The 1988 Demographic
Survey of Viet Nam

*Fertility is still high, but the data indicate
it has been decreasing and may be undergoing a phase
in which it can be brought down rapidly*

By Vu Quy Nhan and R. Hanenberg*

The 1988 Viet Nam Demographic Survey was the first country-wide demographic survey of Viet Nam. The sample was drawn according to the sample design recommended by the World Fertility Survey (WFS).[1] It was a three-stage random probability sample of 4,800 households in 12 provinces and 151 communes.

As with most of the surveys of the WFS there were two questionnaires: a questionnaire for the members of the household and a questionnaire for all ever-married women aged 15 to 49. The questionnaires were translations of the

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latest versions of the questionnaires of the Demographic and Health Survey.[2/]

The survey provides estimates of fertility, infant and child mortality, the use of contraception and the marital status of the population for both the northern and southern regions of the country. It was conducted by the National Committee for Population and Family Planning, with technical assistance from the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). The survey was funded by the United Nations Population Fund (UNFPA). This article presents the principal findings of the survey.

Infant mortality

The survey showed that the infant mortality of the population of Viet Nam is low. The infant mortality rate was 37 per thousand births for the three years 1984-1986 (see table 1).

This low rate appears suspect because Viet Nam is a poor country. However, other poor countries such as China and Sri Lanka have achieved comparable rates of infant mortality. China (the infant mortality rate of which is 33) and Sri Lanka (the infant mortality rate of which is 29 according to United Nations estimates, but even lower according to other estimates) are similar to Viet Nam in that levels of education are high and the distribution of income is fairly even.

Other studies have reported low infant mortality rates in Viet Nam, but analysts have hesitated to accept these results. However, this survey supports the possibility that infant mortality is indeed low.

If mortality is low, part of the reason might be the high level of education

Table 1: Infant mortality rates: average for 1984-1986

Whole country	37	
Northern region	36	
Southern region	38	
No education	63	(76)
Literate	53	(52)
Forms 1-9	31	(30)
Forms 10+	24	(23)

Note: The numbers in parentheses are the rates standardized by the age of the mother at the birth of the child.

Source: 1988 Demographic Survey.

of the respondents. According to table 1, infant mortality was highest among respondents with no education. However, only a small percentage (6 per cent) of the sample population was in this category; most were in the category "literate" (21 per cent) or the category "forms 1-9" of education (57 per cent).
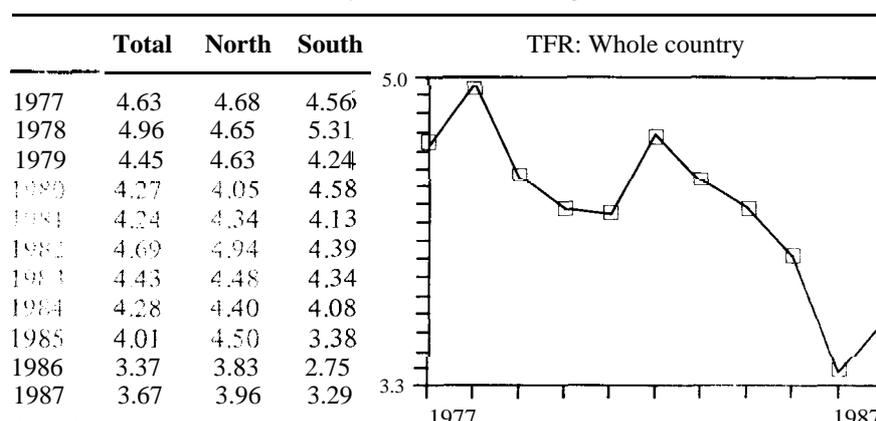
It is quite possible to underestimate mortality in a sample survey; therefore, further studies may show that infant mortality was higher than 37. However, the best estimate currently is that infant mortality is comparatively low. An infant mortality rate of 37 implies an expectation of life at birth of around 68 years during the period 1984-1986.[3/]

Fertility

The total fertility rate for women aged 15-49 during the period 1985-1987 was 4.06 births per woman: 4.40 for the northern region and 3.60 for the southern region.

Fertility appeared to be declining somewhat, especially in the few years before the survey. Table 2 shows the total fertility rates of women aged 15-39 during the period 1977-1987. (Because of the methodology used in surveys of this kind, it is not possible to tabulate the total fertility rates of women aged 15-49 for this many years back). The general pattern is one of decline, especially in the latter half of the decade. However, it is not uncommon for surveys of this type to show a spurious decline in fertility in the years just before the survey. Thus the most conservative interpretation of these data is simply that the total fertility rate was *at least* 4.1 in 1985-1987.

Table 2: Total fertility rates of women aged 15-39: 1977-1987

|	Total	North	South	TFR: Whole country
1977	4.63	4.68	4.56	
1978	4.96	4.65	5.31	
1979	4.45	4.63	4.24	
1980	4.27	4.05	4.58	
1981	4.24	4.34	4.13	
1982	4.69	4.94	4.39	
1983	4.43	4.48	4.34	
1984	4.28	4.40	4.08	
1985	4.01	4.50	3.38	
1986	3.37	3.83	2.75	
1987	3.67	3.96	3.29	

Source: 1988 Demographic Survey.

Although the evidence from only one survey is insufficient to draw firm conclusions, there are grounds for believing that the fertility rates in table 2 are accurate. Viet Nam's population is well educated, which would minimize the misreporting of dates and omission of births.

Moreover, Vietnamese are used to keeping track of dates of birth, each of which is associated with one of 12 animals according to the year of birth. Traditionally, great significance is attached to the date of birth; for example, the dip in fertility in 1986 and the subsequent rise in 1987 was coincident with an inauspicious year: 1986 was the "year of the tiger", during which some parents may have postponed bearing children.

This kind of record keeping, coupled with a high level of education, has contributed to the accuracy of similar survey data in China and the Republic of Korea.

Figure 1: Relationship between female literacy and total fertility rates at the province level: 1979 census

Percentage of women aged 15-34 with second level education

Total fertility rate: 1974-1979
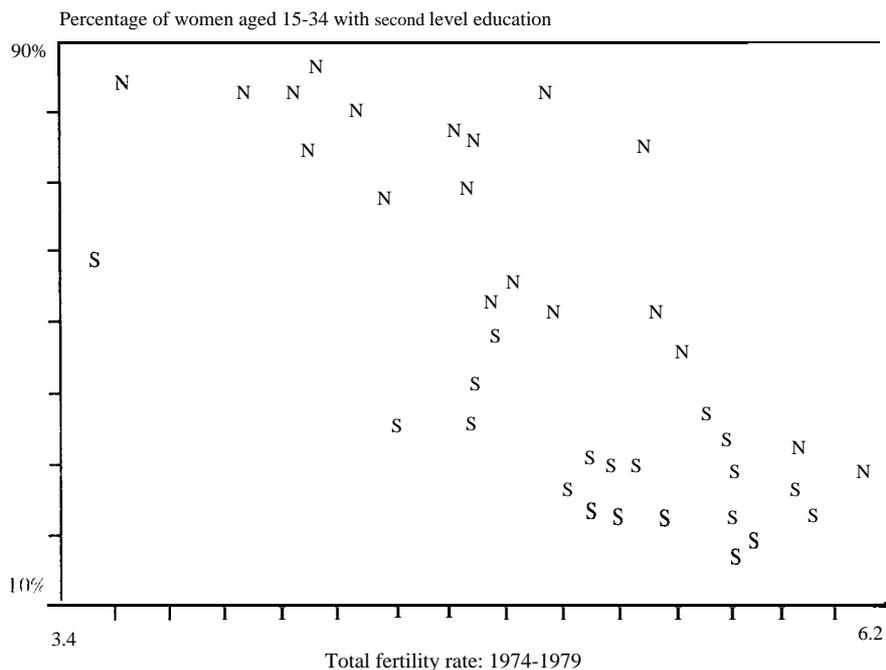
Note: The N's and S's represent northern and southern provinces, respectively.

The trends of fertility reported in this survey confirm the patterns apparent in the 1979 census, which is the only other reliable source of information about the population of Viet Nam.[4/] The census reported the age-sex distribution of each of the 40 provinces. Using indirect techniques of estimation, it is possible to transform child-woman ratios into estimates of the total fertility rates 5-9 and 0-4 years before the census.[5/] An analysis of the 1979 census by ESCAP[6/] concluded that the total fertility rate fell rapidly during the decade before the census (1969-1979), from over six children per woman to perhaps under five. The decline was especially rapid in the southern region of the country.

Throughout the decade 1969-1979, fertility was lowest in the provinces with the highest degree of urbaniztion and education. Figure 1 shows the relationship between the total fertility rates for 1974-1979 and the percentage of women aged 15-34 with second level or higher education for the 40 provinces (the classification of education according to the census was not the same as for the 1988 survey).

The patterns in the 1979 census were puzzling because they seemed to suggest that neither the war nor the different systems of government, nor the different orientations to family planning in the north or the south hindered the decline of fertility during the period 1969-1979. (The country was unified in 1975).

The 1988 survey suggests that the declines continued after the 1979 census (table 3). The rates from the 1979 census and 1988 survey are not completely comparable because the total fertility rates from the census refer to women aged 15-49, while those from the survey refer to women aged 15-39, which tend to be lower by 0.3 to 0.4 births than rates for the normal age group. However, estimates from the census tend to overstate the extent of a decline in fertility; thus, the census estimates for 1974-1979 were also probably too low, perhaps by about the same amount.

Table 3: Total fertility rates from the 1979 census and 1988 survey

Source	Period	Total	North	South
Age groups 15- 49				
1979 census	1969-1974	6.1	5.7	6.6
1979 census	1974-1979	4.8	4.7	5.1
Age groups 15-39				
1988 survey	1978-1982	4.5	4.5	4.5
1988 survey	1983-1987	4.0	4.2	3.6

Allowing for these considerations, it appears that fertility has been declining in Viet Nam for the last 20 years, both in the northern and southern regions of the country. It was lower in the northern than in the southern region until sometime around 1980, when fertility in the south fell below that of the north.

In the northern region, declines in fertility among the older age groups were partially offset by increases among the younger ones (table 4). In the south, fertility declined in all age groups. The reason for the sharp decline in the younger age groups was probably due to a decline in the number of marriages.

Table 4: Age specific fertility rates: 1976-1978 to 1985-1987

	1985-87	1982-84	1979-81	1976-78
Whole country				
15-19	19	30	22	31
20-24	192	205	192	199
25-29	236	279	259	277
30-34	173	227	217	250
35-39	117	153	173	
40-44	57	104		
North				
15-19	25	26	13	24
20-24	226	220	178	194
25-29	268	302	272	299
30-34	186	227	237	249
35-39	113	145	167	
40-44	50	86		
South				
15-19	13	33	35	43
20-24	147	182	212	206
25-29	189	249	244	250
30-34	159	226	192	250
35-39	120	164	179	
40-44	65	125		

Source: 1988 Demographic Survey.

Marriage

Some of the decline of fertility must be attributed to the low prevalence of marriage, especially in the southern region. This survey found the proportion of single women, especially in the south, to be very high (see table 5). At the time of the survey, one of every four women aged 25-29 in the south was still single.

**Table 5: Percentage of men and women single, by age**

	Men			Women	
	North	**South**		**North**	**South**
15-19	99	99		95	96
20-24	64	76		39	58
25-29	16	34		10	24
30-34	3	12		5	12
35-39	2	7		3	10
40-44	1	3		2	7
45-49	0	2		0	2
50-54	0	0		2	4
Singulate mean age at first marriage	24.2	26.3		22.4	24.6

Source: 1988 Demographic Survey.

It must be remembered that surveys such as this one cover only the population living in households. They exclude institutional populations (e.g., soldiers in camps and workers in building sites, plantations and mines), the members of which tend to be single. Thus, despite the fact that the survey found a very low prevalence of marriage, even this may be understated. The singulate mean age at first marriage (SMAM) for women in the northern region of the country was 22.4 years, which is about average for Asia. However, the mean for women in the south was 24.6, which is relatively high.

Figure 2 compares the sex ratios of Viet Nam and Thailand, according to censuses taken in 1979 and 1980. Evidently, part of the reason for the large number of single women in the southern region of Viet Nam was the loss of men during the war. Another reason for the high proportion of single people in the south might include the sudden economic recession after the artificial war-time prosperity of the 1970s.

Figure 2: Sex ratios of Viet Nam and Thailand
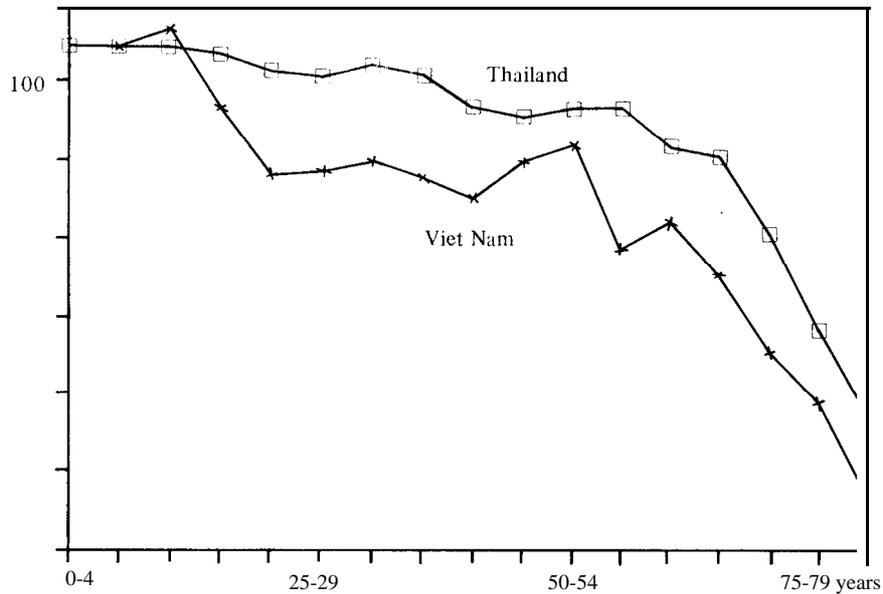
*Sources:* 1979 census of Viet Nam and 1980 census of Thailand.

Contraception

The contraceptive prevalence rate (the percentage of married women aged 15-49 currently practising contraception at the time of the survey) was over 50 per cent. From the experience of other countries, a contraceptive prevalence rate of this magnitude is not consistent with a total fertility rate of 4.1,[7/] and is probably explained by the fact that some women over-reported their use of contraceptives.

In Viet Nam, family planning is a state policy, and family planning is popularly associated with the use of the IUD.[8/] Thus, the reported use of the IUD was particularly high, especially in the northern region, which is the more orthodox of the two regions (see figure 3). The same over-reporting of contraception has been found in other surveys in Viet Nam.

Since the data on contraception were probably not accurate, it is difficult to draw useful conclusions from them. It can be inferred, however, that the use of the pill, condom and vasectomy was low. It is also possible that the traditional methods, i.e. rhythm and withdrawal, were widely practised, especially in the southern region.

Figure 3: Percentage of married women aged 15-49 currently using contraceptives, by method and region
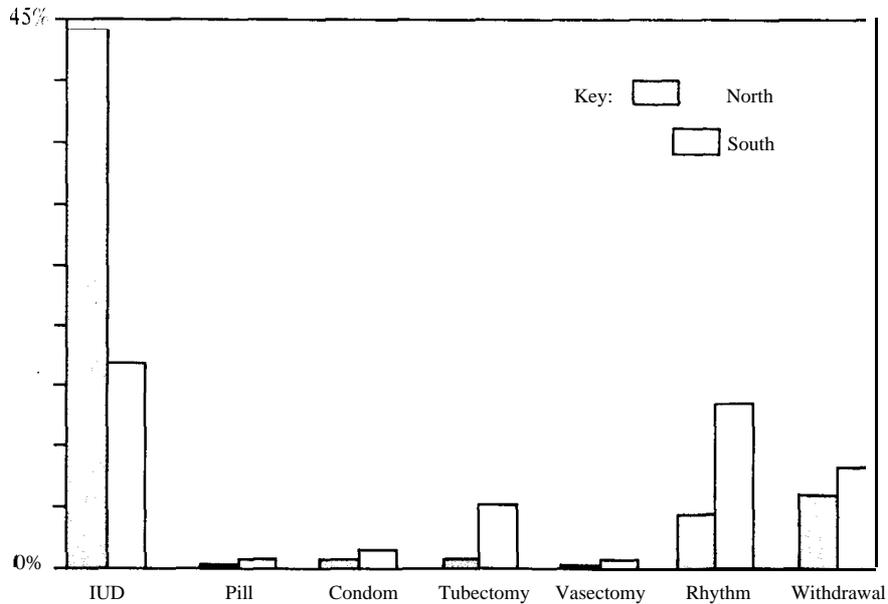
Source: 1988 Demographic Survey.

Birth, death and growth rates in 1989

The crude birth and death rates and the growth rate in 1989 can be estimated by surviving the population as enumerated in the 1979 census forward to 1989 using the different combinations of assumptions about fertility and mortality which seem likely according to the 1988 survey. Table 6 shows four projections from 1979 to 1989.[9/] Projections I-III incorporate a series of estimates of fertility and mortality most likely according to the 1988 survey. Projection IV uses a higher rate of mortality. Projections I-III suggest that in 1989 Viet Nam's crude birth rate was on the order of 31-34, its crude death rate around 7-8 and its rate of natural increase around 2.4-2.6.

Implications of the findings

The family planning programme of Viet Nam has been based on the voluntary co-operation of the population (although incentives have been given to some acceptors of some family planning methods). However, during the last

Table 6: Projections of the population of Viet Nam from 1979 to 1989

Assumptions	Projection			
	I	II	III	IV
Total fertility rate				
1979	5.0	5.2	4.8	4.8
1989	4.0	4.2	3.8	3.8
Expectation of life at birth				
1979	60.7	60.7	63.1	55.8
1989	65.1	65.6	68.0	60.7
Results				
Crude birth rate, 1989	32.5	33.7	31.0	31.6
Crude death rate, 1989	7.8	7.8	6.8	10.0
Rate of natural increase, 1989	2.5	2.6	2.4	2.2
Population, 1989*	67.9	68.8	67.8	65.7

*Note:* Does not account for international migration.

decade, success has been limited by several factors, among them a low degree of urbanization and low rate of economic growth.

This survey suggests that a growth rate of 1.7 per cent by 1990 (which is Viet Nam's population goal) probably will not be achieved, because fertility is still quite high. Although surveys of this kind are subject to various errors, when there is an error in the estimation of fertility, it is usually an underestimate rather than an overestimate. Thus, it is reasonable to assume that the survey's estimate of 4.1 for the total fertility rate in 1984-1986 was a minimum.

Therefore, it is most unlikely that the population growth rate can fall as low as 1.7 per cent in the near future. Moreover, if mortality is as low as it appears from the survey, it will be even more difficult to reduce the growth rate. The projections of the United Nations use a relatively high rate of mortality, as in projection IV of table 6; if mortality is lower than the United Nations has assumed (as in projections I-III), the growth rate would be proportionately higher.

Another consideration is that one of the causes of the comparatively low fertility in the southern region is the high proportion of women who are un-married. This is due in part to the lack of men owing to war-related losses. However, this will be a temporary phenomenon. The sex ratios for people in their twenties and thirties will become more normal in a few years and, other thing being equal, the percentage of women able to find husbands will increase.

Figure 4: Relationship between total fertility rates and percentage of adult women who are literate

Per cent of adult women literate
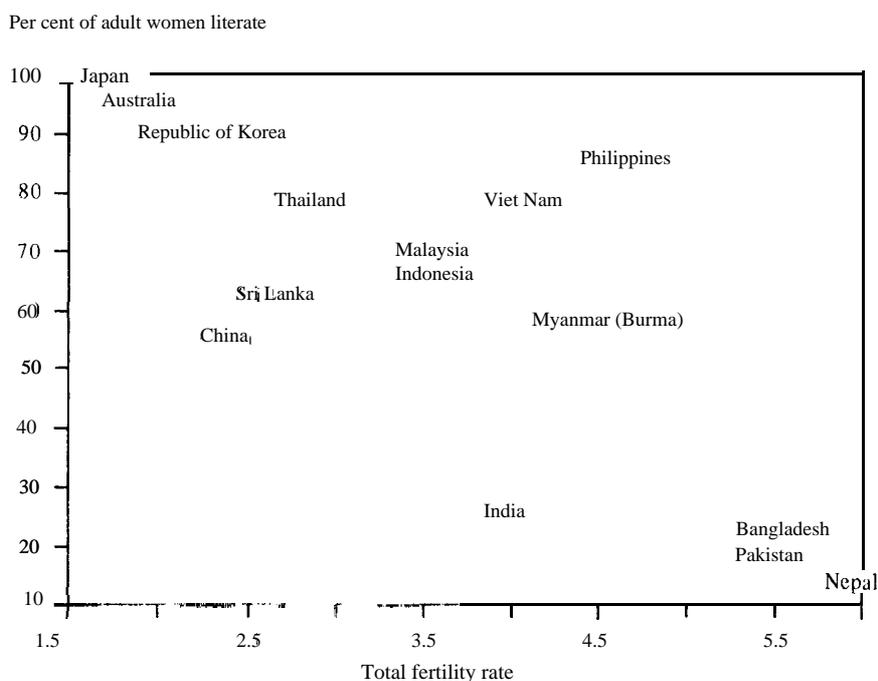
Sources: Total fertility rates: ESCAP estimates for 1987; literacy rates: UNESCO estimates for 1985.

There may also be other reasons why so many people are not getting married. It is not only women, but also men who have remained single, despite the large number of single women available for marriage. The postponement of marriage is common in developing countries partly because of the difficulty of finding a job after graduation from school. This means that economic prosperity may induce young people to marry earlier, thus increasing fertility in the short run.

On the positive side, fertility has probably been decreasing and may be undergoing a phase in which it can be brought down rapidly. In most developing countries, when mortality falls to a low level and education rises to a high level, it is only a matter of time before fertility begins to fall rapidly. Figure 4 suggests

that in a country with a literacy rate as high as in Viet Nam one would expect a lower rate of fertility. Viet Nam is somewhat like the Philippines in being an exception to this rule; however, in both countries, fertility may start to fall rapidly in the near future.

One factor which would help fertility to fall faster would be more supplies of contraceptives. The major difficulty for the family planning programme in Viet Nam at present is the expense of providing a full range of contraceptive methods.[10]   Foreign exchange is scarce and international aid limited. The data on contraception from this survey may not be completely reliable, but they do suggest that many of the effective methods of fertility control are not being used. Moreover, the data suggest that many couples were using the traditional contraceptive methods, which implies a demand for fertility limitation. More attention should be given to supplying some of the contraceptive methods, such as the oral pill and surgical sterilization, which have been used so successfully in other countries in Asia.

References/footnotes

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2. Institute for Resource Development Inc., *Model "A" Questionnaire with Commentary for High Contraceptive Prevalence Countries* (Columbia, Maryland, U.S.A., Institute for Resource Development Inc., October 1986).

3. Ansley J. Coale and Paul Demeny, *Regional Model Life Tables and Stable Populations* (New York, Academic Press, 1983).

4. General Statistical Office, *1979 Census of Viet Nam* (Hanoi, 1983).

5. J.R. Rele, *Fertility Analysis Through Extension of Stable Population Concepts* (Berkeley, Institute of International Studies, University of California, 1967, Republished in 1977 by the Greenwood Press, Westport, Connecticut, as Population Monograph Series No. 2).

6. *The Geography of Fertility in the ESCAP Region,* No. 62K (Bangkok, United Nations Economic and Social Commission for Asia and the Pacific, 1988).

7. Dorothy L. Nortman; *Population and Family Planning Programs: A Compendium of Data through 1981* (New York, Population Council, 1982), p. 22.

8. Vu Quy Nhan, *Knowledge and Attitudes of Grassroots Family Planning Workers about Contraceptive Methods* (ESCAP, ST/ESCAP/687, Bangkok, 1989), pp. 4-5.

9. The projection program used was ESCAP/POP: Economic and Social Commission for Asia and the Pacific, "ESCAP/POP: A Computer Program for Projecting Populations by Age and Sex," *Population Research Leads,* No. 22 (Bangkok, 1986).

10. *Nhan,* p. 15.

The Onset of a Fertility Decline in Nepal?

*The fertility rate may be declining owing to
a changing marriage pattern and
increased use of contraceptives*

By Jayanti M. Tuladhar*

The Nepal Fertility and Family Planning Survey (NFFS) 1986 is the most recent nationally representative demographic sample survey of Nepal. It collected information on all births and pregnancies; demographic and socio-economic background characteristics of respondents and their spouses; knowledge, availability, accessibility and use of contraceptives; and fertility motivation and breast-feeding. The NFFS was conducted for assessing the current status of the

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family planning programme and to monitor changes since the 1976 Nepal Fertility Survey (NFS) and the 1981 Nepal Contraceptive Prevalence Survey (NCPS).

All persons within the sample households were enumerated and information on age, sex, marital status, relationship with the head of the household was recorded in a household schedule.

An individual questionnaire was administered to all currently married women aged 15-50 years. The sample was drawn separately for urban and rural areas. A total of 3,774 women from rural areas and 1,255 women from urban areas were successfully interviewed. The response rates were 98.3 per cent and 95.8 per cent in rural and urban areas, respectively. Details of the sample design are contained in the survey report (Nepal FP/MCH Project, 1987).

The birth history data constitute the most important subset of information collected in the individual questionnaire of the NFFS. They are the basis for calculating fertility levels and trends, and the main source for estimating and child mortality.

The aim of this article is to estimate fertility levels and trends by using

Figure 1: Single-year age distribution of women
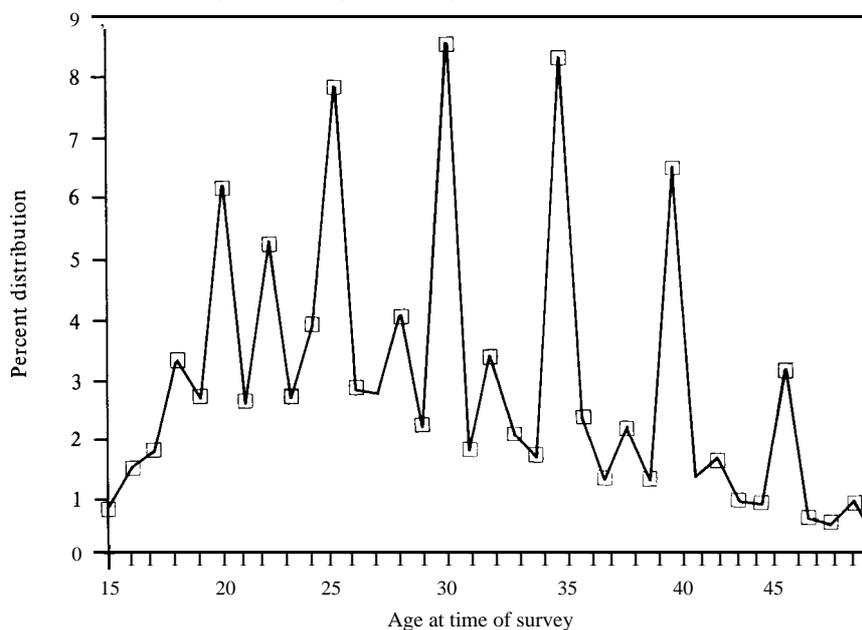
Source: NFFS (1986) individual survey.

the 1986 NFFS birth history data. Among the major constraints for using retrospectively collected birth history data for the analysis of levels and trends of fertility are the biases introduced owing to omissions and misplacements of births. Also, in countries such as Nepal, where most women are illiterate and age per se has no social meaning, the ages of mothers and children are often misreported. In previous surveys, particularly the 1976 Nepal Fertility Survey (NFS), three types of response error (misreporting of age, displacement and omission of births) have been observed (Goldman, et al., 1979). Respondents, particularly older ones, have a tendency to omit births which occurred in the remote past and displace births in time which occurred in recent periods. Therefore, this article starts by examining the extent of response error in the pregnancy histories, particularly omissions and displacements of births that may bias estimates of fertility and infant and child mortality.

Quality of data

Figure 1 shows the single-year age distribution of women aged 15-49 years. As in previous surveys, it is evident that there was a concentration of women at ages ending in 0, 2, 5 and 8, with largest concentrations ending in 0 and 5.

Figure 2: Single-year age of child
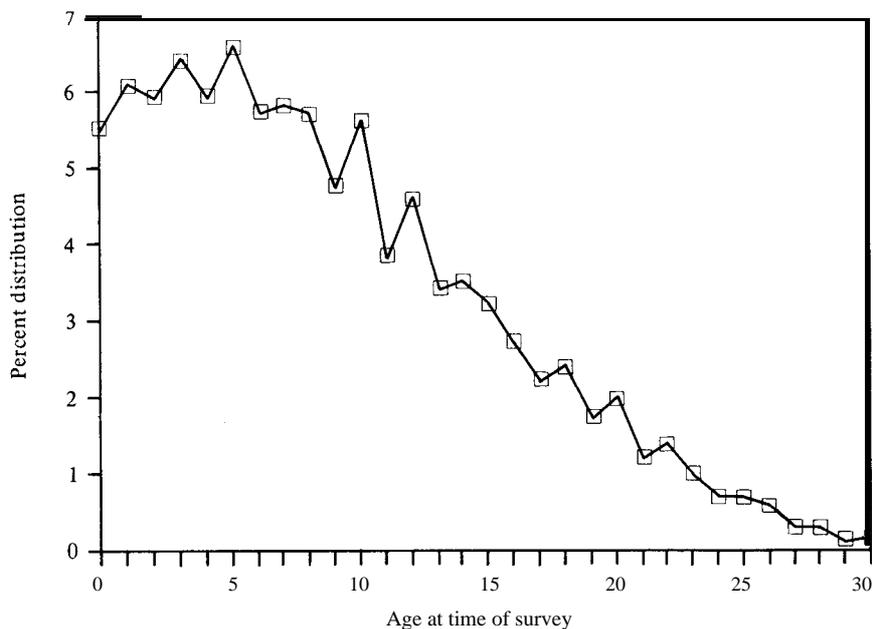
Source: NFFS (1986) household survey.

Table 1. Sex ratios at birth, by cohorts and priods, NFFS, 1986

Cohort (current age in years)	All	Calendar years*					
		2037-2041 (1980-1985)	2032-2036 (1975-1980)	2027-2031 (1970-1975)	2022-2026 (1965-1970)	2017-2021 (1960-1965)	2012-2016 (1955-1960)
15-19	82.6	84.0	–				
20-24	108.7	100.4	141.4	–			
25-29	110.0	108.3	110.3	120.9	–		
30-34	107.7	103.1	110.0	104.8	160.8	–	
35-39	111.0	105.8	109.2	103.1	133.7	147.7	–
40-44	116.8	101.9	99.7	113.3	131.0	156.8	125.9
45-49	111.9	88.8	86.8	110.3	117.0	122.2	171.4
Total	110.8	103.2	108.1	108.3	130.9	140.1	160.1

Note: *Western calendar years are given within parentheses.

**Table 2: Sex ratios at birth, by periods and subgroups, NFFS, 1986**

Nepali calendar years	Western calendar years	All 1/	Hills and Mountains	Terai	Urban		Rural	
		Total			Literate 2/	Illiterate	Literate 2/	Illiterate
2037-2041	1980-1985	103	104	103	86	110	106	104
2032-2036	1975-1980	108	113	104	93	123 3/	120	107
2027-2031	1970-1975	108	103	115	98	(104) 3/	84	109
Total		111	107	107	92	112	103	107

Notes:
1/   "All " includes births occurring in the last 30 years.
2/   "Literate" is defined as one who can read a simple letter.
3/   Ratio inside parentheses is based on fewer than 50 female births.
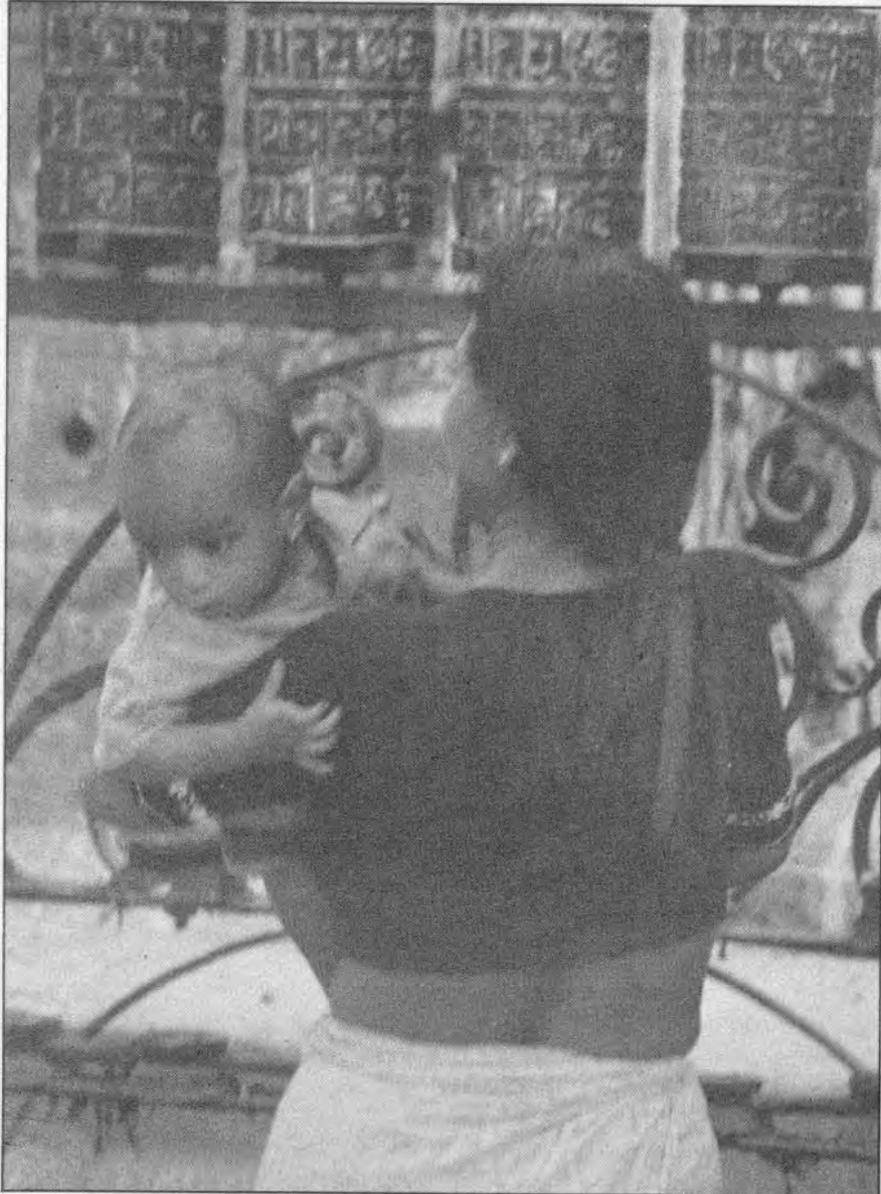
Illiteracy is high in Nepal, especially among women. Because age per se has no social meaning, the ages of mothers and children are often misreported in natronal population surveys.

Respondents not only misreported their own age, but also the ages of their children. Figure 2 shows that there was a concentration of children at 5, 10, and 12 years of age.

To a great extent, these errors in age reporting can be reduced by tabulating the data in five-year age groups and five-year time intervals. Also, since both the ages and dates of birth are reported by the same respondents, there is a good possibility that the derived fertility and infant-child mortality estimates will not be systematically biased.

One way of assessing the completeness of reported births is by examining the sex ratios at birth. Sex ratios at birth normally range between 103 and 105 males for every 100 females (United Nations, 1973). However, there is some evidence that in South Asian countries they may be higher (El-Badry, 1969).

In table 1, sex ratios at birth are shown by current age and five-year periods since the survey. The overall sex ratio at birth for all ages was 111.0, considerably higher than the expected value. This suggests omissions of female births.

For the recent past (the period approximating 1970-1985) however, the ratios were within an acceptable range, varying from 103 to 108. This suggests that there were no systematic sex-selective omissions of births for the last 15 years preceeding the survey. The sex ratios by current age of mother did not show any consistent pattern. However, there may have been omissions of female births for older cohorts in the distant past, i.e. 15 or more years prior to the survey.

As can be seen from table 2, there was no indication of sex-selective omissions of births by geographical region or literacy level among rural respondents. In urban areas, literate respondents seemed to omit more male births. However, the estimates for urban areas were based on much smaller samples than rural ones and should be interpreted with caution.

In societies where the literacy levels are low and child-bearing frequent, children who die immediately after birth are more likely to be omitted from birth histories than surviving children, particularly for births occurring in the remote past. As a result, the proportion dead of children ever born increases with the current age of the respondent. Table 3 presents the proportion dead of children by the sex and current age of the respondent. The table shows the expected pattern of proportions rising by age, both for males and females, which suggests no evidence of sex-selective omissions of births.

An investigation of infant and child mortality is another way to look at whether there was any omission of births in the birth history data. Misplacements of dates of birth and ages at death, and omissions of births and deaths will

Table 3: Proportion dead of children ever born, by sex and current age of respondent, NFFS, 1986

Current age of respondent (Years)	Proportion dead of children ever born		
	Total	Male	Female
15-19	0.178*	0.067	0.133
20-24	0.143	0.081	0.062
25-29	0.157	0.078	0.078
30-34	0.174	0.085	0.087
35-39	0.198	0.103	0.097
40-44	0.211	0.111	0.100
45-49	0.235	0.125	0.112
Total	0.186	0.096	0.090

Note: * Male and female proportions do not add up to the total because of rounding.

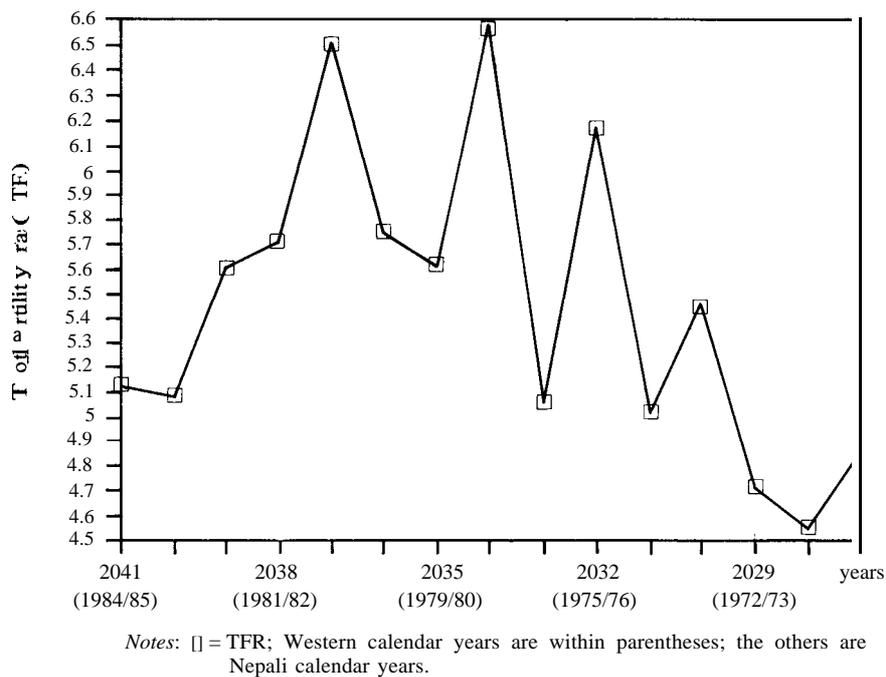**Table 4: Current levels of infant and child mortality**

Nepali calendar years	Western calendar years	NFFS, 1986			NFS, 1976		
		< 1 year	1-5 years	0-5 years	< 1 year	1-5 years	0-5 years
2036-2040	1979-1984	93.2					
203l-2035	1974-1979	107.0	70.3	177.3			
2026-2030	1969-1974	121.1	72.4	193.5	142.3	92.3	234.6
2021-2025	1964-1969	129.8	71.1	200.9			
2016-2020	1959-1964	185.8	87.8	273.6			

Note: The 1976 NFS rates are taken from Chidambaram *et al.* (1984).

affect estimates of levels and trends of infant and child mortality. The 1986 NFFS report indicated that there were heapings of deaths reported at the ages of 12, 24, 36 and 48 months. Since the heapings occurred for both the age at death and the age at birth, the proportions were not affected. Therefore, only omissions of deaths and births had an effect on levels and trends of infant and child mortality.

Table 4 shows estimates of infant and child mortality derived from birth history data. The infant mortality rate (IMR) for the period approximating 1979-1984 was 93 deaths per thousand live births. The further one checks back in time, the more IMR increases, as does child mortality. A comparison of IMR determined by the 1976 NFS with that of the 1986 NFFS for same period (1969-1974) shows that the rate under the NFFS was lower than that under the NFS. It should be noted that the data from the two surveys are not exactly comparable because the NFFS interviewed only currently married women, while the NFS interviewed all ever-married women. It is difficult to estimate what impact the exclusion of divorced and widowed women may have had on estimates

Figure 3: Total fertility rate, by calendar year

Notes: [] = TFR; Western calendar years are within parentheses; the others are Nepali calendar years.

Source: Table 5.

of the IMR, but the chances are that estimates based on currently married wo-men under-estimate infant and child mortality, particularly as one goes back in time.

Another way to judge the accuracy of birth histories is by examining the fertility levels by age and over time. Figure 3 shows the total fertility rates gene-rated by birth history data (the full set of age-specific fertility rates [ASFR] by single Nepali calendar years are given in table 5). The graph shows the impact of the heaping of births at certain digits, namely 0, 2, 5 and 8 years before the sur-vey; the TFR jumps at 5, 8, 10, and 12 years prior to the survey. This is an in-dication of the displacement of births to these preferred digits during the last 10 to 12 years. At the same time, this graph also shows TFR declining as one goes back in time from the date of the survey. This suggests omissions of births in the remote past. It may be noted that the pattern of heaping was similar to that ob-

Data on marriage, births, mortality and other population information are gath-ered from every walk of life in Nepal. An analysis of the data from a 1986 survey indicates that fertility may have declined during the past decade.

Table 5: Age-specific fertility rates, by calendar year* NFFS, 1986

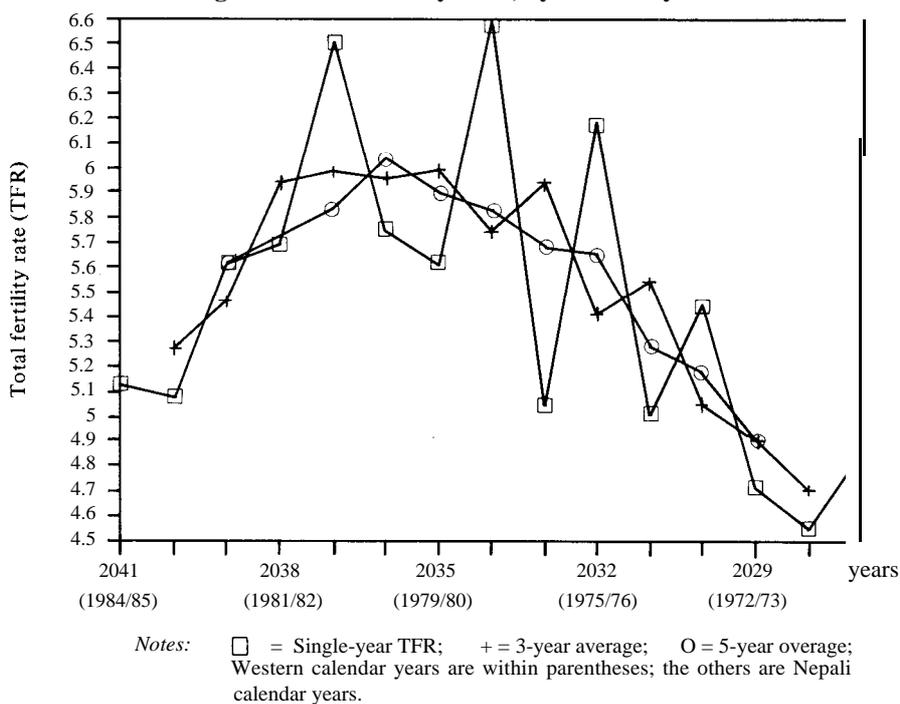| Nepali calendar year	Western calendar year	Age-specific fertility rates per woman							Total fertility rate
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	
2041	1984/85	0.110	0.263	0.234	0.199	0.138	0.072	0.009	5.119
2040	1983/84	0.108	0.258	0.251	0.196	0.107	0.056	0.039	5.078
2039	1982/83	0.116	0.290	0.255	0.219	0.149	0.086	0.005	5.602
2038	1981/82	0.132	0.263	0.281	0.217	0.143	0.092	0.013	5.705
2037	1980/81	0.140	0.304	0.296	0.264	0.200	0.083	0.000	6.498
2036	1979/80	0.153	0.274	0.246	0.215	0.189	0.059		5.744
2035	1978/79	0.149	0.282	0.285	0.202	0.157	0.034		5.606
2034	1977/78	0.160	0.276	0.332	0.261	0.200	0.075		6.586
2033	1976/77	0.128	0.236	0.255	0.200	0.161	0.015		5.042
2032	1975/76	0.146	0.306	0.308	0.271	0.174			6.168
2031	1974/75	0.103	0.253	0.267	0.210	0.141			5.006
2030	1973/74	0.137	0.300	0.284	0.245	0.095			5.446
2029	1972/73	0.112	0.250	0.233	0.239	0.081			4.712
2028	1971/72	0.138	0.231	0.280	0.208	0.024			4.547
2027	1970/71	0.141	0.266	0.259	0.253				4.851
2026	1969/70	0.102	0.232	0.253	0.131				
2025	1968/69	0.324	0.529	0.877	1.080				
2024	1967/68	0.108	0.258	0.246	0.080				
2023	1966/67	0.109	0.190	0.174	0.049				
2022	1965/66	0.115	0.248	0.259					
2021	1964/65	0.094	0.150	0.158					
2020	1963/64	0.121	0.233	0.151					
2019	1962/63	0.080	0.142	0.082					
2018	1961/62	0.062	0.165	0.062					
2017	1960/61	0.098	0.163						
2016	1959/60	0.085	0.139						
2015	1958/59	0.063	0.109						
2014	1957/58	0.067	0.087						
2013	1956/57	0.036	0.006						
2012	1955/56	0.077							

Notes: *Nepali calendar year starts from the middle of April; for the period 1970-1981, the total fertility rates were computed by assigning rates for the nearest preceeding period to the truncated cells.

served for the age of the mother and age of the children, and, as mentioned previously, this can be reduced by aggregating the data into broad age and period groups.

Therefore, in analyzing fertility, the data have been tabulated by five-year age groups and five-year periods. It is to be noted that the most recent period estimate based on the five-year average may have an upward bias owing to the inclusion of the highest heaped group, i.e. children born five years before the survey. The declining trend of TFR over the distant past indicates that older cohorts of mothers have omitted births 15-20 years prior to the survey, a pattern also observed in the NFS survey (see figure 4).

Examination of cohort fertility is another way to study the omission of live births. Table 6 shows fertility rates by current age and age of the mother at the time of the birth. As one reads down the columns, one finds that the data suggest that the older cohorts (women aged 40 years and over) omitted

Figure 4: Total fertility rates, by calendar year

Notes: □ = Single-year TFR; + = 3-year average; O = 5-year overage;
Western calendar years are within parentheses; the others are Nepali calendar years.

Source: Table 5.

Table 6: Fertility rates for cohort and age at birth, NFFS, 1986

Current age (years)	Mother's age at child's birth					
	15-19	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**
45-49	0.086	0.175	0.190	0.200	0.164	0.073
40-44	0.116	0.223	0.234	0.220	0.131	
35-39	0.147	0.250	0.270	0.202		
30-34	0.177	0.281	0.247			
25-29	0.192	0.274				
20-24	0.042					

births which occurred when they were young. The data also might indicate some displacement of births towards the survey date, in addition to suggesting that the degree of omissions of births increases with an increase in age.

In conclusion, the above analysis leads us to believe that the 1986 NFFS data do suffer from the misreporting of age, misplacement of births in the recent periods, and omission of births for the remote past, particularly among older cohorts. However, there was little evidence of sex-selective omission of births. The data from the recent past, about 10 years before the survey, appear reliable if averaged over five-year periods. This can be observed by comparing the age-specific fertility rates derived from the 1986 NFFS data with those of the 1976 NFS for the same approximate period (tables 5 and 7), which shows that most of the estimates agreed closely.

Levels and trends

Table 7 presents age-specific fertility rates derived from the 1966 NFFS birth history data for the periods approximating (1975-1980) and (1980-1985) and from the 1976 NFS data for the period approximating 1971-1976. The NFS rates are based on five-year intervals prior to the survey, while the NFFS rates refer to Nepalese calendar years.

The data presented in table 7 suggest that fertility has declined over the last 10 years. The birth histories do not have data to compute ASFR for the period 1975-1980 for women 40 years of age and over and the period 1980-1985 for women 45 years of age and over. The standard practice is to use the

**Table 7: Comparison of age-specific fertility rates
from NFFS, 1986, and NFS, 1976**

Age group (years)	NFS, 1976 2028-2032 (1971-1976) (1)	NFFS, 1986		Percentage decline in past 10 years [(1)-(3)]/(1)
		2032-2036 (1975-1980) (2)	2037-2041 (1980-1985) (3)	
15-19	0.135	0.147	0.121	10
20-24	0.284	0.275	0.276	3
25-29	0.293	0.285	0.263	10
30-34	0.242	0.230	0.219	10
35-39	0.167	0.176	0.147	12
40-44	0.084	0.040*	0.078	7
45-49	0.028	0.017*	0.017*	
TFR (15-39)	5.61	5.57	5.13	
TFR (15-49)	6.17	5.85	5.61	9

Notes: * = truncated; calendar years within parentheses are approximate only, as the NFFS (1986) rates are based on the Nepali calendar year.

Source: NFS (1976) rates are calculated based on rates provided by Alam and Casterline (1984).

rates for the most recent years for which a rate for a given age can be computed. Using that procedure, the TFR estimated for the period 1975-1980 was 5.9. It was 5.6 for 1980-1985. This suggests a slight decline in fertility.

From 1971-1976 to 1980-1985, TFR appears to have declined from about 6.2 to 5.6, or by 9 per cent, over a 10-year period. However, as can been observed from TFR for ages 15-39, there was no change in fertility between 1971-1976 and 1975-1980. The estimated TFRs for ages 15-39 are more direct than for the ages 15-49, since they do not need adjustment for truncation. They show that fertility has only recently started declining. The comparison of age-specific fertility rates obtained in the NFS and NFFS indicates that the biggest absolute declines occurred among women 25-39 years of age (figure 5).

The decline in fertility among women aged 25 years and over is consistent with the increase in contraceptive prevalence rates. The contraceptive prevalance rate was only 3 per cent in 1976; it increased to 15 per cent in 1986 (table 8). The use of contraception was found to be highest among women aged 25 years and above. Permanent contraception (male and female sterilization) comprises 86 per cent of all the methods used (Nepal FP/MCH Projcet, 1987).

Figure 5 : Change in age-specific fertility rates between 1976 and 1986

Notes: [] = ASFR for 1975;   + = ASFR for 1985
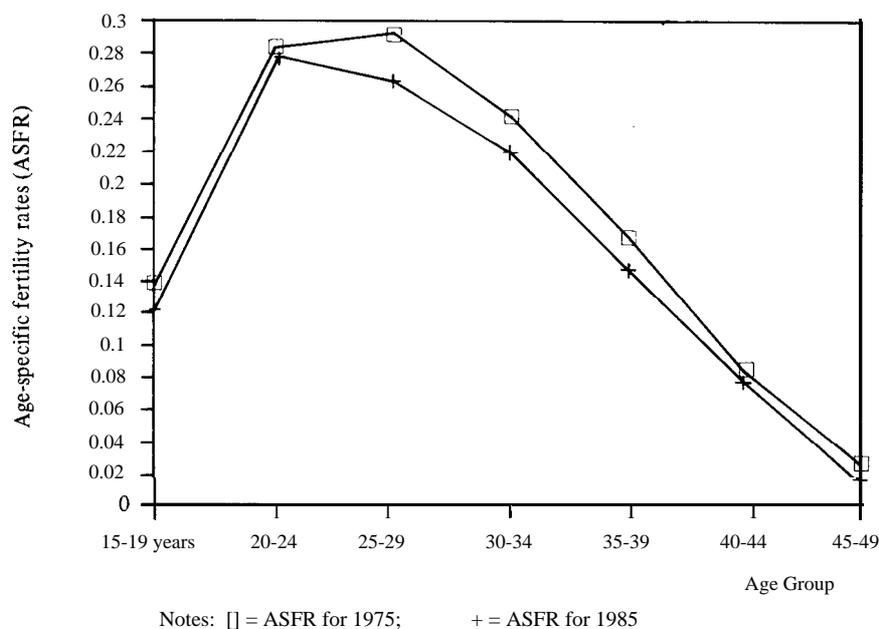
The slight decline in fertility in the age group 15-19 can be attributed to a rise in the age at marriage. During the period 1976 and 1986, the proportion never married for the age groups 15-19 years rose from 37 to 62 per cent.

Conclusion

This analysis found that in the 1986 Nepal Fertility and Family Planning Survey there was age heaping for both mothers and children, but the likely effects on estimates of fertility were minimum. The sex-selective omission of births was not noticable. The study found misplacement of births in the recent period and the omission of births in the remote past for older women. This makes it difficult to use data for the remote past; however, the data for the recent past appear accurate if appropriately averaged. When comparing the age-specific fertility rates derived from the 1986 NFFS data with the 1976 NFS for the same approximate period, it was found that the estimates agreed closely.

The TFR was around 5.6 per woman for the period 1980-1985. Compared with earlier periods, TFR seems to have declined by 9 per cent during the past

**Table 8: Percentage of current contraceptive use among
currently married and non-pregnant women of ages 15-49 years,
NFS, 1976 and NFFS, 1986**

Age of woman (years)	NFS, 1976 (No. = 4,325)	NFFS, 1986 (No. = 3,654)	Absolute increase (%)
15-19	0.3	1.3	1.0
20-24	1.3	7.2	5.9
25-29	2.5	15.1	12.6
30-34	5.3	24.6	19.3
35-39	5.7	22.3	16.6
40-44	3.8	18.3	14.5
45-49	5.3	11.5	6.2
Total	2.9	15.1	12.2

Note: Ministry of Health (1977), Nepal Fertility Survey 1976: First Report, His Majesty's Government, Nepal FP/MCH Project, WFS/Nepal Project, Kathmandu, Nepal; and Nepal FP/MCH Project (1987), Nepal Fertility and Family Planning Survey Report 1986, His Majesty's Government, Ministry of Health, Kathmandu.

Sources: Figures inside parentheses refer to the number of cases.

10 years, the main decline occuring during the last five years. The decline in TFR was due to both a changing marriage pattern among the youngest cohort (age group 15-19 years) and the increased use of contraception among older cohorts (age groups 25-39 years).

Given the difficulty of obtaining accurate survey data in a largely illiterate population, it is not possible to say with a high degree of certainty that fertility has indeed declined. Restrospectively collected birth history data are notorious for showing spurious curves of fertility which decline sharply in the years just before the survey. Jubilant announcements of fertility decline are then contradicted by subsequent surveys showing precisely the same patterns (Retherford *et al.,* 1987). The same may be occurring in this case too.

However, no internal evidence has been found of the omission or serious displacement of births in the recent past, except for some heaping around age five, which has been largely neutralized by averaging. One can argue that internal consistency in the birth histories might mean nothing more than that the omissions of births were random. But our best assessment at present is that the 1986 survey indicates the onset of a fertility decline in Nepal.

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Muslim Fertility Transition: The Case of the Singapore Malays

*Below-replacement fertility has been achieved
by the Singapore Malays, the majority
of whom are Muslim*

By Saw Swee-Hock*

It is generally believed that the higher level of fertility prevailing in some populations has been sustained by certain religious tenets favouring large family norms. There are numerous studies which have demonstrated that Roman Catholicism has played an important role in upholding fertility at a relatively higher level on account of its consistent condemnation of artificial methods of birth control (Day, 1968; Murphy and Erhart, 1975). There are still other studies which have linked the relatively higher fertility prevailing in most Muslim populations to certain Islamic teachings concerning population control (Kirk, 1968; Nagi and Stockwell, 1982). There is, however, no general concensus

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Singapore is a multicultural society comprisrng people of Chinese, Malay and Indian origin, such as this woman visiting a family planning clinic during the early 1970s. The influence of religious doctrines on fertility levels appears to exist among such groups, yet a fertility transition has taken place among the Singapore Malays, most of whom are adherents of the Islamic faith. (United Nations photograph)

among Muslim religious authorities about the different forms of birth control: the majority endorsing family planning, some sanctioning induced abortion, and most opposing sterilization.

The influence of religious doctrines on fertility levels appears to exist among certain populations in South-east Asia. The comparatively high fertility persisting in the Philippines is in large part due to the extensive influence of Roman Catholicism among both the masses and those in authority. Again, there is the Islamic factor in engendering higher fertility levels among the Malay population in Malaysia (Saw, 1988) as well as among the predominantly Muslim population in Indonesia.

Against this backdrop of populations appearing to conform to the role that religious beliefs are thought to have on fertility patterns is the unusual case of below-replacement fertility experienced by the Malay population in Singapore. It would be instructive to examine this less well-known fertility transition that has taken place among the Singapore Malays in spite of their total adherence to the Islamic faith.

The population of the city-state of Singapore was estimated to be 2,647,100 in mid-1988, with the Malays accounting for some 401,200 or 15.2 per cent of the total population. The Indians constitute a much smaller ethnic group, numbering some 171,800 or 6.5 per cent of the total. By far the most dominant group are the Chinese who comprise about 2,011,300, or 76.0 per cent, of the total. The general pattern of religious practices among these ethnic groups is that, aside from those not professing any religion, the Chinese and the Indians practise a variety of religions such as Buddhism, Taoism, Hinduism, Islam and Christianity rather than a single faith. With very few exceptions, the Malays are ardent followers of the Islamic faith. According to the 1980 population census, no less than 99.4 per cent of the 294,121 Malays aged 10 years and over were Muslims. Among the 323,867 Muslims aged 10 years and over, some 90.2 per cent were Malays, 8.6 per cent Indians, 0.3 per cent Chinese and the remaining 0.9 per cent from minority ethnic groups (Khoo, 1983).

This study is based entirely on statistics derived from the vital registration system implemented in January 1872 to effect the compulsory registration of births occurring in Singapore. However, an examination of the long-term trends in the fertility of the Malay population can begin only from the year 1947, when the prerequisite birth statistics classified by age of mothers became available for computing the total fertility rate (TFR). This rate, defined as the average number of children produced by each woman during her reproductive life, is of course a reliable index for studying fertility trends. The total fertility rate for the Singapore Malays is calculated for the years 1947 to 1988, and the results are presented in table 1 together with the annual number of births and the crude birth rate (CBR).

Table 1: Births, crude birth rate and total fertility rate for the Malay population in Singapore, 1947-1988.

Year	Number of births	Crude birth rate (CBR)	Total fertility rate (TFR)	Percentage annual change		
				Birth	CBR	TFR
1947	5,473	48.1	5.74	–	–	–
1948	5,107	43.9	4.98	-6.7	-8.7	-13.2
1949	5,709	47.7	5.29	+11.8	+8.7	+6.2
1950	5,758	45.7	5.02	+0.9	-4.2	-5.1
1951	6,062	45.0	4.95	+5.3	-1.5	-1.4
1952	6,858	47.1	5.35	+13.1	+4.7	+8.1
1953	7,304	46.7	5.75	+6.5	-0.8	+7.5
1954	8,118	49.0	6.18	+11.0	+4.9	+7.5
1955	8,336	47.8	6.08	+2.7	-2.4	-1.6
1956	8,999	48.8	6.25	+8.0	+2.1	+2.8
1957	9,317	47.3	6.28	+3.5	-3.1	+0.5
1958	10,005	47.9	6.48	+7.4	+1.3	+3.2
1959	10,463	47.4	6.61	+4.6	-1.0	+2.0
1960	10,577	45.6	6.53	+1.1	-3.8	-1.2
1961	10,990	45.3	6.57	+3.9	-0.7	+0.6
1962	11,257	45.0	6.67	+2.4	-0.7	+1.5
1963	11,568	45.0	6.73	+2.8	0	+0.9
1964	11,709	43.9	6.69	+1.2	-2.4	-0.6
1965	11,008	39.7	6.21	-6.0	-9.6	-7.2
1966	10,986	38.2	5.97	-0.2	-3.8	-3.9
1967	9,849	33.3	5.37	-10.3	-12.8	-10.1
1968	8,667	28.8	4.46	-12.0	-13.5	-16.9
1969	7,422	24.3	3.65	-14.4	-15.6	-18.2
1970	7,316	23.5	3.50	-1.4	-3.3	-4.1
1971	7,246	22.9	3.30	-1.0	-2.6	-5.7
1972	7,594	23.6	3.33	+4.8	+3.1	+0.9
1973	6,903	21.2	2.91	-9.1	-10.2	-12.6
1974	6,176	18.7	2.48	-10.5	-11.8	-14.8
1975	5,647	16.9	2.14	-8.6	-9.6	-13.7

(**Table 1** – *Continued*)

Year	Number of births	Crude birth rate (CBR)	Total fertility rate (TFR)	Percentage annual change		
				Birth	**CBR**	**TFR**
1976	5,470	16.2	1.91	-3.1	-4.1	-10.7
1977	3,364	15.7	1.88	-1.9	-3.1	-1.6
1978	5,523	16.1	1.84	+3.0	+2.5	-2.1
1979	5,755	16.6	1.85	+4.2	+3.1	+0.5
1980	6,654	18.9	2.04	+15.6	+13.9	+10.3
1981	7,131	20.0	2.09	+7.2	+5.8	+2.5
1982	7,315	20.2	2.11	+2.6	+1.0	+1.0
1983	7,527	20.4	2.06	+2.9	+1.0	-2.4
1984	7,900	21.1	2.09	+5.0	+3.4	+1.5
1985	8,104	21.3	2.11	+2.6	+0.9	+1.0
1986	8,124	21.0	2.05	+0.2	-0.1	-2.8
1987	9,100	21.9	2.16	+12.0	+4.3	+5.4
1988	9,752	24.3	2.31	+7.2	+10.5	+6.9

The long-term movement in the number of births in the last 42 years has been quite clear-cut, rising from 5,473 in 1947 to the peak of 11,709 in 1964 and then descending to the low of 5,369 in 1977, and thereafter rising again to reach 9,752 in 1988. On the other hand, CBR oscillated above 45 births per thousand population during the years 1947-1958, after which it went down consistently to the low of 15.7 in 1977. Since then, CBR has been climbing steadily to reach 24.3 in 1988. The fall in the rate during the period 1959-1962 was not a result of fertility decline, but rather a reduction in the proportion of women in the reproductive age group brought about by the entry of a smaller number of women than usual into that age group (Saw, 1980). This smaller cohort of women consists of survivors of the fewer births and more infant deaths which occurred during the war years 1941-1945.

The figures for TFR reveal that fertility has in fact been moving up quite regularly from 1947 to as late as 1963, rising from 5.74 to 6.73 during this period. The extremely high fertility prevailing during the post-war period may be attributed to certain attitudes and beliefs deeply imbedded in the social and cultural tradition of the Malays (Saw, 1970). First, there was the interaction of the lower mean age at first marriage of women, the higher marriage rate and the larger proportion ultimately married. Malay girls were expected to marry early; marriage was universal and celibacy was frowned upon. Second, there

was the desire for larger families as determined by the extended family system and the greater value attached to children. Third, the practice of family planning and induced abortion was so negligible as not to have any impact on the fertility level at that time.

The commencement of fertility decline that occurred among the Malays in 1964 was somewhat later than that of the Chinese (1957). There are many reasons for the delayed downturn recorded for this ethnic group, but there is one particular variable that could only affect the Malays, and this is related to the incidence of divorce. There is considerable evidence to suggest that the higher divorce rate with its attendant marital instability tends to depress fertility in some Muslim populations, and any sudden marked reduction in divorce will lead to a temporary rise in fertility. The data for Muslim marriages and divorces in table 2 point to the higher divorce ratio of about one divorce for every two marriages during the years up to 1958 and the sudden sharp fall to about one for every ten in the next few years. This has undoubtedly created greater marital stability among the Malays and hence a further rise in fertility from 1958 to 1963. The steep down-swing in Muslim divorces was due to the deliberate effort of the Government to bring them under firm control by establishing the Shariah Court in November 1958 under the Muslim Ordinance, 1957 to oversee divorce cases (Singapore, 1957; Djamour, 1966).

As the effect of the divorce downturn faded and as the norms favouring large family size were weakened by social and economic progress, Malay fertility began to decline in 1964 and continued unabated during the next 15 years. The onset of fertility decline, in the absence of illegitemate births, was triggered mainly by a rise in the average age at marriage of women. According to population census data, the median age at first marriage has been increasing from 19.8 years for the cohort marrying during the period 1946-1950 to 20.2 years for the cohort marrying during the period 1951-1955, 21.4 years for the cohort marrying during the period 1956-1960, and 22.5 years for the cohort marrying during the period 1961-1965 (Arumainathan, 1973).

The reduction recorded in the first three years, i.e. 1964-1966, was rather modest but gathered momentum in the next three years as a consequence of the introduction of the national family planning programme in January 1966. With the blessing of their religious leaders, the Malays responded positively to the subsidized family planning services made readily available in government health clinics. Owing to the saturation effect, the fertility decline slowed down again in the early 1970s, but soon picked up speed as induced abortion was legalized on a restricted basis in 1970 and made available on demand in 1975. This acceptance of induced abortion by Malay women contributed to the double-digit reduction in fertility during the years 1973-1976. However, it should be mentioned that few Malays accepted sterilization as a method of birth control when it was legalized at the same time as induced abortion. This

Table 2: Muslim marriages and divorces, 1921-1971

Year	Muslim marriages	Muslim divorces	Per cent of divorces to marriages
1921-1930	23,555	13,114	55.7
1931-1940	21,138	12,036	56.9
1941-1950	26,463	15,781	59.6
1951	2,699	1,526	56.5
1952	2,658	1,474	55.5
1953	2,445	1,417	58.0
1954	2,458	1,357	55.2
1955	2,472	1,247	50.4
1956	2,414	1,074	44.4
1957	2,303	1,192	51.8
1958	2,332	1,149	49.3
1959	2,116	577	27.3
1960	1,814	574	31.6
1961	1,560	401	25.7
1962	1,483	447	30.1
1963	1,690	430	25.4
1964	1,698	324	19.1
1965	1,922	366	19.0
1966	1,911	301	15.8
1967	1,894	374	19.7
1968	1,971	200	10.1
1969	1,972	244	12.4
1970	2,272	219	9.6
1971	2,471	241	9.8

drastic and permanent method of preventing conception has never received the sanction of Muslim religious leaders.

An examination of the figures for TFR in table 1 will reveal that the fertility transition of the Malays from high to low was completed within the relatively short span of 12 years. TFR was brought down rapidly from the peak of 6.73 in 1963 to near the level of replacement in 1975 when it stood at 2.14. The transition is significantly shorter than the 18 years (1957 to 1975) taken by the Chinese and the 17 years (1958 to 1975) by the Indians (Saw,

Visiting nurses give family planning advice to a Singapore Malay woman during a campaign in 1972. Since that time, the city-state has undergone a fertility transition, and the Singapore Malays have achieved replacement level fertility. (United Nations photograph)

1990). It should be noted that the attainment of replacement level fertility by all three major ethnic groups in 1975 coincided with the introduction of the new Abortion Act, 1975 which made induced abortion freely available on demand (Singapore, 1975). What is more noteworthy is that the Malay population in Singapore stands out as the first Muslim population in the world to have achieved replacement level fertility.

For a greater understanding of the fertility transition of the Malay population in Singapore, table 3 provides some of the key indicators which can throw further light on this unique phenomenon. The Singapore Malays are essentially urban dwellers, with a higher literacy rate of about 89 per cent. Nearly all of them are employed in non-agricultural activities, particularly in the modern manufacturing and services sectors. Singapore Malay women tend to marry at a very late age, about 24 years. Among those married women, about 68 per cent have practised contraception, 11 per cent have been sterilized and 16 per cent have undergone induced abortion, Under such favourable conditions, Islamic

Table 3 : Some fertility variables for the Singapore Malay population

Variable	Percentage	Year
Literacy rate for Malay population aged 15 years and over	88.9	1988
Proportion of Malay population in urban areas	100	1988
Labour force participation rate for Malay women aged 15 years and over	23.3	1988
Proportion of Malay labour force in		1988
Agriculture & fishing	0.4	
Manufacturing	36.4	
Services	30.4	
Average age at first marriage of Malay women	23.9 yrs.	1987
Proportion of currently married Malay women aged 15-44 years using contraception	67.5	1982
Proportion of currently married Malays aged 15-44 years who have undergone sterilization	11.4	1982
Proportion of currently married Malay women aged 15-44 years who had an abortion	15.6	1982

teachings concerning birth control no longer pose a serious obstacle to the Malays in achieving very low fertility.

After descending to the level of replacement, the Malay TFR continued to move downwards for a few more years until it touched 1.84 in 1978. It later recovered slightly and went back to the replacement level in 1987. The latest year, i.e. 1988, witnessed an appreciable rise of 6.9 per cent which brought the TFR to 2.31, slightly above the replacement level. This noticeable upturn is most probably due to the population policy changes introduced by the Government in March 1987. The changes involved the relaxation of certain old anti-natalist measures and the introduction of some new pro-natalist incentives aimed at encouraging Singaporeans to produce more children to raise the national fertility to the replacement level (Saw, 1989). In comparison with the other ethnic groups, the Malays are likely to respond more positively to these policy changes as they would be attracted by the incentive rewards attached to some of the new measures and would be in a better position to respond to the changes in view of their relatively low acceptance of sterilization in the past.

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Correction

The authors of the article entitled "New Directions in Family Planning Communication: 12 Predictions for the 1990s", which was published in the December 1988 issue of the *Journal* (vol. 3, No. 4), would like to make the following correction of the byline on page 17 of that issue:

The authors are Dr. Phyllis T. Piotrow, Director, Center for Communication Programs, and Jose G. Rimon, II, Deputy Project Director, Population Communication Services project in the Center for Communication Programs, the Johns Hopkins University School of Hygiene and Public Health, USA.

Rural Labour Force Transition and Patterns of Urbanization in China*

Urbanization is characterized by the movement of people from rural areas to urban areas (Kupper and Kupper, 1985, p. 874). The term urbanization refers to such a redistribution of population as a demographic phenomenon, and the changing morphological structure of urban agglomerations and their development as social phenomena. The migration of populations links the rural areas with urban areas and is affected by "push" forces from rural areas and "pull" forces from urban areas. Different degrees of these forces determine the different pace, patterns and processes of migration and urbanization and the transition of populations.

A large part of China's population is beginning to migrate from rural to urban areas; there has been no previous experience of urbanization on such a large scale in the entire world. Urbanization is a new and important field of study in China and is currently absorbing the attention of social scientists and demographers both in country and abroad. Many papers on China's urbanization have been published in recent years. This review of some of the literature on this subject summarizes the discussions on rural labour force transition and patterns of urbanization in China and examines what has already been studied and what areas require further study.

Surplus labour force in rural areas

The formation of surplus labour as a component of urbanization is an important topic. Zhong and Lu (1987), Yan (1986), and Pan and Chen (1987) estimate there will be a surplus labour force of 120-200 million in China by the year 2000. The situation is already very serious in rural areas. A few authors (for example, Yan, 1986; Zhong and Lu, 1987; Li *et al.,* 1987) assert that surplus labour has been created only in recent years. Yan (1986, pp. 4-6) states that the growth of the labour force has been faster than that of the population in rural areas in recent years because people who were born in the two "baby boom" periods (the 1950s and 1960s) have entered the economically active age groups, while population growth has declined since the early 1970s. Li *et al.* (1987, p. 6) and Wang (1987d, p. 28) state that speedy agricultural mechanization has displaced a large pool of agricultural labour.

Many authors (for example, Cao, 1987; Wang, 1987e) also note that changes in age structure, mechanization and the responsibility of families for agricultural production have had a strong impact on surplus labour. They argue that surplus labour is not a recent phenomenon, but that is has existed for a long time. Cao (1987, pp. 16-20) states that there has long been a contradiction between the growth of the labour force and the decline in the area of land under cultivation. That area has decreased constantly owing to the use of land for industry, transportation and residential purposes. In contrast, the labour force has increased rapidly as a result of the large population base, although surplus labour has been latent on a large scale for over 30 years.

Yan (1986, p. 4) and Cao (1987, pp. 17-18) observe that when the people's commune system was established in the middle 1950s, the free mobility of the rural people was no longer possible. The introduction of the restricted identity card management system completely blocked the migration of rural people to urban areas, and meant that rural people could not change their rural status. Li *et al.* (1987, p. 16) and Wang (1986, p. 284) state that labour productivity does not change, or may even decline, when labour supply increases; that not only conceals surplus labour but constrains the transition of labour from agricultural work to "non-farm" activities. Such a situation means that labour productivity is too low to supply more agricultural production for a larger non-agricultural population. Cao (1987) and Wang (1987e) also state that under the centralized administration of collective ownership, low labour productivity concealed the existence of a surplus labour force. Peasants may have joined work teams, but many did little or no work. Such concealed surplus labour has been revealed relatively recently by the introduction of the family responsibility system for production.

Many authors (Zhang, 1986, p. 42; Fang, 1984, p. 17; Wang, 1987b,

p. 40) assert that the performance of the family responsibility system and the increased prices of agricultural produce have raised labour productivity rapidly. They argue that an increasingly expanding level of agricultural production can supply a larger non-agricultural labour force. With the migration of rural people to non-rural areas becoming a possibility, rural people may thus be able to change their status. Luo (1988, p. 13) and Cao (1987, p. 17) note that some peasants accumulate savings when their income increases; their focus becomes one of looking for a field in which to invest those svaings. They urgently want to change their rural status in order to work in the non-agricultural sectors. Goldstein and Goldstein (1984, pp. 92-95) also state that the pressures of a large surplus labour force and the introduction of the relatively new economic responsibility system have led to a substantial increase in temporary population mobility.

However, Zhong and Lu (1987, pp. 21-29) and Li *et al.* (1987, pp. 16-23) suggest that the family responsibility system also constrains rural people from divorcing themselves completely from agriculture and migrating to urban areas, because each family has to plant the land which is its responsibility (it is apportioned taking account of the size of the family) and pay the grain
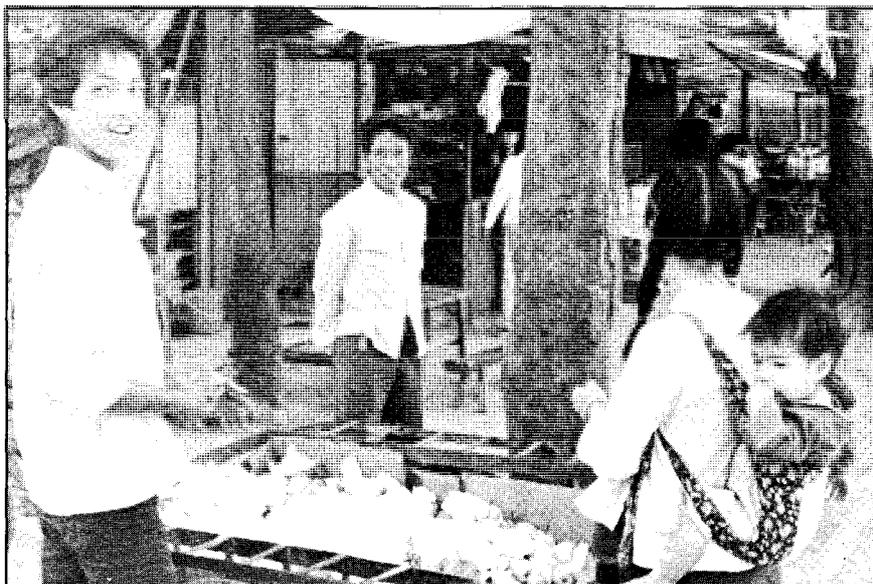
Policy changes in China since the end of 1978 are affecting the composition of the labour force as people change their rural status to work in non-agricultural sectors or those that are only somewhat related, such as this young man selling fruit in Guangdong province.

tax. The land which is the family's responsibility holds the family on the land, not allowing it to migrate or, at most, to migrate only partially.

Role of cities in absorbing surplus labour

A precondition of urbanization is that there exists in rural areas a large surplus labour force and an expanding population which can leave agriculture; however, the absorptive capacity of urban areas is much more important in its effect on migration and urbanization.

Song (1988, p. 20), Zhao (1984, p. 10) and Wang (1986, p. 30) observe that cities very easily absorb rural people, because there are great differences in living conditions, social facilities and cultural facilities between cities and rural areas. Nevertheless, there are many obstacles that prevent rural people from migrating to cities.

Zhao (1984, pp. 10-12) and Ma (1987, pp. 96-100) agree that although cities easily absorb rural people, the absorptive capacity of cities is very low because natural population increase is very high. Further, industries in urban areas cannot absorb a large number of people who are in the economically active age groups because services are neglected and seriously underdeveloped. Therefore, a large number of educated young people have even been sent to the countryside as a measure aimed at absorbing unemployed surpluses. Luo (1988, pp. 14-16) states that a developed urban system itself faces a lot of difficulties and incomplete urban infrastructure, such as a lack of basic urban facilities, underdeveloped transportation and residential facilities, a shortage of energy and traditional management. These seriously constrain absorptive capacity.

An urbanization crisis is occurring in many of China's "mega cities" and other large cities, making it necessary to control urban areas more strictly. Liu (1987) reveals that the system of identity cards and the basic commodities supply system effectively block rural people from migrating to urban areas. Because urban residents get many privileges, for example, basic commodities supply is based on large financial subsidies, the Government cannot afford much more support for even larger urban populations. Thus, it strictly controls the migration of rural people into urban areas.

Kwok (1982, pp. 550-552) observes that whenever priority is given to heavy industry and there is administrative centralization, urban development is concentrated in the few existing major industrial cities. Such a development policy is unfavourable to the growth of small cities. There is no pressure for establishing more small cities, and existing small cities are not under pressure to absorb more labour from rural areas. Liu (1987) and Wang (1987a, pp. 22-29) state that the Government stresses the development of

heavy industry and ignores the development of services, which constrains effective urban functions and any increase in absorptive capacity.

Since there are many rural people about to migrate in China, Cao (1987, pp. 17-18), Ma and Wang (1988, pp. 1-9) and Zhao (1984, pp. 37-38) suggest that urban areas must increase rapidly their ability to absorb migrating rural people. But because urbanization is related to national economic development, any increase in absorptive capacity will require more investment to complete and broaden basic urban infrastructures and generate more employment opportunities for those migrants. Although the growth of industry in China has been very rapid, the urban economic system cannot absorb both a large urban and a large rural labour force. Moreover, because the Government cannot afford much investment in urban construction, rural migrants should be encouraged to move to rural towns and small cities, bringing their own capital with them. Thus, the strategy that has been suggested is one of strictly controlling large cities, rational development of medium-size cities, and active development of small cities and towns (Luo, 1988, p. 17).

Patterns and stages of rural labour migration

Large numbers of people in the rural labour force began to shift their occupational status from agriculture to other production sectors, such as commerce and services, and to move from the countryside to rural towns and urban areas following the Third Plenary Session of the Eleventh Central Committee of the Communist Party of China (1978). In studying this phenomenon, many authors (for example, Cao, 1987; Luo, 1988; Xu, 1985; Zhang, 1986) pay more attention to the patterns, pace and stages of rural labour force migration than to the formation of the rural surplus labour force.

Cao (1987, p. 16) considers that the transition of agricultural labour to non-agricultural activities in rural areas is an "explosion" that has resulted because of the double pressures of a large surplus population on one hand and obstacles to the migration of that surplus labour to larger cities on the other hand. Peasants shift their occupational status when the urban system blocks them. They invest their own limited funds in constructing rural handicrafts, manufactures, and commerce and services in local rural areas or rural towns. Luo (1988, pp. 13-14) also indicates that many peasants "liberate" themselves from agriculture to construct rural industries.

Wang (1987a, pp. 24-26) and Zhao (1984, pp. 7-14) suggest that rural surplus labour should leave the land only for non-agricultural sectors such as rural industry, but they should still stay within rural areas, because large-scale migration of labour to urban areas will put intense pressure on those areas where absorptive capacity is still very low. If a large number of better

educated young labourers leave rural areas, agricultural production will also be adversely affected. People leaving the land but remaining in rural areas would suit China's current conditions of economic development. Such would not only favour agricultural production, but also promote rural industrial development and an improvement in rural living standards while eliminating differences between rural and urban areas.

Some authors (Zhang, 1986, p. 43: Xu and Ye, 1985, p. 38; Yan, 1986, pp. 4-6; Kang, 1984, pp. 18-20 and 1986, pp. 33-37) believe that the "creation" of people who are both workers and peasants is a special form of urbanization in China. Kang (1984, pp. 18-20 and 1986, pp. 33-37) defines such a population as comprising those people who are not completely divorced from agriculture but who have given up agricultural work as their major occupation in order to earn their living mainly from non-agricultural work. Fang (1984, pp. 17-19) and Yan (1986, pp. 4-6) express the view that such a population of worker-peasants completes only the first step in the transition of this segment of the population from agriculture. This initial transition fits the current situation and the characteristics of rural surplus labour, because the family responsibility system for production makes it difficult for entire families to move.

Zhu (1987, pp. 33-35) divides the transition patterns into an overflowing pattern, an absorbing pattern, and a transfer pattern. The overflowing pattern refers to the situation where the surplus labour force is much larger than the absorptive capacity of the non-agricultural sector: e.g. surplus labour continues to flow from agriculture seeking absorption by industry. The absorbing pattern occurs when the demand for and supply of agricultural labour is near equilibrium or even when there is a shortage of agricultural labour. When a large labour force transition has taken place, the push force declines rapidly and agriculture may even exert a pull force. However, the absorptive capacity of non-agriculture increases over the pull force of agriculture as rural industry and small cities and towns develop quickly, because the income from non-agriculture is much higher than that from agriculture. In such circumstances, the size of the labour force currently in transition is larger than the currently separating labour force.

The separating pattern is defined as the rural labour force gradually leaving agriculture owing to agricultural mechanization. Productivity improves constantly and surplus labour changes its nature gradually. Zhu (1987, pp. 34-38) also suggests that the transition process can be divided into two stages: firstly, incomplete transition in which the population comprises people who are both workers and peasants, and secondly, complete transition in which the population is completely divorced from agriculture and is employed in the non-agricultural sector. Ultimately the population will not only leave the land, but will also leave the rural areas.

Xu and Ye (1987, pp. 37-39) and Zhong and Lu (1987, pp. 24-25) suggest that such populations will be absorbed into different industrial sectors. Most enter rural industrial and handicraft plants; some move to small cities and towns as contract-labourers for construction and transportation, and still others manage businesses in cities. The distances moved extend gradually from short to long moves far from the migrants' origins.

With regard to the migrants' different destinations and the various sectors in which they work, the term "mobility" refers not only to daily circulation but also to seasonal mobility and semi-permanent migration. Goldstein (1984, pp. 100-103) states that circulation has become a major mechanism which enables rural areas to cope with their surplus labour force and to improve their standard of living.

Zhang (1987a, pp. 53-55) asserts that the transition is accelerating at a pace never before experienced. Growth in the transition of labour is faster than the growth of the total labour force at a time when both the proportion and size of the agricultural labour force is declining. Many people who are just entering the economically active age groups enter directly into the non-agricultural sectors. Kang (1986, pp. 31-37) suggests that the pace of the transition cannot be very fast and that the transition cannot be completed in a short period of time. Pan and Chen (1987, pp. 90-94) and Guo and Pan (1986, pp. 16-20) also state that the transition will vary in different provinces and districts. Because levels of economic development are different, the transfer process will be faster or slower and take a longer or shorter period to complete in different places.

Kwok (1982, pp. 556-557) proposes that a slow-down in agricultural mechanization would allow (a moderate structural) transition. The pressure of urban development in towns and cities would therefore be less intense, and urbanization of the rural areas could then be developed steadily. By contrast, Li *et al.* (1987, pp. 16-23) and Zhong and Lu, (1987, pp. 21-29) emphasize that, in order to promote the complete transfer of responsibility, land should be relatively concentrated under the control of a few peasants in order that they may develop large-scale management to improve labour productivity and agricultural production.

Some authors (for example, Xu and Ye, 1985; Wang, 1986; Kang, 1984; Cao, 1987), in considering absorptive capacity, suggest that rural industry should be developed quickly and the blockade of urban areas should be eliminated completely. The absorptive capacity of urban areas would then increase greatly and migrants would determine patterns freely. Zhang (1986, pp. 42-43) and Wang (1987c) state that the population that will undergo transition should be trained in non-agricultural skills to promote the transition so

that people's skills would be better suited to the requirements of the transport, construction, industrial, service and retail sectors in urban areas.

Patterns of urbanization

More and more migrants gather in rural towns and move to urban areas when they leave the agricultural sector for the aforementioned sectors. Since there has been considerable experience with urbanization, particularly in the third world and in China during the past 30 years, many Chinese authors (for example, Ma, 1987; Ma and Wang, 1988; Zhao, 1984) have paid attention to patterns of urbanization. Some authors (for example, Cao, 1987; Luo, 1988; Wang, 1984; Zhao, 1984) urge the active development of small cities and towns. Zhao (1984, pp. 7-10) and Wang (1984, pp. 44-45) emphasize that, corresponding to development of rural non-agricultural industrial sectors, rural surplus labour should not leave their agricultural work but continue to live within rural areas and urbanize their local areas. The transition should be a shift of occupational structure and not a change of place of residence.

Wang (1984) and Wang (1987a, pp. 22-29) suggest that industrial production should be spread throughout rural areas to promote urbanization. Zhao (1984, pp. 8-14) states that urbanization in the rural areas can save state investment, improve rural economic development, eliminate the differences between rural and urban areas, and recruit surplus labour for productive work.

Wu (1984, pp. 3-6) asserts that the current rapid development of small cities and towns is partly a "compensating increase", because small cities and towns had actually been in decline for about 20 years. Fang (1984, pp. 17-22) considers that the development of small cities and towns includes two levels: the high-level small cities in which residents are urban residents, and the low-level rural towns in which residents are not urban residents. The low-level rural towns are suitable for the rural population's incomplete transition to non-agricultural occupations and favour their shifting within local areas. Those who do not complete the transition may later make a complete transition to high-level urban small cities and towns. The small cities and towns not only absorb rural populations but also block them from migrating to large and medium-size cities, thus acting as reservoirs and preventing over-urbanization of large and medium-size cities.

Wang (1986) and Li *et al.* (1987) assert that urban areas include large, medium, and small cities and towns which form a complete urban network. They think that the development of medium-size cities should not be ignored when small cities and towns are actively developed. Li *et al.* (1987, pp. 17-23) state that some small cities and towns will become medium-size cities when their economic and social functions are improved and populations increase

to a certain size. Wang (1986) suggests that some rural people should be allowed to migrate directly into medium-size cities. Some new medium-size cities should be established to absorb rural surplus labour and take the lead in rural economic development.

Ma (1987, pp. 98-100) proposes that small cities will constantly progress to become medium-size cities and new small cities will be established continuously. As the proportion of the urban population increases to quite a high level in a population of more than 1 billion people, the number of large cities will naturally grow. He believes that an increase in the number of large cities will not cause an urbanization crisis, the key to avoiding which is being able to manage and modernize large cities. He argues that if a large city has complete facilities and good management, the benefits it offers are much greater than its disadvantages.

Wang (1987c) states that urbanization will vary significantly in different provinces. Regional urbanization should be considered, he says, since development and industrialization are at various levels and there are different population densities, resources, economic patterns and cultural backgrounds in different regions. Thus, urbanization will show various paces and patterns, forming different types of cities, such as industrial centres, commercial centres, and cultural and administrative centres.

Conclusion

In summary, the literature shows that a rural surplus labour force has existed in China covertly or overtly since the 1950s. A large rural surplus labour force has abandoned agriculture and moved to towns and cities of various size. This transition will progress constantly as economic development advances. Small cities and towns act as reservoirs in absorbing large rural surplus labour populations and will regulate the migration of people who want to move to medium-size and large cities. The transition process and urbanization will progress in varying patterns, pace and stages in different regions.

In recent years, Chinese authors have concentrated on explaining only the phenomena of rural labour force transition and urbanization. Many study these aspects theoretically; few study the effects of indirect factors, such as economic policies, education and labour skill training; the consequences of labour force transition on urban and rural areas; and the consequences of the active development of small cities and towns. The study of the transition of the rural labour force and urbanization is beginning and is still in its initial stages; thus, future studies will be deeper, more systematic and more theoretical when research on urbanization is more thorough and when researchers have more knowledge about studies outside China.

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