living with parents have only one or two children. The census observation on the proportion of families of more than five persons is significantly smaller than that from the model output under 1950-70 conditions because those young couples who are living with parents also have fewer children.

Table 12.    Average family sizes from the 1982 census and the model output

| Type | Source | | Average size |
|------|--------|--------|--------------|
| Total | 1950-70 | simulation | 4.90 |
| | 1981 | simulation | 4.37 |
| | 1982 | census | 4.43 |
| Nuclear family | 1950-70 | simulation | 4.41 |
| | 1981 | simulation | 3.19 |
| | 1982 | census | NA |
| Three-generation family | 1950-70 | simulation | 6.17 |
| | 1981 | simulation | 5.60 |
| | 1982 | census | NA |

NA: Not available

Figure 16a. Percentage distribution of family sizes in 1982, China (census observation)
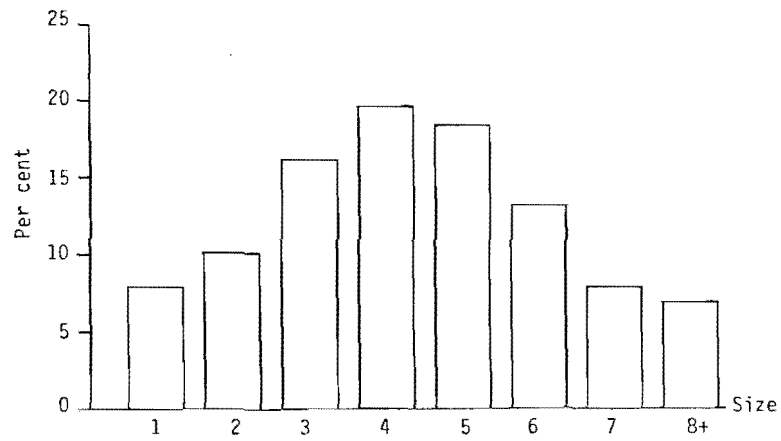


Figure 16b. Percentage distribution of family size under the 1950-70 rates, China (according to the model output)
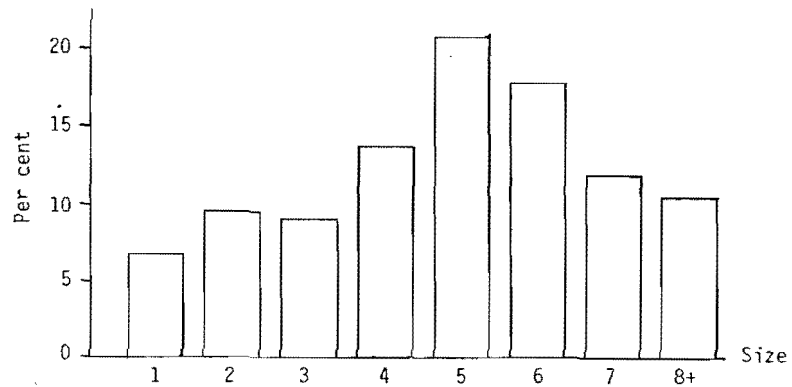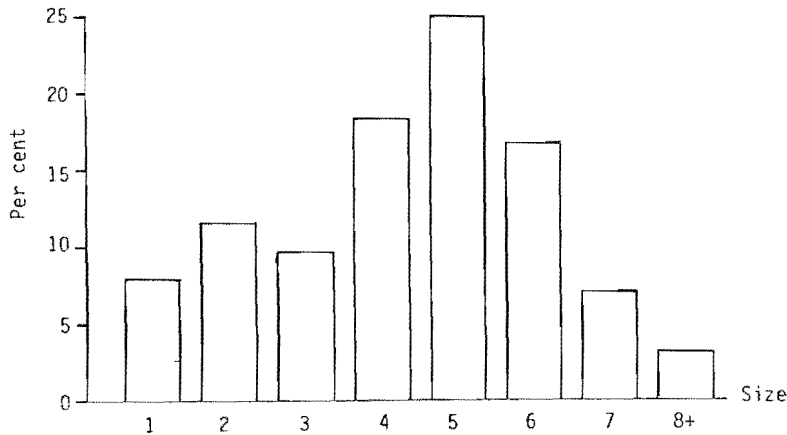
Figure 16c.   Percentage distribution of family sizes under the 1981
rates, China (according to the model output)



## Comparison between the 1981 and 1950-70 life table output

The average family size under the 1981 rates is 4.37: a decrease
of 11 per cent, as compared with 4.90 under the 1950-70 rates. Is
this surprising? Why is the family size reduced by 11 per cent
whereas the 1981 fertility was reduced by more than half as
compared with 1950-70? The explanation is as follows.   Firstly,
decreased mortality has played an important role. The longer life
span gives everyone, including children and older parents, a higher
probability of surviving, which compensates for part of the effects
on average family size by the fertility decline. Secondly, as we will
see later on, the proportion of three-generation families will
increase with the fertility decline if the desirability of co-residence
between parents, and married children remains unchanged. The
family size of three-generation families is generally larger than that
of nuclear families. The increased fraction of three-generation
families also compensates for part of the effects on average family
size by fertility decline. This argument is supported if we look at
the average family size of nuclear families and three-generation
families separately. The average size of nuclear families is 3.19
under the 1981 rates, compared with 4.41 under the 1950-70 rates: a
decrease of 27.7 per cent. The average size of three-generation
families under the 1981 rates is 5.60 compared with 6.17 under the
1950-70 rates, a decrease of 9.2 per cent.

One of our interesting findings is that the decline in average
family size will not be as remarkable as the fertility decline.

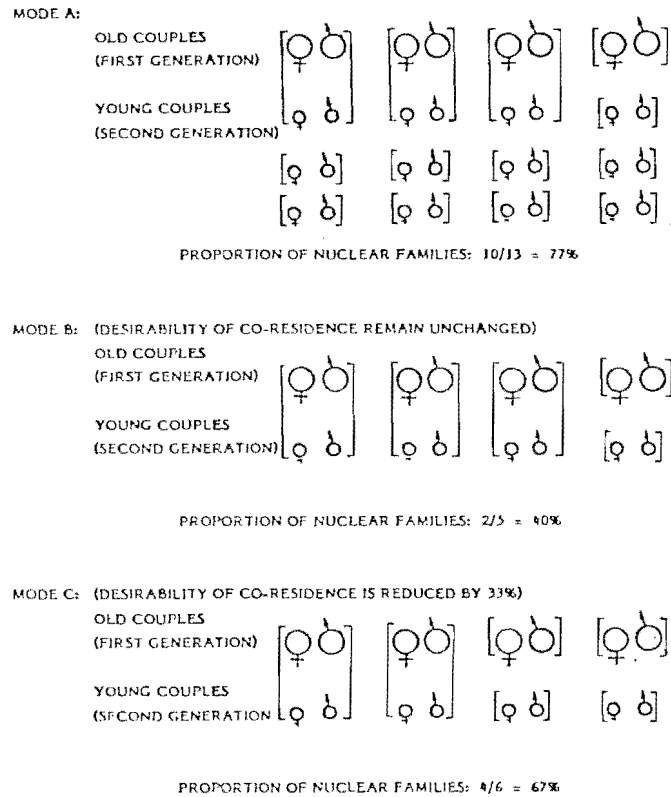# FAMILY TYPES: NUCLEAR FAMILIES VERSUS THREE-GENERATION FAMILIES

## Comparison between the 1982 census observations and the 1950-70 life table output

The proportions of nuclear families (including one-person families) and three-generation families (including more than three-generation families) are 81.1 per cent and 18.9 per cent, respectively, from the 1982 census. These figures are 72.2 per cent and 27.8 per cent from the 1950-70 family status life table output and 51.3 per cent and 48.7 per cent from the 1981 family status life table. The fact that the 1982 census observation on the proportion of nuclear families does not differ very much from what it would be if the 1950-70 rates were to prevail is not surprising. Given that no (or very few) married siblings live together, the proportion of nuclear families mainly depends on the number of adult children per older couple and on the extent older couples and one of their married children desire to live together. In other words, the smaller number of adult children per couple and the lower the desirability for parents and one of their married children to live together, the lower the proportion of nuclear families. Up to 1982, the average number of adult children per older couple was the result of high fertility before 1970, since the reduced number of new-born children after 1970 have not yet reached adulthood. Therefore, the availability of adult children per middle aged or elderly couple in 1982 was not reduced by reduced fertility whereas reduced mortality may allow more children to survive up to adulthood and consequently to form more nuclear families, so that the 1982 census observation on the proportion of nuclear families was close to, but somewhat higher than that of 1950-70 family status life table.

## Comparison between the 1981 and 1950-70 life table outputs

The proportion of nuclear families under the 1981 rates is 51.3 per cent, but 72.2 per cent under the 1950-70 rates. The demographic change (mainly the fertility decline) would bring down the proportion of nuclear families by about 20 percentage points. This striking result may be understood from a simple hypothetical example (see figure 17). Suppose there are four old couples in a population and that each of those four couples has 6 sons and 6 daughters. The children of those four couples get married to each other and form 12 young couples. We assume that three out of four old couples live with one young couple and the other young couples move out of the parental home to set up independent families. Thus, there are 13 families in the population, ten are nuclear families, i.e.

Figure 17.    A simple illustrative example

MODE A:

OLD COUPLES
(FIRST GENERATION)

YOUNG COUPLES
(SECOND GENERATION)

PROPORTION OF NUCLEAR FAMILIES: 10/13 = 77%

MODE B:    (DESIRABILITY OF CO-RESIDENCE REMAIN UNCHANGED)

OLD COUPLES
(FIRST GENERATION)

YOUNG COUPLES
(SECOND GENERATION)

PROPORTION OF NUCLEAR FAMILIES: 2/5 = 40%

MODE C:    (DESIRABILITY OF CO-RESIDENCE IS REDUCED BY 33%)

OLD COUPLES
(FIRST GENERATION)

YOUNG COUPLES
(SECOND GENERATION)

PROPORTION OF NUCLEAR FAMILIES: 4/6 = 67%

77 per cent (Mode A in figure 17). However, if each of the four couples has 1 son and 1 daughter, there will be 4 young couples. Three young couples live with the husband's (or wife's) parents, the other one does not. The nuclear family will account for 40 per cent (Mode B in figure 17). In Mode C (see bottom panel of figure 17), each of four couples has two children (one boy and one girl). Instead of three out of four, we assume only two out of four old parents are living with a young couple (in other words, the desirability of co-residence between parents and married children is reduced by 33%). The proportion of nuclear families would be 67, which is still lower than in Mode A (high fertility and the higher desirability of co-residence). Clearly, the tremendously reduced fertility will bring down the proportion of nuclear families (this argument is not true when fertility is below the replacement level, which will be discussed in the following section).

## FAMILY TYPES BY MARITAL STATUS

Table 13 shows the percentage distribution of families by type as well as the marital status of the mother for the implied stable populations in which the demographic regimes of 1981 and 1950-70 prevail. Several observations can be drawn from table 13.

a) One-female families account for a small proportion in both implied stable populations since few women leave the parental home to set up an independent family before marriage and there are few childless widowed or divorced lone women. Note that the proportion of one-female families in 1981 is somewhat higher than that under the 1950-70 rates. This is consistent with the remarkably increased mean age at marriage in 1981 since a girl has a longer period during which she is exposed to the risk of moving out of the parental home before marriage if she marries later.

b) Nuclear families with a widowed or divorced mother constitute 0.8 per cent under the 1981 rates and 3.2 per cent under the 1950-70 rates. Three-generation families with a widowed or divorced mother account for 1.6 per cent under the 1981 rates and 1.3 per cent under the 1950-70 rates. The proportion of families with at least one widowed or divorced woman (either mother or grandmother) is 15 per cent under the 1981 rates and 15.9 per cent under the 1950-70 rates. Clearly, "incomplete families" have always accounted for a small proportion of the total.

c) The great majority of families are so-called "complete families" of husband and wife (plus children and/or grandparent(s)). Familieswith at least one couple (i.e. either a middle-generation couple, or grandparents or both) constitute of 90.4 per cent under the 1981 rates and 89.4 per cent under the 1950-70 rates. Families with a middle-generation couple (grandparent(s) may be either present or absent) account for 89.7 per cent under the 1981 rates and 88.5 per cent under 1950-70 rates. This surprisingly small difference is consistent with the very slight difference in the ratios of currently married to ever-married women from ages 20 to 45 in 1982 and in the Chinese farm population in 1930, as found by Coale (1984, p. 55, see also table 2.7. It implies that, among women under age 45, the higher incidence of widowhood in 1950-70, which was the main cause of "incomplete families" for those women must have been offset by high rates of remarriage.

Note that the proportion of three-generation families with two couples (parents and grandparents) under 1981 conditions is 33.7 per cent, which is more than twice as high as that under the 1950-70 rates (14.6%). This is mainly due to the proportion of three-generation families under the 1981 rates is significantly higher than that under 1950-70 rates, and partly due to the longer life span of grandparents.

Table 13.    Percentage distribution of family types by marital status according to the model output

| Family type | Year | One female | Husband-wife | Widowed mother | Divorced mother | Total |
|---|---|---|---|---|---|---|
| Nuclear | 1950-70 | 6.9 | 62.1 | 2.7 | 0.5 | 72.2 |
| families | 1981 | 8.0 | 42.5 | 0.6 | 0.2 | 51.3 |
| With lone | 1950-70 | – | 11.8 | 0.8 | 0.1 | 12.7 |
| grandmother | 1981 | – | 13.5 | 0.8 | 0.1 | 14.4 |
| With both | 1950-70 | – | 14.6 | 0.3 | 0.1 | 15.0 |
| grandparents | 1981 | – | 33.7 | 0.5 | 0.2 | 34.4 |
| Total | 1950-70 | 6.9 | 88.5 | 3.8 | 0.7 | 100.0 |
| | 1981 | 8.0 | 89.7 | 1.9 | 0.5 | 100.0 |

In short, our findings show that the majority of Chinese families are "complete families" of the husband-wife type, and that this feature has remained stable.

## HOW WILL THE SIZE AND STRUCTURE OF THE CHINESE FAMILY EVOLVE

Two prospects are usually described in the popular media: Chinese family size will continue to fall and the proportion of nuclear families will continue to increase. We, however, think the second prospect may not be true since the dramatic fertility decline after 1970 reduces the new generation's chance to move out of the parental home if the traditional preference of most parents to live with one of their married children does not change dramatically.

This section explores this problem by analysing related output from implied stable populations under the 1950-70 rates and under the 1981 rates as well as a number of extra simulations. A comment concerning the foreseeable evolution of family structure will also be presented. For ease of presentation, we abbreviate hereafter "the desirability of parents and one of their married children to live together" as "the desirability of co-residence".

What have we learned from the model output under the 1950-70 and 1981 rates?

The model output illustrates quantitatively, the trend of Chinese family structures: if the desirability of co-residence does not change, the average family size would decrease by about 11 per cent under the 1981 rates as compared with the 1950-70 rates, the proportion of nuclear families will decrease significantly (about 20 percentage points) under the 1981 rates as compared with the 1950-70 rates because children who have much fewer siblings will have a smaller chance of moving out of the parental home.

Of course, what this exercise tells us is only "what would be if the 1981 conditions would remain constant" compared with "what would be if the 1950-70 conditions would remain constant". Note that the average family size and proportion of nuclear families resulted from the implied stable populations is not a prediction at all, because the demographic rates will not remain constant. Nevertheless, the exercise does tell us that the effect of the dramatically reduced fertility on reducing the proportion of nuclear families will be substantive.

On the other hand, socioeconomic development will reduce the desirability of co-residence, operating therefore in the opposite direction to the reduced fertility. Whether the real proportion of nuclear families will increase or decrease, depends on which of those two factors will be stronger. In order to explore what would be the effect on family size and structure by changing these two factors, we perform a number of extra simulations, which will be presented in the next section.

## Some extra simulations

With strong and efficient population policies and family planning programmes as well as the modernization process, fertility is likely to be further reduced in China. The rapid economic development will decrease the desirability for parents and their married children to live together. Based on these considerations, we assumed the values of the parameters for the extra simulations, as presented in table 14. We summarize the main outcome of simulations 1 to 8 in table 15 and table 16 for the sake of comparing the effects of TFR, $e_0$ and $n_2$ (TFR, Total Fertility Rate; $e_0$ female life expectancy at birth; $n_2$, proportion of parents who have married children but do not live with any of them).

Table 15 and figure 18 show that the average family size decreases as fertility decreases. If $n_2$ remains the same as that estimated for 1981, the average family size decreased very little from 4.37 to 4.36, when TFR decreased from 2.63 to 2.21 and $e_0$

Table 14. Parameters used and the main outcome of the simulations

| Codes of simulation | 1950-70 | 1981 | I | I' | II | II' | III | IV | IV' | V | V' | VI | VII | VII' | VIII | VIII' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameters** | | | | | | | | | | | | | | | | |
| 1. Expectation of life | | | | | | | | | | | | | | | | |
| Females at birth ($e_0$) | 51.0 | 69.3 | 74.0 | 74.0 | 74.0 | 74.0 | 69.3 | 74.0 | 74.0 | 74.0 | 74.0 | 69.3 | 74.0 | 74.0 | 74.0 | 74.0 |
| Males at birth ($e'_0$) | 49.1 | 66.3 | 70.0 | 70.0 | 70.0 | 70.0 | 66.3 | 70.0 | 70.0 | 70.0 | 70.0 | 66.3 | 70.0 | 70.0 | 70.0 | 70.0 |
| 2. Total fertility rate (TFR) | 5.78 | 2.63 | 2.21 | 2.21 | 1.80 | 1.80 | 2.63 | 2.21 | 2.21 | 1.80 | 1.80 | 2.63 | 2.21 | 2.21 | 1.80 | 1.80 |
| 3. Mean age at childbearing ($\hat{m}$) | | | 27 | 29 | 27 | 29 | 27 | 27 | 29 | 27 | 29 | 27 | 27 | 29 | 27 | 29 |
| 4. Intrinsic growth rate of the implied stable population (⁰/oo) | 25.3 | 5.8 | 0.0 | 0.0 | -7.6 | -7.6 | 5.8 | 0.0 | 0.0 | -7.6 | -7.6 | 5.8 | 0.0 | 0.0 | -7.6 | -7.6 |
| 5. Proportion of parents who have married children but do not live with any of them | | | | | | | | | | | | | | | | |
| urban | 0.365 | 0.365 | 0.365 | 0.365 | 0.365 | 0.365 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.650 | 0.650 | 0.650 | 0.65 | 0.65 |
| rural | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 | 0.270 | 0.270 | 0.270 | 0.270 | 0.270 | 0.400 | 0.400 | 0.400 | 0.40 | 0.40 |
| whole ($n_2$) | 0.181 | 0.195 | 0.195 | 0.195 | 0.195 | 0.195 | 0.350 | 0.350 | 0.350 | 0.350 | 0.350 | 0.500 | 0.500 | 0.500 | 0.50 | 0.50 |
| (proportion of urban population) | 0.142 | 0.208 | 0.208 | 0.208 | 0.208 | 0.208 | 0.350 | 0.350 | 0.350 | 0.350 | 0.350 | 0.400 | 0.400 | 0.400 | 0.40 | 0.40 |
| 6. Proportion of children who leave parental home before marriage | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 7. Mean age at marriage (m) | | 22.8 | 22.8 | 24.8 | 22.8 | 24.8 | 22.8 | 22.8 | 24.8 | 22.8 | 24.8 | 22.8 | 22.8 | 24.8 | 22.8 | 24.8 |
| 8. Divorce level (annual no. of divorces per 1000 married couples, denoted as D) | 2 | 1 | 1 | 5 | 1 | 5 | 1 | 1 | 5 | 1 | 5 | 1 | 1 | 5 | 1 | 5 |

9. Remarriage rates assumed to remain the same

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increased to 74. The reason why there is such little change in family size in this case is that the effect of reduced fertility (from TFR 2.63 to 2.21) is almost compensated for by the decreased proportion of nuclear families (this will be discussed below) and the increasing life expectancy. If $n_2$ and $e_0$ remain unchanged, a further decrease of TFR would result in a sharper decrease in average family size. The average family size decreased as $n_2$ increased when $e_0$ and TFR remain unchanged.

As one may expect, table 16 and figure 19 show that the proportion nuclear families increased with decreased desirability of co-residence if other things remain unchanged. On the other hand, table 16 and figure 19 demonstrate some extremely interesting trends of family structure with changing fertility. Let us look at three rows in table 16. If $n_2$ remains constant and the fertility is above replacement level, the proportion of nuclear families decreases with decreasing fertility; its explanation was given in a previous section. However, the further reduction in the birth rate after fertility reaches the replacement level will increase the proportion of nuclear families e.g. when $n_2 = 0.35$, $e_0 = 74$, the proportion of nuclear families would increase by about 10 percentage points, if total fertility rates decrease from 2.21 to 1.8. Why? The reason is fairly simple: when the number of members of the children's generation is smaller than that of parent's generation, some of the parents have to live away from their married children even if they do not wish to do so, because of the shortage of children in the population. This is, of course, based on the assumption that no married children simultaneously live together with their parents and parents-in-law which is generally true in the society.

Table 15.    Average family sizes under various levels of fertility,
mortality and the desirability of co-residence according
to the model output

| | $e_0 = 69.3$ | $e_0 = 74.0$ | |
| | TFR = 2.63 | TFR = 2.21 | TFR = 1.80 |
|---|---|---|---|
| $n_2 = 0.195$ | 4.37(1981) | 4.36(II) (4.21,I') | 3.65(VI) (3.51,II') |
| $n_2 = 0.350$ | 4.01(III) | 3.87(IV) (3.73,IV') | 3.28(V) (3.21,V') |
| $n_2 = 0.500$ | 3.69(VI) | 3.55(VII) (3.46,VII') | 2.97(VIII) (2.94,(VIII') |

Note:   The codes of simulations are given in parentheses; for other
parameters used, see table 14.

Figure 18.    Average family sizes under various levels of fertility,
mortality and the desirability of co-residence according
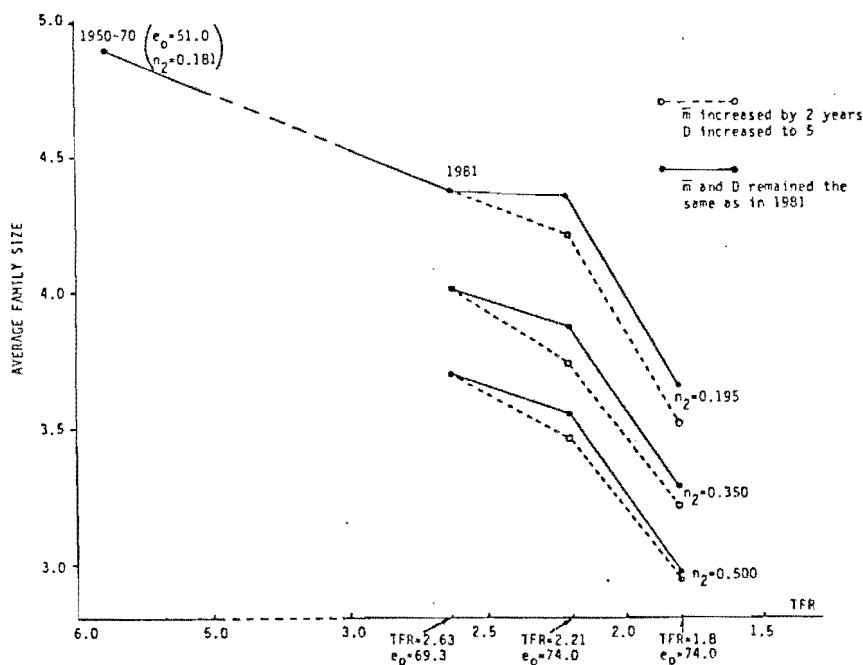to the model output

Table 16.     Percentage of nuclear families (including one-person families) under various levels of fertility, mortality and the desirability of co-residence according to the model output

| | $e_0 = 69.3$ | $e_0 = 74.0$ | |
| --- | --- | --- | --- |
| | TFR = 2.63 | TFR = 2.21 | TFR = 1.80 |
| $n_2 = 0.195$ | 51.25(I) | 40.92(I) (47.21,I') | 56.07(II) (62.02,II') |
| $n_2 = 0.350$ | 64.01(III) | 59.97(IV) (65.63,IV') | 68.84(V) (72.93,V') |
| $n_2 = 0.500$ | 74.69(VI) | 70.49(VII) (74.57,VII') | 79.68(VIII) (82.01,VIII') |

Note:   The codes of simulations are given in parentheses; for other parameters used, see table 14.

Figure 19.     Percentage of nuclear families (including one-person families) under various levels of fertility, mortality and the desirability of co-residence according to the model output
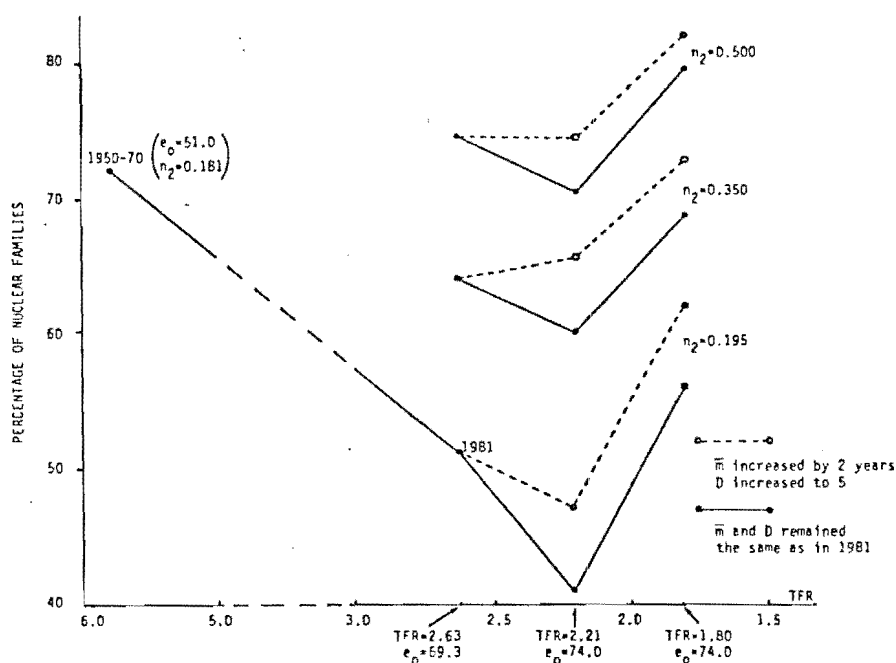
Note that simulations 1 to 8 assume the nuptiality and divorce pattern to be constant, as in 1981. This is obviously not the case in reality. But for the purpose of identifying the effects of a foreseeable further decline in fertility and in the desirability of co-residence, we need to control the variables of nuptiality and divorce. The choice of assuming constant nuptiality and divorce can facilitate this purpose.

Now let's consider what will be the effects of changing nuptiality and divorce on family size and structure. We modify the inputs of simulations I, II, IV, V, VII and VIII by increasing the mean age at marriage (m) and at childbearing by two years, increasing the divorce level (D) from one to five, while the other parameters remain the same as the ones previously used. We call these modified simulations, simulations I', II', IV', V', VII' and VIII'. The main outcome of simulations I', II', IV', V', VII' and VIII' are shown in the parenthesis in the tables 15 and 16and plotted as dotted lines in figures 17 and 18. The results show that the average family size decreases by a margin of 1-4 per cent and the proportion of nuclear families increases by a margin of 2.2-6.3 percentage points as m increases by 2 years and D increases to 5.

The mean ages at marriage have fluctuated around 22.8 since 1977 (22.6 in 1977, 23.1 in 1979, 22.7 in 1982). It is unlikely that it will increase rapidly in the foreseeable future. The divorce level is also only expected to increase gradually. Therefore, the assumptions concerning the possible increase of m and D in simulations I', II', IV', V', VII' and VIII' (m increased by two years, D increased fivefold) are rather extreme. Even so, their effects on family size and structure are not major. We can thus assume that the most important demographic factors affecting Chinese family size and structure will be the decreasing TFR and $n_2$, rather than m and D.

As we stated at the beginning of this chapter, the simulations are not projections. Nevertheless, they do show how the Chinese family size and structure will change with changing fertility, nuptiality, divorce, mortality and the desirability of co-residence. Thus a number of observations can be drawn from these simulations:

a) Chinese family size will steadily decrease with the expected decrease in fertility and the desirability of co-residence and the gradual increase in age at marriage and the divorce level.

b) If the desirability of co-residence does not decrease dramatically, the proportion of nuclear families will decrease when the children born in the 1970's reach the family formation stage, since people of the new generation who have a reduced number of siblings will have a smaller chance of moving out of the parental home to form an independent nuclear family. However, when fertility is below the replacement level, a further reduction of TFR would increase the proportion of nuclear families. On the other hand, the gradually increasing

mean age at marriage and the divorce level may partly compensate for the effects of the dramatic fertility decline on the decreasing proportion of nuclear families.

c) If the desirability of co-residence decreases rapidly, the effects of decreasing fertility (as long as it remains above replacement level) on the decreasing proportion of nuclear families will be compensated for to a large extent, or even wholly.

d) The change in fertility and the desirability of co-residence can occur simultaneously. But the fertility change, unlike the changing desirability of co-residence, cannot affect the proportion of nuclear families immediately after the change (it does affect family size immediately) because the reduced or increased number of children per couple mainly influences the proportion of nuclear families by reducing or increasing the children's chance to move out of the parental home when the children grow up. Therefore, the detained effects of changing fertility should be taken into account.

## The future of Chinese family structure: two opposing forces?

In this section we comment on the above four observations drawn from the simulations.

With an efficient family planning network, improved contraceptive services and education, and with people's changing attitudes toward the number of desired children - more and more couples, especially in urban areas and some economically advanced rural areas, wish to have fewer but better qualified children - we may expect fertility to continue to fall. We may also expect the mean age at marriage and the divorce level to gradually increase with the process of modernization. Rapid socioeconomic development will gradually reduce the desirability of co-residence. Therefore, observation (a) from the simulations is likely to be materialized in the future, namely, the Chinese family size will steadily decrease with the expected decrease in fertility and in the desirability of co-residence.

Is situation (c) from the simulations likely to take place in the near future? In other words, will the desirability of co-residence decrease dramatically so that the effect of the remarkable fertility decline will be compensated for completely? Our answer is negative. To illustrate why we suspect situation (c) is unlikely to occur in the near future, we will list and compare two different categories of socioeconomic factors which operate in opposite directions.

The factors which accelerate the decrease in the desirability of co-residence are as follows:

(1) Rapid economic development and improvement of education will increase people's demand for cultural life. Growing

availability of the mass media (e.g. telephones and TV sets) and transportation (e.g. automobiles) will ease communication between family members, even if they are not living in the same house or in the same area. With the adoption of a modern life style, the gap between the young generation and the old generation regarding the preference of family life will gradually increase. This change will decrease the desirability of co-residence.

(2) Severe housing constraints in the urban areas will be gradually relieved because of widespread housing construction, which will allow more young people to live away from their parents.

(3) With the relaxation of restrictive policies on migration, the scale of rural-urban and urban-urban migration will become larger. In fact, the Chinese government has permitted, or even encouraged peasants to go to the towns or cities to invest in shops or enterprises, although the government promotes so called "Li Tu Bu Li Xiang" (meaning: transfer from farming to industrial or commercial activities without moving away from the village). The migrants are usually young people. Their elderly parents will either stay in the original place or join the migrants until they settle down in the new place. Separation (maybe temporary) of some family members is expected, if migration gathers force.

(4) With the process of urbanization, the proportion of old people in urban areas who rely on pensions or social security will increase. This will reduce the necessity for those old parents to live with one of their married chilren. Of course, a pension cannot be equated with living away from children in China since the pension system was introduced many years ago for employees working in state- or collective enterprises in the urban areas, whereas a considerable majority of elderly urban parents (most of them are entitled to a pension) live with a married child.

On the other hand, several other factors will be acting in the opposite direction to the decreasing desirability of co-residence.

(1) As we have indicated in section 1, the collective mode of production and income distribution suppresses the profitability of maintaining a larger multi-generation family in the 1950's, 1960's and 1970's. However, from the early 1980's, under the responsibility system, peasant families became the production unit instead of production team. According to a recent survey of 2035 peasant families in Sichuan province, the so called better-off specialized households have a larger average family size and higher proportion of three-(or more than three) generation families (see table 17).

Table 17.   Comparison of family size and structure between
better-off specialized families and ordinary families in
rural areas

|  | Average family size | Percent of multi-generation families | | |
|---|---|---|---|---|
|  |  | 3-gene-rations | more than 3-gene-rations | Total |
| Better-off specialized households | 6.07 | 35.15 | 2.48 | 37.63 |
| Ordinary households | 4.52 | 22.26 | 0.98 | 23.24 |

Source:   A recent survey of 2036 peasant households in Sichuan
province, see Zhao (1985, pp. 26-27).

In the urban areas, the number of privately owned small shops, restaurants, hotels etc. have grown very fast in recent years. Up to the end of 1985, the total number of privately owned industrial and commercial households holding an officially issued license was 10.2 million (People's Daily, June, 17, 1986), an increase of 25.5 per cent compared with 1984. The total personnel in those privately owned industrial and commercial enterprises was 17.6 million, an increase of 34.8 per cent compared with 1984. The total personnel of privately owned industrial and commercial households has exceeded the total number of employees in the state-owned commercial (not including industry) system by more than three million (People's Daily, February 23, 1986). The Chinese government has obviously allocated an increasingly large role to the private section in the country's modernization process.

Those private enterprises are usually owned and run by people who are from the same family, or else they are close relatives. Given the very low automation in agricultural and private industrial or commercial production, it appears profitable for peasants and those urban privately owned industrial and commercial households to maintain larger families through division of labour and mutual care in work and daily life among the family members.

(2) It is unlikely that the pension system will spread rapidly throughout the rural areas in the foreseeable future. A great majority of the peasants will still depend economically on their children when they are old.

(3) Although there is no officially stated government policy which promotes three-generation families, there is clear evidence that the Chinese government is in favour of maintaining the three-generation family as one of the major family type for the sake of upholding a Chinese cultural tradition, and due to the economical savings for the state on old age care. For instance, both the current Marriage Law and the current Constitution state explicitly that children have full responsibility for caring for their parents in old age. Another example is that a considerable majority of "model families", which are selected by the locals and the community each year and are honoured, are three-generation families (Liu Yin, 1985).

(4) As discussed earlier, the expected rural-urban or urban-urban migration may result in, on the one hand, the division of some families and on the other hand, it may result in an increase in the number of extended families due to the fact that some young migrants may temporarily live with relatives and because rural-urban migration may aggravate the housing constraints in urban areas.

(5) The ethical tradition of "respect to, and care for the elderly" will continue to play an important role. Psychologically speaking, most old Chinese parents will continue to dislike being alone and prefer to have a warm family environment with a married child and grandchildren living with them (Lin Xiao and Bi Ka, 1984).

This argument is supported by the persistence of traditional extended families in the Taiwan province of China. It is well known that Taiwan is now an industrial-commercial society. Most families own motor-cycles or cars. Universal mass media (e.g. television) link almost everyone to local and international communication networks. The educational system takes more than 95 per cent of all children to the ninth grade. It might have been expected that such changes would greatly hasten Westernization and nuclearization of the family. However, according to the 1973 and 1980 surveys, while there has been a significant decline in the prevalence of extended family types as compared to what it used to be, about 40 per cent of all ever-married women of childbearing age were living in extended families and a considerable majority of older parents (80% in 1973, 76% in 1980) were living with a married son. It was still true that a majority of husbands' parents living with a married son even in the most modern strata - 72 per cent among the best educated, 68-71 per cent in the big cities, as

Table 18.  Indicators of economic development and family structure in Taiwan, selected years

| Indicators of economic and educational development a) | | | | |
|---|---|---|---|---|
| Calendar years | 1952 | 1960 | 1972 | 1979 |
| GNP index * | 100 | 176 | 580 | 1006 |
| Total industrial production index | 100 | 243 | 1658 | 3835 |
| Percentage of population aged 6 and over who are illiterate | 42 | 27 | 13 | 11 ** |
| Percentage of primary school graduates enrolled in junior high school | 34 | 51 | 84 | 96 |
| Automobiles per 1000 population | 1.0 | 2.0 | 9.3 | 25.7 ** |
| Telephones per 1000 population | 3.9 | 8.6 | 38.9 | 122.6 ** |
| Television sets per 1000 households | – | – | 670 | 990 ** |

| Indicators of family structure b) | | 1973 | 1980 |
|---|---|---|---|
| Calendar year | | 1973 | 1980 |
| Percentage of respondents living in nuclear families | | 60.0 | 60.6 |
| Percentage of respondents living in extended families | | 40.0 | 39.4 |
| Percentage of respondents living in extended families among those with parents available | | 54.4 | 48.7 |
| Percent of respondents' husbands' parents living alone | | 19.9 | 24.2 |

Source: a)  Council for International Economic Cooperation and Development, Taiwan Statistical Data Book.
*  At constant 1976 prices adjusted for gain or loss due to changed terms of trade.
** 1978 data.
b)  The data of family stucture for 1973 and 1980 come from two carefully designed samples, which represent all ever-married women of childbearing age in Taiwan. (The respondents are ever-married women of age 20-39). Freedman et al., 1982.

compared with 87-89 per cent among those living on farms (Freedman et al., 1982, p. 405). Table 11 shows indices which illustrate Taiwan's rapid economic development and the persistence of the extended family. Rapid economic development has been accompanied by some changes in co-residential patterns. However, these familial changes do not replicate the Western nuclear model, as some might have anticipated. It is possible that co-residence patterns might merely be lagging - changing more slowly than other aspects of society. It is also worthwhile to point out that the Total Fertility Rate fell from 5.61 in 1961 to 2.67 in 1979 in Taiwan. The effect of the tremendous fertility decline on proportions of nuclear families was not yet reflected in the 1980 Taiwan survey since the cohorts born under reduced fertility, who have a much smaller number of siblings, had not yet reached the family formation stage. But it will be operating in the opposite direction to the effect of modernization on the proportion of nuclear families when children born in late 1960's and 1970's grow up.

To summarize, the actual change of Chinese family structure will be the balance of the above-mentioned two categories of factors which act in opposite directions. We suspect that the average desirability of co-residence in China is not likely to decrease rapidly; instead, it will first remain more or less stable or decrease slowly, and then decrease steadily. On the other hand, the tremendous reduced number of births after 1970 will affect the family structure in the coming years, namely, those children born in the 1970's will begin to reach the age of family formation; they will have less chance of leaving the parental home to set up an independent nuclear family since they have a much smaller number of siblings than the people who have already passed, or who are now in the process of family formation. Thus the proportion of nuclear families will decrease in the near future, given that the desirability of co-residence is not likely to decrease dramatically. If fertility continues to drop to below the replacement level, and when children born under a given fertility regime - that is, below the replacement level - reach the age of family formation, some elderly parents will not be able to live with any married children even if they wish to do so. At that time, the decreasing fertility will intensify the effect of the gradually decreasing desirability of co-residence on the increasing proportion of nuclear families.

In short, in the foreseeable future the proportion of nuclear families will first decrease and then increase again. Of course, it is still an open question to what extent, and how quickly the Chinese family structure will change. It certainly deserves further study by both sociologists and demographers.

## CONCLUSIONS

The review in part one of this article shows a demographic profile of family dynamics in China by presentation and discussion of observed family size, structure and its determinants, such as nuptiality, fertility and mortality. The Chinese family has become a smaller unit and is more likely to be a nuclear family, compared with what it used to be. It is very impressive that fertility and mortality have been remarkably reduced, and the late marriage pattern has emerged.

We applied a family status life table model, which is an extension of Bongaarts' method, to observed or estimated Chinese data for 1981 and 1950-70 to investigate how the tremendous change in fertility, marriage and mortality would affect people's family life course and to ascertain what would be the implications of two completely different sets of demographic rates in 1981 and 1950-70 on changing family size and structure. Some more impressive, and more interpretable measurements, as compared with the conventional measurement in part one, have been derived through the application of our model.

According to the family status life tables, a girl who survives to age 15 would expect to live 2.4 years more in the never-married status and enjoy 8 years more in the currently married status during the rest of her life under the 1981 rates, than a 15-year-old girl would expect to do under the 1950-70 rates.

The proportion of 50-year-old women of parity higher than three, who experience the 1950-70 rates, would be 3.9 times as high as women of the same age, who experience the 1981 rates. Under the 1950-70 rates, a cohort member surviving to age 15 is likely to spend about 25 years (76.9% of the rest of her life) with at least one surviving child under age 18, 50 per cent of which will be spent with more than two children. A 15-year-old cohort member who experiences 1981 rates would expect to spend 22 years (only 37.9% of the rest of her life !) with at least one child under 18 years old, of which only 22 per cent will be spent with more than two. The number and the proportion of years of overload (with simultaneous responsibilities to elderly parent(s) over 65 and young children under 18, irrespective of the number of young children, is somewhat larger under the 1981 rates than under 1950 conditions due to the extended life span in 1981. However, the proportion of a woman's life time beyond age 15 spent in the very heavy overload (with parent(s) over 65 and more than two children under 18) under the 1950-70 rates is about two times as high as that under the 1981 rates because of the much higher fertility in 1950-70.

Clearly, the family status life table is a very good tool for investigating the family life course. On the other hand, perhaps the most impressive outcome of our family status life table model is the

distribution of family by size, number of generations, marital status and age of female members (or reference person) of the family. The model output shows how decreasing fertility may reduce family size. Another extremely interesting finding of this exercise is that when young people born after the tremendous fertility decline reach the age of family formation, given that certain proportions of parents wish to live with one of their married children, they will have a much smaller chance of forming an independent nuclear family since they have a much smaller number of siblings; thus the proportion of nuclear families will decrease. If, however, fertility continues to fall after reaching the replacement level, a further reduction in the birth rate will raise the proportion of nuclear families. In that case, some parents will find it impossible to live with their married children even if they wish to do so because of the shortage of children.

The simulations tell us that because of the remarkably decreased fertility, the average family size would be reduced by about 11 per cent and the proportion of nuclear families would be brought down by about 20 percentage points under the 1981 rates as compared with what would be found under the 1950-70 rates. Our findings also show that the majority of Chinese families are "complete families" of the husband-wife type and this feature has remained stable.

## APPENDIX

### DATA AND ESTIMATIONS

The family status life table can be constructed using the following data: (1) age-marital status-specific death rates; (2) age-specific occurrence/exposure rates of first marriage, widowhood, divorce and remarriage; (3) age-parity-specific occurrence/exposure rates of birth. If there is no parity birth control in the study population, the age-specific, rather than the age-parity-specific, occurrence/exposure rates of births can be used. (4) Proportion leaving parental home before marriage, and its age schedule. (5) Proportion of parents, who have married children, but do not live with any of them and the schedule of children leaving the parental home by duration in the ever-married state. All the needed age-specific rates and probabilities are single-age-specific between the lowest and the highest age at childbearing (15 and 49, say) and 5-year-age-specific for other ages with the exception of ages 0 to 1 and 1 to 5.

### DEATH RATES

The death rates are derived from China's 1982 census data (Jiang et al., 1984). The age intervals in published death rates are five years, except ages zero to one and one to five. We obtained the single-age-specific death rates from ages 15 to 49 by linear interpolation.

Death rates at other ages are taken directly from Jiang's life table. For the period 1950-1970, we adapt two intercensus life tables estimated by Coale (1984, p. 67). We give the proper weight to the 1953-64 life table (0.647) and the 1964-1982 life table (0.353), respectively, in order to obtain a set of weighted average death rates for the years 1950 to 1970. The single age-specific death rates between ages 15 to 49 are derived by linear interpolation. The marital status-specific death rates are not available for this study, we therefore assume that the death rates are the same for all marital states. Since divorce rates are very low in China and widows and divorcees remarry quickly if they are not too old, we expect that to assume the same death rate for all marital states would not create siginificant errors.

### OCCURRENCE/EXPOSURE RATES FOR FIRST MARRIAGE

China's 1982 one-per-thousand fertility survey published female single-age-specific reduced events of first marriage (some authors

call it a frequency distribution or rates of the second kind) for calendar years 1940 to 1981.

What we need are the occurrence/exposure rates, which are defined as the number of first marriages, divided by the number of person-years lived in the never-married status in the age interval.

The number of person-years lived in the never-married state in an age interval can be approximated as the number of never-married women of that age in the middle of the year. Since the denominators of reduced first marriage and the denominators of the proportion never-married are the same when mortality and external migration are disregarded, which is often the case for retrospective fertility survey data, the occurrence/exposure rate of first marriage is equal to the age-specific reduced first marriage rate divided by the proportion never-married in the middle of the year. We took the age-specific proportion never-married to be one minus Coale's age-specific, period estimate of the proportion of women ever married (Coale, 1984, table A.4). The estimates of occurrence/exposure rates for 1981 and the average occurrence/exposure rates for 1950-70 are plausible except after age 30, because so few women are unmarried and so few marriages occur after this age. To reduce the noise, we estimate the occurrence/exposure rates over age 30 by extrapolation.

## WIDOWHOOD RATES

The female widowhood rates can be estimated from the differences between the average age at first marriage for grooms and brides and the mortality rates for married males. On the basis of China's 1982 census data, it was estimated that the difference between age at first marriage for males and females was 2.69 years (Li Rongshi, 1985, p. 28). For the sake of convenience, we approximate the difference of age at first marriage in 1981 and 1950-70 as 2.5 years instead of 2.69 years. If we assume that mortality is equal in all marital states, the male death rate $d(x+2.5)$ (which is estimated by the average of $d(x)$ and $d(x+5)$ or the average of $d(x+2)$ and $d(x+3)$) can be said to represent the female widowhood rate.

## DIVORCE RATES

Following a similar methodology for constructing model life tables and using the age-specific divorce rates of 48 countries listed in the United Nations Demographic Yearbook 1968, Krishnan and Kayani (1976) constructed model divorce tables with 13 levels, defined as the number of divorces per 1000 married couples in a

given year. The estimated divorce level of Chinese women (i.e. the number of divorces per 1000 married couples) was about 1 in 1981 and 2 in 1950-70 (see section 1). From Krishnan's model divorce table, we derived age-specific occurrence/exposure divorce rates of level 1 for 1981 and of level 2 for 1950-70.


## REMARRIAGE RATES

In China, published age-specific remarriage rates by previous marital status have not yet become available. We do have data on the proportion widowed and divorced from the 1982 census, the divorce levels in the past 30 years estimated by the published number of divorces between 1950 and 1981 (Li Ning, 1985), and on life expectancy at birth in the past 50 years using well-established indirect estimation techniques based on 1982 census data (Brass, 1984) and on first-marriage rates for the years from 1950 to 1981 or for cohorts whose members were 15-49 years old in 1982. We propose an indirect estimation procedure to derive remarriage rates by previous marital status using the above-mentioned available data (Zeng, 1986a).


## AGE-PARITY-SPECIFIC OCCURRENCE/EXPOSURE BIRTH RATES

China's one-per-thousand fertility survey published single-age-parity-specific reduced events of birth, which are defined as the ratio of the number of births classified by parity and the age of the mother to the total number of women of the corresponding age. The period parity progressive ratios based upon a synthetic cohort life table using the survey data were published very recently (Feeney, et al. 1985 and Ma Yingtong and Wang Yanzu, 1985). However, what we need is the age-parity-specific occurrence/exposure birth rates, which take the exposure into account. The numerators of the occurrence/exposure rates are the same as those of the reduced birth rates, namely, the number of births classified by parity (p) and age of the mother. The denominators of the occurrence/exposure rates differ from those of the reduced rates; they are not the total number of women of a given age, but the number of person-years lived in parity p-1 by women of the corresponding age. These required age-parity-specific occurrence/exposure birth rates are not yet available for this study. We therefore estimate 1981 age-parity-specific occurrence/exposure birth rates by a two-step procedure using available data.

Step 1.  **Estimation of the preliminary age-parity specific occurrence/exposure birth rates**

Multiplying the age-specific proportion distribution of the number of surviving children of women from the one-per-thousand fertility survey by age-specific ratios of the number of women classified by number of children ever born, to the number of women classified by number of children surviving from the 1982 census, we obtain the single-age-specific proportional distribution of parity at the survey time (mid-1982). Assuming that the age-parity-specific reduced events of birth from mid-1981 to mid-1982 are the same as those throughout 1981, and combining them with the age-parity-specific proportional distribution in the middle of 1982, we estimated the age-parity-specific proportional distribution in mid-1981. Dividing the observed single-age-parity-specific reduced events of birth by the estimated single-age-specific parity distribution, we obtained the estimates of single-age-parity specific occurrence/exposure rates of birth except for first birth. Since the estimated proportion of women with parity zero includes never-married women, we divide the rates of first birth by the proportion ever-married to estimate the occurrence/exposure rates of first birth for ever-married women. We do not have the same problem for birth rates of orders higher than one since the numbers of never-married women with parity one or higher are negligible.

Step 2.  **Improvement of the estimated rates**

The age-parity-specific birth rates in 1981 derived from step 1 need to be further improved since they were not estimated from the same survey data source. This step is to adjust the estimates in step 1 using the published period parity progression ratios (Feeney et al., 1985). Applying the estimated age-parity-specific occurrence/exposure rates of birth and first marriage to a synthetic cohort, we obtain a set of parity progression ratios. Comparing these ratios with the published period parity progression ratios, which are also based upon a synthetic cohort life table using age-parity-specific occurrence/exposure birth rates from the survey (but the occurrence/exposure birth rates used have not been published), we proportionally reduce (if the estimated ratio is higher than the published one) or increase (if the estimated ratio is lower than the published one) the age-parity-specific occurrence/exposure rates of birth estimated in the first step. Repeat this procedure

until there are no further improvements. We finally obtained a set of age-parity-specific occurrence/exposure birth rates which produce, in combination with nuptiality rates, the parity progression ratios that are exactly the same as the published period parity progression ratios. Although the timing of parity-specific fertility may only be an approximation due to the indirect estimation procedure, the estimated total fertility level and implied final parity distribution are fully consistent with the published ones.

Using the single-age-parity-specific occurrence/exposure rates of birth for 1981 as a basic schedule, we shift all the curves of birth rates with different birth order to the left by 3 years since the mean age at first marriage in 1950-1970 is about 3 years lower than that in 1981. Then we follow the procedure described in step 2 and estimate a set of single-age-parity-specific occurrence/exposure rates of birth, which produce precisely the mean age of the first marriage schedule and period average parity progression ratios for the period 1950-1970, which are approximated from the 1982 census observation of parity distribution of women aged 50-59 since the fertility experience of this age group stands for the fertility level in 1950-70.

## SEX RATIO AT BIRTH

The one-per-thousand national fertility survey of China held in 1982, reported a total of 818,876 live births by sex from 1930-1981. There were 425,904 male births and 392,972 female births. The overall mean sex ratio at birth was 108.4 (Li and Tuan, 1985).

## PROPORTION ULTIMATELY LEAVING THE PARENTAL HOME

The estimator of the proportion ultimately leaving the parental home can be found in Zeng (1986b). The required data on the total fertility rate, mean age at childbearing, proportion of baby girls among all births and the probability of surviving from birth up to the mean age at childbearing, can be directly obtained from the observed data described in the previous sections. The proportion of women who do not give birth to a live child during their lifetime has been derived from census data.

For reasons discussed in the first section, we assume that the proportion of parents who have married children but do not live with any of them, $n_2$ remains stable from the mid-1950's to 1981.

Another important reason for assuming the stability of $n_2$ is to ascertain the pure effect of the remarkable changes of demographic

variables such as nuptiality, fertility and mortality from 1950-70 to 1981 on family size and structure.

According to a survey among 709 elderly persons (males over 60; females over 55) in Lanchou, a city with about 2.3 million inhabitants, 36.5 per cent of the respondents do not want to live with their married children (Lin Xiao and Bike, 1984). We therefore assume that $n_2$ is 36.5 among the urban population.

In rural areas, about 97.5 per cent of the elderly are economically dependent on their children (Yun Kalin, 1985, p. 106). This clearly indicates that a great majority of old parents live with a married child. We assume that in rural areas the old parents who have married children but do not live with any of them accounted for 15 percent.

Using the proportion of the rural and the urban population, in 1981 and 1950-70 (SSB, 1984, p. 81), we estimated the weighted average $n_2$ for the whole country in 1981 and 1950-70, respectively.

For both periods, we adapted a timing schedule of leaving the parental home by marriage duration, derived from the survey report of China's in-depth fertility survey (SSB, 1986).

We assume that 5 per cent of all cohort members who survive at least up to age 18 leave the parental home before marriage but after age 18, for both 1981 and 1950-70. A time schedule is also assumed.

It should be noted that the arbitrary assumed proportion and its time schedule of leaving the parental home before marriage, but after age 18, may not be true, but it is unlikely that it creates significant errors because the proportion is so small and because the period between age 18 and marriage is not long.

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