

## The Fertility Decline in China: The Contribution of Changes in Marital Status and Marital Fertility

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*The policy prospects for retaining a low level of fertility must take into account the effects of socio-economic development on fertility*

The dramatic decline in Chinese fertility during the past three decades is well known. The 1982 population census of China reveals that the total fertility rate fell from 5.93 in 1950 to 2.63 in 1981 (China Population Information Centre [CPIC], 1983).

The factors fostering the fertility transition in China are a matter of debate among demographers, both in China and abroad (Mauldin, 1982; Chen, 1983; Banister, 1984; P. Chen, 1984; Coale, 1984a; Tien, 1984; Bongaarts and Greenhalgh, 1985; Wolf, 1986; and Poston and Gu, 1987). The facts mentioned most frequently as underlying the decline include the changing roles and aspirations of women, postponement of marriage, and the impact of family planning and increasing use of reliable contraceptives in particular. These authors have not taken into account the distinction between the underlying variables (such as social norms about family, or economic conditions) and the intermediate variables (factors affecting exposure to intercourse and conception, and factors affecting gestation and successful parturition) through which the underlying variables affect fertility (Davis and Blake, 1956).

This article attempts to fill this void by examining the possible impacts of changes in nuptiality and marital fertility patterns on fertility in China. Its purpose is to quantify the components of the decline in annual fertility in China from 1953 to 1981 in such a way as to facilitate future research on the underlying and intermediate variables which are likely to affect fertility. For this special purpose, Coale's indirect standardization procedure, which distinguishes the impacts of women's marital status and fertility within marriage on overall fertility, is used.

This study analyzes the data primarily from China's 1982 One-per-Thousand Sample Fertility Survey conducted by the State Family Planning Commission. Retrospective histories of child-bearing and marriage of women aged 15-67 were obtained by this survey. The survey also included data on contraceptive practice, education, occupation, recent abortions and possession of a one-child certificate. Coale (1984) and several others, after scrutinizing the quality of the data, have concluded that the data are reasonably reliable and allow much more accurate and more detailed study than has been possible until now.

Following the introduction, a discussion is presented on the nationwide trends in nuptiality, including total female first-marriage rate, age at first marriage, and nuptiality pattern. The third part of the article examines the data related to declining marital fertility. In the fourth part, after a brief discussion of Coale's indirect indices (Coale, 1965, 1970), the article assesses the contribution of marital structure and marital fertility based on the measures of the relationship between overall fertility and its components: marital fertility and an index of the proportion currently married. The article concludes by discussing some research and policy implications of the findings. We hope that the results presented here will contribute to a better understanding of China's recent fertility trends.

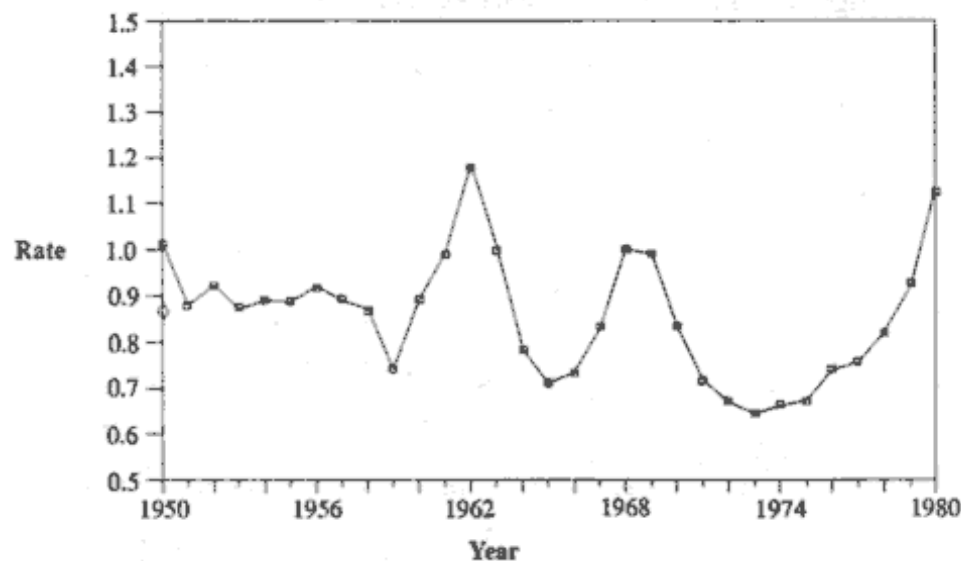
### Changes in nuptiality patterns

Sustained fertility decline is typically the outcome of changes in demographic behaviour that occurred earlier in time. This is also true of the impact of marital status of fertility in China. Whenever the age of marriage changes, some years pass before the change in number of newly married women moves through the initial ages of child-bearing and has its full impact.

### Total female first-marriage rate (TFFMR)

TFFMR, obtained by summing age-specific female first-marriage rates and indicating the number of females who will ever marry per thousand females in a population, has differed from unity in most years, often substantially (figure 1). For example, it was at a high of 0.89 in 1954, fluctuated throughout the 1950s, reached a low of 0.74 in 1959 during the Great Leap Forward, rebounded to a high of 1.19 in 1962 as the economy and society recovered from that venture and the "bitter year" of 1960/61; TFFMR fell again to 0.71 and 0.73 in 1965 and 1966, respectively, at the beginning of the Cultural Revolution. It increased to unity in 1969. TFFMR dropped rapidly to a low point of 0.64 until 1973. In 1973, the TFFMR was at only 64 per cent of the 1968 level. It then gradually rose, reaching 1.1 in 1980. In 1980 and the first six months of 1981, it rose in part due to the new marriage law of 1980, and in part to the large "baby-boom" cohorts of women born at the beginning of the 1960s. The marriage boom in turn caused increased births in 1981 and 1982 and exerted a continued upward pressure on births throughout the 1980s.

Figure 1: Total female first-marriage rate, China, 1950-1980



Source:China Population Information Centre, 1983, pp. 233-235.

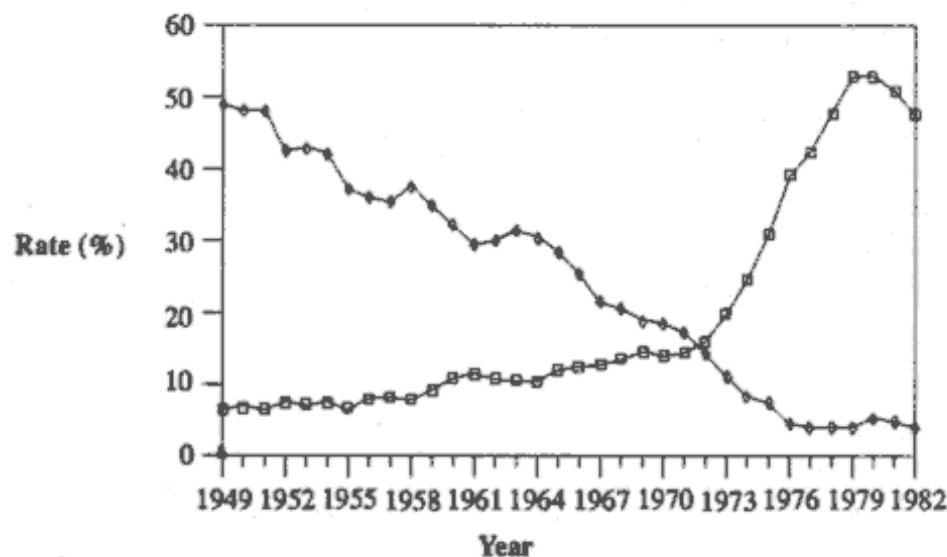
### Age at first marriage (AFM)

AFM identifies the onset of exposure to the risk of socially sanctioned child-bearing, and as such, it is thus a principal determinant of the number of births a woman will have (Bongaarts, 1983).

Early and universal marriage was pervasive in traditional China. Data from before 1949 indicate that AFM was 17-18 years for women and 20-21 for men: 90 per cent of women married before age 20; few remained single after 25. AFM calculated for the 1940s is little different from that for 1950 (18.5 compared with 18.7). The increase in AFM was relatively gradual during the 1950s and the 1960s, and then became relatively rapid during the 1970s. Throughout the 1970s, the family planning programmes raised the age of marriage by controlling the issue of marriage permits. It became increasingly difficult to obtain permission to marry if the marrying couple did not meet the minimum age requirement: usually 23 years for women and 25 for men (Chen, 1985). By 1980 it had reached 23.1 years (25.2 for urban and 22.5 for rural areas) (Zhao and Yu, 1983).

The steady rise in AFM reflects the steady increase in the late marriage rate (LMR) and the early marriage rate for females (figure 2). In 1950, the LMR (defined as the percentage of women who marry after attaining 23 or more years of age) was 7 per cent for China as a whole. By 1971, LMR was 14 per cent. This rate had risen to 53 per cent up to 1981 (Wen and Wei, 1983). Obviously, without this change, the AFM could not have risen as it did.

Figure 2: Late and early marriage rate, China, 1949-1982



Source:Wen Zhifu and Wei Cen, 1983, pp. 126-129

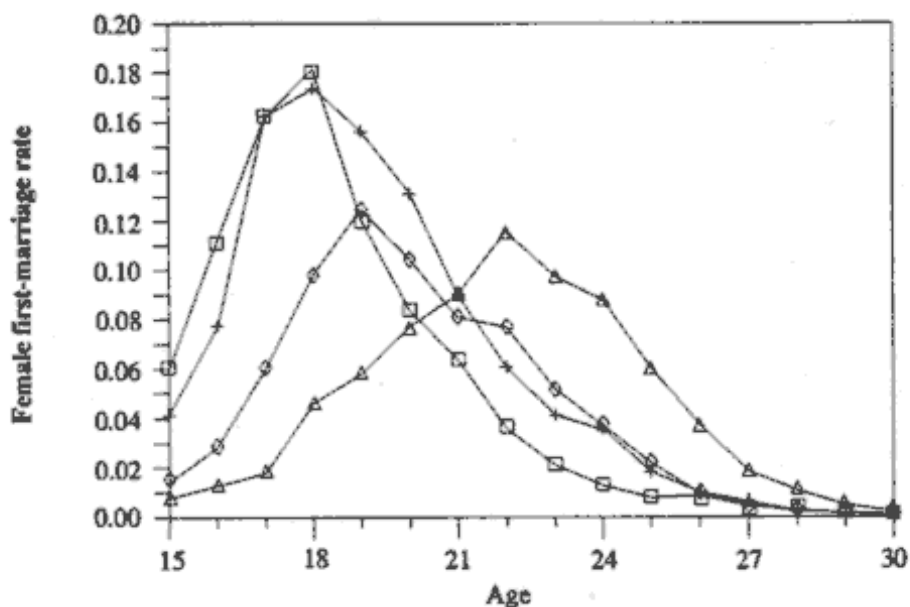
Notes: □ = Late marriage rate; ◇ = early marriage rate.

The early marriage rate (EMR) (defined as the percentage of women who marry at 18 years of age or earlier) also correlates with the steady rise in AFM. In 1949, EMR was 49 per cent for China as a whole. In 1960, this fraction had fallen to almost 32 per cent. Between 1949 and 1970, EMR was 34.7 per cent for the country as a whole. Since 1970, the proportion has fallen to about 4 per cent. During those 12 years, EMR was only 7 per cent for the whole country (Wen and Wei, 1983). That LMR and EMR were equal in the year 1972 suggests a surprising coincidence with the timing of the implementation of the population policy "later, longer, fewer" in 1971. This rapidly rising tendency to delay marriage obviously thinned out the actual number of marriages until the rise in mean age ceased as a result of the new marriage law which went into effect in 1980 (Coale, 1985).

## Age patterns

The cumulation of age-specific rates of entry into first marriage contributes to TFFMR. Figure 3 delineates the age-specific female first marriage rates (ASFFMRs) for 1955, 1963, 1971 and 1977. During the 1950s and 1960s, ASFFMR plummeted after about age 18, a pattern characteristic of general resort to the legal minimum age at marriage (18 years for women, according to the marriage law of 1950), even though norms concerning age at marriage were already beginning to change. In contrast, by 1971 and 1977, the peak had been postponed and the fall after the peak had become more gradual, as changing marriage policies, especially the policy "later, longer, fewer" in 1971, and socio-economic factors began to cause women to delay marriage. This can be seen especially from the pattern for the year 1977.

Figure 3: Female first-marriage rate by age, China, 1955, 1963, 1971 and 1977



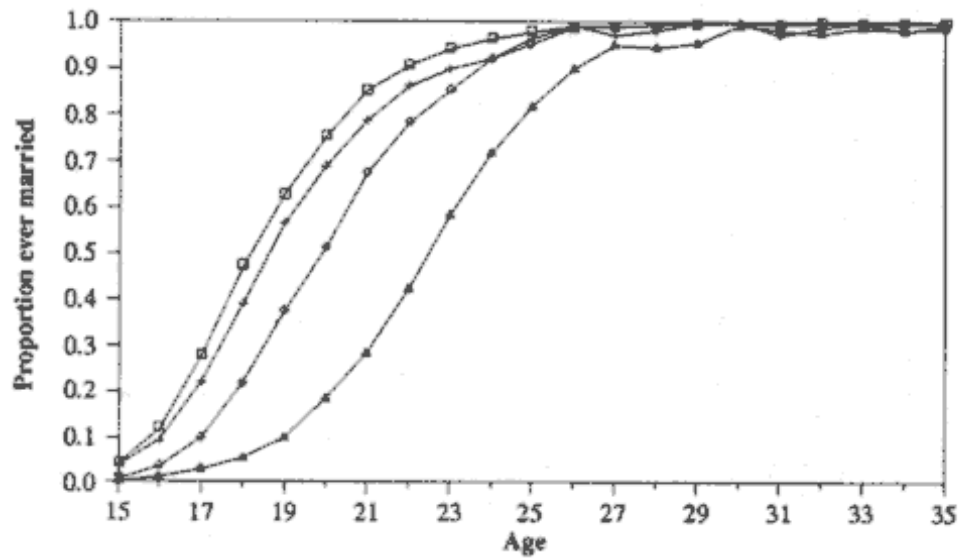
Source: China Population Information Centre, 1983, pp. 233-235.

□ = 1955;

Notes: + =

1963; ◇ = 1971; △ = 1977.

Figure 4: Proportion of ever-married women, China, 1956, 1963, 1970 and 1979



Source: Coale, A. J., 1984.

□ = 1956;

Notes: +

= 1963; ◇ = 1970; △ = 1979.

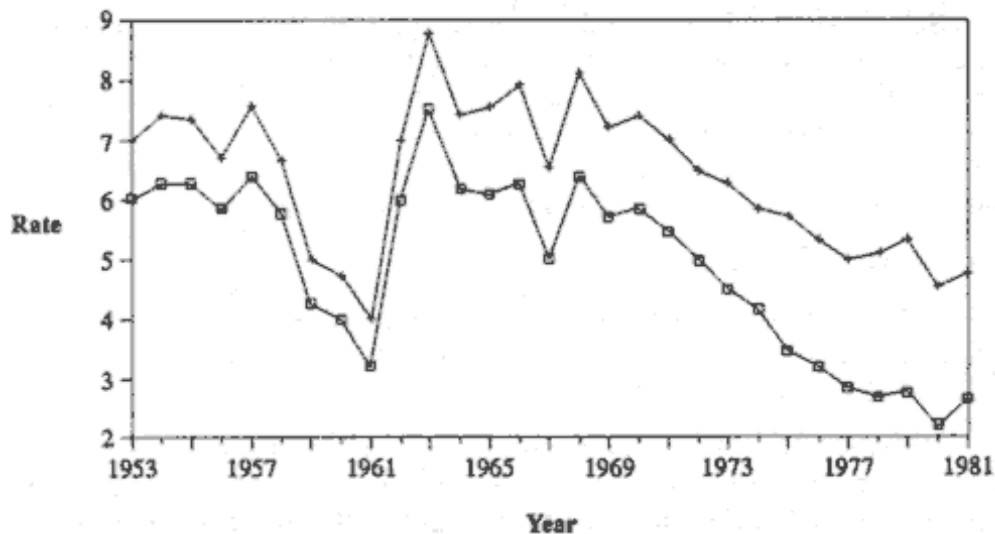
Like the general nuptiality model schedule (Coale, 1971), the age-specific proportions ever-married among females rose from the usual 0 for women aged under 15 to a plateau level that is reached in the late twenties or early thirties (figure 4). This figure depicts the age-specific ever-married proportions for 1956, 1963, 1970 and 1979. Several salient features can be ascertained from the figure. First, marriage remains "universal" for Chinese women. Actual cohorts of women in China achieve very close to 100 per cent entry into marriage (Coale, 1985). Second, the proportion ever-married decreased sharply throughout the decades across all age groups. Third, the ranges of largest and smallest proportions of ever-married women among the groups aged 15-49 become distant over time. The range, for instance, was 0.69 in 1955, and this value was 0.74 in 1963. In sharp contrast, the values of 1970 (prior to the policy "later, longer, fewer") and 1979 (the first year starting the "one child, one couple" campaign) were 0.84 and 0.95, respectively.

To sum up, the above discussion shows that the transformation from traditional to modern marriage patterns occurred in China during the past three decades. This transformation was especially conspicuous between the early 1970s and the 1980s.

## Marital fertility patterns

### Marital fertility level and trend

Figure 5: Total fertility and marital fertility, China, 1953-1981



Notes: □ = Total fertility rate (TFR); + = Total marital fertility rate (TMFR).

As [figure 5](#) shows, total fertility rates (TFRs) and total marital fertility rates (TMFRs) by period exhibit remarkably persistent regularities. The two patterns seem to be repeated, with only differences in level. In the early 1950s, TFR fluctuated relative to TMFR from about 0.85, and it remained at this constant ratio until the mid-1960s. This suggests that nuptiality changes were having an impact on fertility.

Since the mid-1960s, TFR declined from 80 per cent of TMFR to about 50 per cent in the early 1980s. We note that during the period 1968-1981, TMFR fell less rapidly than TFR. This suggests that since the mid-1960s, the changes have taken place in either marriage structure or marital fertility or in both, although the nuptiality factor has had relatively less impact on the course of TFR compared with that of TMFR.

### Age pattern of marital fertility

**Table 1: Comparison between age-specific marital fertility and age-specific fertility: China, 1956, 1963, 1970 and 1979**

Age group	1956		1963		1970		1979	
	MFR	FR	MFR	FR	MFR	FR	MFR	FR
15-19	0.2182	0.0786	0.2359	0.0788	0.2351	0.0444	0.2048	0.0118
20-24	0.3089	0.2690	0.4184	0.3478	0.3810	0.2832	0.3708	0.1610
25-29	0.2885	0.2842	0.3843	0.3742	0.3207	0.3122	0.2428	0.2194
30-34	0.2397	0.2380	0.3270	0.3260	0.2568	0.2530	0.0967	0.0954
35-39	0.1845	0.1840	0.2541	0.2536	0.1813	0.1782	0.0416	0.0414
40-44	0.1014	0.1012	0.1086	0.1138	0.0838	0.0824	0.0177	0.0176
45-49	0.0781	0.0156	0.0116	0.0116	0.0092	0.0090	0.0024	0.0024
Total	6.7812	5.8540	8.6781	7.5020	7.3392	5.8120	4.8839	2.7450

Sources: The age-specific marital fertility rates were calculated by the author from China Population Information Centre, 1983, pp. 244-246, and from Coale, A. J., 1984, pp. 76-85; the age-specific fertility rates also were derived from China Population Information Centre, 1983, pp. 244-246.

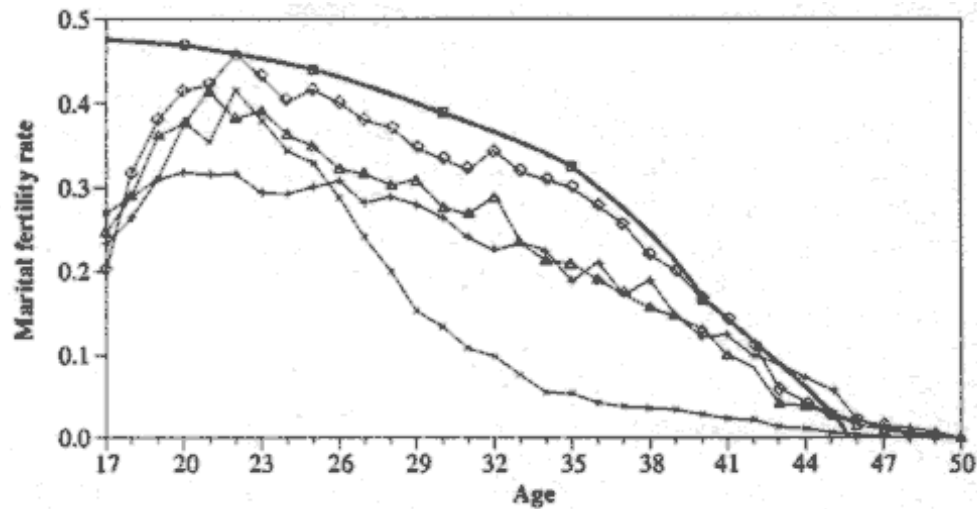
[Table 1](#) attempts to compare age-specific fertility rates (ASFRs) with age-specific marital fertility rates (ASMFRs) by employing the 1956, 1963, 1970 and 1979 data.

Relative to the ASMFRs over time, the ASFRs of younger women fell rapidly. The fertility rate of women in the 15-19 age group, for instance, was about 0.08 to 0.01 between 1956 and 1979, respectively, dropping by 85 per cent, while this was not the case for the marital fertility rate in the same age group during the same period. The rate increased from 0.22 in 1956 to 0.24 in 1970, and then decreased to 0.20 in 1979, a nearly constant pattern. This phenomenon suggests that the decline in the ASFR of those females aged 15-19 was not due to marital child-bearing itself, but rather the changes in marriage pattern.

The ASMFRs of women aged 30 and above, on the other hand, have dropped considerably over time. This is a most striking characteristic in the change of the child-bearing pattern among ever-married women in China, indicating that those ever-married Chinese women, after passing through the prolific periods, have exercised deliberate control over the birth of babies. The fertility rates of the ever-married women aged 30 and above were surprisingly similar to those marital fertility rates in the same age group. The fertility level was thus affected only by the changes in child-bearing itself rather than by the marital level.

The patterns remained similar prior to the 1970s. It was not until the 1970s that a sharp change took place. The marital fertility rates in all the child-bearing age groups in 1979 were lower than those of 1956, 1963 and 1970 ([figure 6](#)).

**Figure 6: Age-specific marital fertility and natural fertility, China, 1956, 1963, 1970 and 1979**



Sources: Age-specific marital fertility was derived from Coale, A. J., 1984, and natural fertility from Lively, W.R., 1986.

Notes: □ = natural fertility; + = 1956; ◇ = 1963; △ = 1970; X = 1979.

Henry (1961) was the first to note that the age patterns of marital fertility were similar in different populations in which couples do not practise contraception or take other measures to reduce fertility before a certain family size is reached. He called such fertility "natural". The comparison with natural fertility provides indirect evidence of the extent to which marital fertility is affected by deliberate control through the use of contraception and abortion in China (see also [figure 6](#)). The convex shape of the natural fertility pattern different from the concave shapes that characterize Chinese society throughout the 1970s when deliberate parity-dependent birth control was exerted through the use of contraception and/or induced abortion.

In 1956, the ratio of marital fertility to natural fertility was 0.67. This ratio became 0.84 in 1963. The age structure of marital fertility in 1963 was very similar to that of 1956, each being a typical pattern of natural fertility, and suggesting slightly deliberate restriction in each case. The marital fertility schedule in 1979, however, departs far from that of the natural fertility curve which is high and wide. This is almost certainly the result of an increase in deliberate control.

## Numerical analysis

### Coale's indirect indices

Early discussion of the fertility decline in China often ignored the effects of nuptiality and marital fertility on overall fertility. Yet the fact is that the decline in birth rates was due in part to the limitation of births within marriage. It is widely accepted that the predominant mode of fertility control in China is control within marriage.

Coale (1965) developed an indirect standardization procedure for distinguishing the impact on period fertility of nuptiality, legitimate and illegitimate fertility (Wusch, 1978). At time  $t$ , the following symbols are defined:  $f_i$ , as the births per woman aged  $i$ ;  $g_i$  the legitimate births per married woman aged  $i$ ;  $m_i$  the number of married women aged  $i$ ; and  $F_i$  the standard fertility schedule. The following standardized indices can then be computed:

$$I_f = \frac{\sum f_i w_i}{\sum F_i w_i}$$

$I_f$ , the index of overall fertility, is the ratio of the number of births occurring in a population to the maximum number that might occur if women at each age experienced the highest rates of marital child-bearing on reliable record for a population.

$$I_g = \frac{\sum g_i m_i}{\sum F_i m_i}$$

$I_g$ , the index of marital fertility, is the ratio of the number of births occurring among married women to the maximum

number that married women might have if subject to maximum fertility rates at each age.

$$I_m = \frac{\sum F_i m_i}{\sum F_i w_i}$$

$I_m$ , the index of proportion married, is a fertility-weighted index that measures the contribution of marital status to the attainment of maximal overall fertility in a population in which child-bearing occurs only among married women as is true in China.

The indices of fertility ( $I_f$  and  $I_g$ ) strictly lie from 0 to 1 - a value of 1 would imply attainment of maximum fertility, and 0 implies no births at all. The index of marriage ( $I_m$ ) falls within the same range: it is 1 if all women 15-49 are married, and 0 if all are single, widowed, or divorced.

When fertility among the non-married is negligible, the three indices are related by the identity:

$$I_f = I_g * I_m$$

In this case, the comparative index of general fertility is simply equal to the product of the comparative indices of legitimate fertility and of nuptiality (see Coale, 1965 and 1970, for a fuller definition of the indices).

Coale's indirect indices differ from the conventional measures by interacting between the weights (which always include the number of women or the number of married women at each age) and the function - the standard fertility schedule. The standard fertility schedule provides a natural upper limit with which the child-bearing of a population or population segment is compared. The fertility schedule considered as a maximum is the fertility schedule of married Hutterites during the period from 1921 to 1930. This maximum fertility schedule includes the following rates by five-year age intervals from ages 15-19 to 45-49: 0.550, 0.502, 0.447, 0.406, 0.222 and 0.061. Women marrying at age 15 and remaining married until age 50 would produce an average of 10.9 children if subjected to these rates.

Coale's indirect indices used in the case of China were designed here with three major considerations in mind. First, although the usefulness of Coale's indirect indices does not depend on the availability of absolutely precise estimates of the required measure, it is important to eliminate the effect of the difference in age structure if one is trying to compare two different populations or the same population but in different periods.

Second, it was essential to make explicit allowance for the effect of nuptiality on the overall fertility of the population. In China, child-bearing is almost wholly restricted to married couples. Coale's indirect indices can be quite useful in assessing the extent to which the index of marital fertility and the index proportional married inhibit fertility and how their contributions change over time.

Third, since detailed information about births such as age or duration of marriage in China is unavailable, it is necessary to employ Coale's indirect standardization if population structures (by age, sex and marital status) are known (Wunsch, 1978).

## Measures of fertility for China, 1953-1981

Since the age-specific marital fertility rates and the number of married women by age were unavailable from China's data, they were first constructed by utilizing the One-per-Thousand Sample Fertility Survey of 1982. The author then had recourse to Coale's method by calculating  $I_f$ ,  $I_g$  and  $I_m$ . [Table 2](#) shows the comparative indices.

**Table 2: Measures and indices of fertility, China, 1953-1981**

Year	TFR	TMFR	TMFR/TFR	$I_f$	$I_g$	$I_m$
1953	6.049	7.0270	1.1617	0.5169	0.5924	0.8726
1954	6.278	7.3590	1.1722	0.5033	0.5812	0.8660
1955	6.261	7.3283	1.1705	0.5067	0.5847	0.8666
1956	5.854	6.7812	1.1584	0.4698	0.5429	0.8654
1957	6.405	7.5495	1.2255	0.5436	0.6528	0.8686
1958	5.679	6.7089	1.1814	0.4713	0.5498	0.8572
1959	4.303	5.0382	1.1709	0.3308	0.3894	0.8496

1960	4.015	4.8042	1.1966	0.3181	0.3778	0.8420
1961	3.287	3.9841	1.2121	0.3059	0.3652	0.8377
1962	6.023	6.9939	1.1612	0.4784	0.5810	0.8234
1963	7.052	8.6781	1.2306	0.6001	0.7144	0.8399
1964	6.176	7.3712	1.1935	0.4922	0.5905	0.8336
1965	6.076	7.4237	1.2218	0.4799	0.5877	0.8166
1966	6.259	7.7956	1.2455	0.4920	0.6116	0.8044
1967	5.313	6.7784	1.2758	0.4149	0.5259	0.7890
1968	6.448	8.1186	1.2591	0.4915	0.6318	0.7779
1969	5.723	7.2280	1.2630	0.4408	0.5726	0.7698
1970	5.812	7.3392	1.2628	0.4464	0.5885	0.7585
1971	5.442	7.0224	1.2904	0.4184	0.5603	0.7467
1972	4.984	6.4707	1.2983	0.3833	0.5209	0.7358
1973	4.539	6.2120	1.3686	0.3521	0.4911	0.7169
1974	4.170	5.8746	1.4088	0.3310	0.4680	0.7073
1975	3.571	5.7705	1.6159	0.2913	0.4152	0.7016
1976	3.235	5.3547	1.6552	0.2711	0.3886	0.6976
1977	2.844	4.9831	1.7521	0.2506	0.3529	0.6987
1978	2.716	5.0948	1.8758	0.2345	0.3467	0.6764
1979	2.745	5.3339	1.9431	0.2373	0.3559	0.6667
1980	2.247	4.6443	2.0669	0.1959	0.2929	0.6688
1981	2.652	4.7710	1.7990	0.2259	0.3340	0.6764

Sources: Calculated by author from China Population Information Centre, 1983, pp. 152-154; and from Coale, 1984, pp. 76-85.

An interesting comparison enables us to observe that the fluctuations of the overall fertility rates ( $I_f$ ) show a remarkably consistent trend as TFR and TMFR change over time: wide fluctuations between 1949 and 1964; small downturn between 1965 and 1968; sharp drop during the 1970s; and modest upturn from the early 1980s. Fertility, for example, peaked in 1963 in all three indices, then declined to a common point in 1967, the year which marked the onset of the Cultural Revolution, when constraints on marriage and fertility were temporarily relaxed. The decline resuming in 1970 appears to conform to the deliberate family planning and "later, longer, fewer" population policy.

Factoring  $I_f$  into its two components, marriage structure ( $I_m$ ) and marital fertility ( $I_g$ ) shows how the changes of  $I_f$  came about. Surprisingly, before the transition began,  $I_f$  was found to be much higher than the Hutterite standard suggested. Between 1953 and 1960, mean  $I_f$  was about 1.29 times as high as the Hutterite standard, and climbed slightly to 1.31 times between 1961 and 1970. Then, it declined rapidly, and its mean value was only about 82 per cent of the Hutterite standard.

The fluctuations in  $I_g$  parallel the curve of  $I_f$ , exhibiting its importance in affecting the fertility level and intimate relationships between the two indices. Between 1953 and 1981,  $I_f$  fell by 56.3 per cent. The reduction in the index of  $I_m$  was far less than the reduction in  $I_g$ : the former fell by 22.5 per cent, while the latter fell by 43.6 per cent. The decline in  $I_f$  was mainly due to changes in marital fertility rather than nuptiality. The relative importance of the fertility-inhibiting effect of each can be examined more clearly by taking (common) logarithms of the two indices:

	$\log(I_g * I_m) = (\log I_f)$
e.g.	$\log(0.51 * 0.79) = \log(0.40)$
i.e.	$(-0.29) + (-0.10) = (-0.39)$

The results show that 74.4 per cent (0.29/0.39) of the combined inhibiting effects on  $I_f$  is due to marital fertility between 1953 and 1981. In sharp contrast to the effect of marital fertility, the contribution made by the proportion married is much smaller, i.e. only 25.6 (0.10/0.39) per cent.



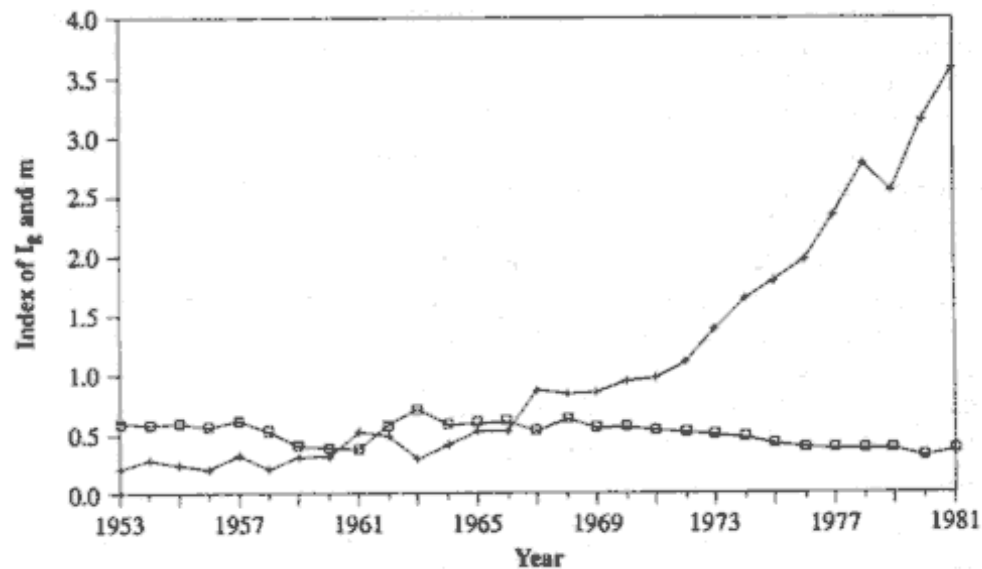
**Table 3: Estimates of the contributions of  $I_g$  and  $I_m$  to  $I_f$**

Period	$I_f$	$I_g$		$I_m$	
1953-1960	0.4576	0.5305	81.0 %	0.8610	19.0 %
1961-1970	0.4642	0.5769	71.7 %	0.8051	28.3 %
1971-1980	0.2901	0.4115	71.3 %	0.6994	28.7 %
1953-1981	0.4039	0.5063	74.2 %	0.7885	25.8 %

**Table 3** gives the relative importance of the fertility-inhibiting effect of each of the two factors responsible for the changes in  $I_f$  during the decades under observation. **Table 3** yields several interesting points. First, the changes in  $I_f$  between 1953 and 1980 were more striking than changes in  $I_g$ . Mean  $I_f$  fell from 0.46 to 0.29; and mean  $I_g$  fell from 0.53 to 0.41. Second, changes in marital fertility made a far greater contribution to the decline in overall fertility than did the proportions married during the decomposed periods, accounting for about 74 per cent of the decline in overall fertility. The contribution to lower fertility made by the assumed decrease in proportion married is of much smaller magnitude. Third, the proportion ever married was inhibiting potential fertility somewhat more between the 1960s and the 1970s than at the beginning, accounting for about 20 per cent during the period of 1953-1960, and about 30 per cent between 1961 and 1981, reflecting that before and since the intensification of the family planning programmes and the policy "later, longer, fewer" starting in 1971, steady changes in the marriage pattern had occurred.

Obviously, a rapid decline in  $I_g$  was due to family limitation, particularly between 1971 and 1981. Family limitation had been defined by Henry to mean that the timing of the cessation of child-bearing is conditional upon the couple's previous fertility history (Henry, 1961; Knodel, 1977). As a final comment on recent declining fertility in China, we note evidence of the effect of family limitation of marital fertility, revealed by Lavelly (1986) who, by using the same Chinese data as those in this study, calculated an index ( $m$ ) of the degree of departure of the age structure of marital fertility from the pattern typical of a population in which there is no voluntary control of marital fertility. According to Coale and Trussell (1971, 1974, 1978), this index ( $m$ ) is zero when marital fertility follows the typical pattern of "natural" fertility; it reaches values of 2.0 or more in populations in which the majority of couples use contraceptives or abortion to limit the total number of births to a very small number.

**Figure 7: Marital fertility and family limitation, China, 1953-1981.**



Sources: Marital fertility ( $I_g$ ) was calculated from data provided by Coal, A.J., 1984, and the China Population Information Centre, 1983, pp. 244-246, and family limitation ( $m$ ) from Lavelly, W.R., 1986.

Notes:  $\square$  = marital fertility ( $I_g$ ); + = family limitation ( $m$ ).

In **figure 7**, the value of  $m$  is compared with our calculations of  $I_g$ . The shift from natural fertility to family limitation and the resulting decline in marital fertility reflected a radical change in the reproductive behaviour of couples and Chinese society. The time series in **figure 7** for the index of family limitation,  $m$ , and the index of marital fertility,  $I_g$ , are remarkably consistent. The value of  $m$  was 0.17 in 1953; it rose to 0.30 in 1960, 0.54 in 1965, 0.90 in 1970 and jumped to 3.10 in 1980. The index of  $I_f$ , on the other hand, was 0.59 in 1953 and declined to 0.38 in 1960 (note that this was a peculiar year because it was the first year of a natural disaster and the lagging effect of the Great Leap Forward starting in 1958); it

rose to 0.59 in 1970. Since then, the index of  $I_g$  has uninterruptedly and precipitously declined, reaching 0.29 by 1980, clearly indicating a coincidence with an increasing degree of parity-related control. The intersection of the two indices took place in 1966, a lagging reflection of the family planning campaign in 1962. Both  $m$  and  $I_g$ , however, gained ground much slower until the early 1970s when family limitation began to have an increasing effect.

## Discussion and conclusion

This study is concerned with assessing the degree to which marital structure and marital fertility variables are related to fertility levels. The results indicate that the reduction in fertility in China has been caused both by a dramatic fall in marital fertility and a change in the marital structure. The more important inhibitor of potential fertility was marital fertility, which has affected the fundamental transition from typical natural fertility to controlled fertility, especially since the 1970s. In contrast, changes in the marital structure have contributed moderately to the reduction in overall fertility owing to the relative stability of the marriage pattern during the past three decades, since the age at first marriage could not be raised infinitely. The importance of the latter, however, has gradually increased. Thus, research on the decline in fertility in China since the early 1950s should be focused on the underlying and intermediate variables affecting marital fertility.

Our study has pointed to evidence suggesting that the family planning programmes of "later, longer, fewer" from the beginning of the 1970s and the "one child, one couple" campaign launched in 1979 coincided with the timing of changes in both marital status and marital fertility. The urgency and importance of China's family planning programmes have been steadily and systematically reflected in the increasingly more stringent norms for child-bearing and their stricter enforcement.

At the same time, this coincidence reflects momentous changes in political and economic structures that have linked the central Government in the past three decades. Obviously, it is difficult to assess the family planning programmes' effects on fertility net of socio-economic and institutional factors that encourage people to accept and practise effective contraception (Tien, 1985). Since 1949, the Government has consistently and energetically pushed for greater development in education, employment opportunities, feminist campaigns and the rise in the status of women, health, medical, cultural and related services in the country as a whole and in the rural areas in particular. In addition, changes in the costs and benefits of children, changes in the family and marriage system, the repeated rustication campaigns, housing shortages in urban China and land shortages in rural China, and so on - all those forces lying behind the fertility transition in China demonstrate that the Chinese family planning programmes operate within the context of a socialized society. Institutional developments, as a natural process, have greatly weakened the motivation for large families. This is especially true in urban China.

Future prospects for retaining a low level of fertility are unclear. This study at least indicates certain future research needs and policy implications. First, since marriage is almost universal in China, with only a negligible proportion remaining single throughout the reproductive age span, and since marital dissolutions as well as remarriages are uncommon, it would be unrealistic to expect further lowering in the index of  $I_m$  given the fact that the current age at marriage is relatively high except perhaps in some special local circumstances.

Second, the most important demographic determinant responsible for the decline in Chinese fertility has been marital fertility since levels of marital fertility can vary substantially with the adoption of family limitation (Watkins, 1986). The practice of contraception has become pervasive during the last decade. Public policy should ensure the rapid spread of knowledge about access to contraception as a means to assure birth control and especially as an alternative means to obtain the desired spacing between births.

Third, levels of marital fertility can vary substantially in the absence of deliberate marital fertility control. The relative weight of factors affecting marital fertility (including behavioural factors such as coital frequency, sexual taboos and duration of breast-feeding, as well as physiological factors such as fecundability, intra-uterine mortality, total or partial sterility) should be taken into account. Unfortunately, these factors have so far received little explicit attention partly because the data are meager.

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