Chapter VII

THE EFFECTS OF SEX PREFERENCES AND MORTALITY ON CURRENT FERTILITY

7.1 THE PROBLEM

The results presented in the preceding chapter have dealt with the independent effect of sex preferences on the level of fertility. The stopping rules framed to estimate this effect ignored the contribution of mortality among children born. The consideration of mortality is vital in the study of sex preference, since the desired family size composition conceived by couples is with reference to living children and not live births. In other words, couples are likely to continue childbearing until they achieve the desired number of surviving children by sex. It is therefore necessary, from a policy point of view, to understand the likely impact of such reproductive behaviour by couples on fertility. In this regard, the same twelve stopping rules regarding sex preference are redefined, taking care of the mortality among children born, in order to assess the combined effect of sex preferences and mortality on current fertility. The twelve stopping rules thus reframed are described below.

Couples stop reproduction as soon as they have :

Rule 1 : two living children ($s=2$)

Rule 2 : three living children ($s=3$)

Rule 3 : four living children ($s=4$)

Rule 4 : one living son and one living daughter ($b=1$, $g=1$)

Rule 5 : two living sons ($b=2$)

Rule 6 : one living son and two living daughters ($b=1$, $g=2$)

Rule 7 : two living sons and one living daughter ($b=2$, $g=1$)

Rule 8 : two living sons and two living daughters ($b=2$, $g=2$)

Rule 9 : three living sons and one living daughter ($b=3$, $g=1$)

Rule 10: one living son and one living daughter or three living children ($b=1$ and $g=1$, or $s=3$)

Rule 11: two living sons and one living daughter or four living children ($b=2$ and $g=1$, or $s=4$)

Rule 12: two living sons or three living children ($b=2$ or $s=3$).

7.2 APPLICATION OF THE MODEL

Using the results obtained under the probability model (Chapter IV, Section 4.2), the expected fertility trend during 1981-96 in each of the above twelve cases (Rules 1 to 12), as against that of the control set during the same period have been computed corresponding to various combinations of fecundability ($\pi = .384$ and $.612$) and rest period ($\theta = 1.75$ and 2.75 years). The values of these parameters have been chosen arbitrarily but are consistent with the empirical estimates for Indian women (see Chapter V). The maximum value of h in the model is taken as 1.75 years (nine months of gestation (G=0.75 years) plus twelve months of postpartum amenorrhea (M=1.00 year)). The values of α, for illustration, are considered to be 1 year and 2 years to provide exposure for infant and child mortality. Since $\theta = \text{Max}(M+G, \alpha+G)$ and the minimum assumed value of α is greater than or equal to that of M, the value of θ always depends on the value of α for the present analysis. The value of p is assumed to be .512. The values of δ_α and ε_α are chosen from the results of a paper by Sinha (1972) which provides complete life table based on Coale and Demeny's Model (West) Life Tables (see Chapter V, Table 5.4). The level of mortality is assumed to correspond to the e_o^o shown in Chapter V, Table 5.3. Further, the value of $(1-\beta_x)$ used in the model is also presented in Chapter V, Table 5.8.

7.3 RESULTS

The results obtained are summarised in Tables 7.1 to 7.9. The interpretation of the results is similar to that presented in Chapter VI.

7.3.1 Probability of Not Satisfying Sex Preference at the Attained Parity

Tables 7.1 and 7.2 show the probability (Q_m) of not achieving the desired number of surviving children of each sex (b boys and g girls) and/or a total of s surviving children by the time the attained parity is m (m = 1, 2, ... 8). This is shown for s = 1, ... 4 and for all possible combinations of b and g upto and including a total of four children.

Table 7.1 : Probability of Not Achieving the Desired Number of Surviving Children of Each Sex (b Surviving Boys & g Surviving Girls) and/or a total of s Surviving Children by Parity m
($p = .512$, $\delta_1 = .09857$, $\epsilon_1 = .09339$, $\alpha = 1.00$ year)

Desired Number of Living Children			Parity (m)							
Boys (b)	Girls (g)	Total (s)	1	2	3	4	5	6	7	8
0	0	1*	.096	.009	.001	.000	.000	.000	.000	.000
1	0	-	.539	.290	.156	.084	.045	.024	.013	.007
0	1	-	.558	.312	.173	.097	.054	.030	.017	.009
0	0	2*		.183	.026	.003	.000	.000	.000	.000
2	0	-		.787	.558	.372	.239	.150	.092	.056
0	2	-		.804	.586	.403	.268	.173	.110	.064
1	1	-		.592	.329	.181	.099	.054	.030	.016
0	0	3*			.261	.049	.008	.001	.000	.000
3	0	-			.902	.743	.572	.418	.294	.201
0	3	-			.913	.769	.607	.457	.331	.233
2	1	-			.717	.467	.293	.180	.109	.065
1	2	-			.729	.486	.313	.198	.123	.076
0	0	4*				.332	.076	.014	.002	.000
4	0	-				.955	.857	.725	.584	.450
0	4	-				.962	.876	.757	.624	.495
3	1	-				.826	.624	.448	.311	.211
1	3	-				.840	.650	.481	.344	.240
2	2	-				.750	.503	.322	.202	.124
1	1	3		.592	.144	.026	.004	.001	.000	.000
2	0	3		.787	.200	.037	.006	.001	.000	.000
2	1	4			.717	.224	.050	.009	.002	.000

* It indicates no preference for sex. The couples stop as soon as a total of s living children is achieved.

Note: Dash (-) indicates that there is no upper limit on family size (s). Couples will continue reproduction until desired minimum number of living children of each sex is achieved.

Table 7.2 : Probability of Not Achieving the Desired Number of Surviving Children of Each Sex (b Surviving Sons & g Surviving Girls) and/or a total of s Surviving Children by Parity m
($p = .512$, $\delta_2 = .11836$, $\epsilon_2 = .11636$, $\alpha = 2.00$ years)

Desired Number of Living Children			Parity (m)							
Boys (b)	Girls (g)	Total (s)	1	2	3	4	5	6	7	8
0	0	1*	.117	.014	.002	.000	.000	.000	.000	.000
1	0	-	.549	.301	.165	.091	.050	.027	.015	.008
0	1	-	.569	.324	.184	.105	.060	.034	.019	.011
0	0	2*		.221	.038	.006	.001	.000	.000	.000
2	0	-		.796	.573	.389	.254	.162	.101	.062
0	2	-		.814	.603	.422	.285	.188	.122	.077
1	1	-		.611	.348	.195	.109	.061	.034	.019
0	0	3*			.312	.070	.014	.002	.000	.000
3	0	-			.908	.757	.591	.439	.314	.218
0	3	-			.920	.783	.627	.480	.354	.254
2	1	-			.736	.490	.313	.196	.120	.073
1	2	-			.748	.510	.334	.215	.136	.086
0	0	4*				.393	.108	.025	.005	.001
4	0	-				.959	.867	.742	.602	.474
0	4	-				.965	.887	.775	.648	.521
3	1	-				.841	.646	.472	.333	.229
1	3	-				.855	.674	.507	.369	.262
2	2	-				.773	.532	.349	.222	.140
1	1	3		.611	.175	.038	.007	.001	.000	.000
2	0	3		.796	.241	.054	.010	.002	.000	.000
2	1	4			.736	.269	.072	.016	.003	.001

* It indicates no preference for sex. The couples stop as soon as a total of s living children is achieved.

Note: Dash (-) indicates that there is no upper limit on family size (s). Couples will continue reproduction until desired minimum number of children of each sex is achieved.

The probabilities Q_m for $m \geq 9$ have not been presented for want of space, although they are used in the calculations for Tables 7.3 to 7.6.

As might be expected, for any given combination of b and g, the values of Q_m decrease with the increase in parity. In other words, the probability of achieving the desired family size composition $(1 - Q_m)$ will increase with the increase in parity. For any value of b+g, the chances of not achieving the desired family size composition (Q_m) would be least if there was no sex preference. This holds true considering the variation in Q_m under a given parity. The value of Q_m increases with increasing preference for one sex over the other. For a given family size, the maximum is for a family size where the desired minimum consists of one sex only. These probabilities decrease as the minimum desired numbers of the two sexes become equal or nearly equal. Even in those cases where the values of b and g are equal or nearly equal, the probability is at the most 0.41 that the desired number of living children of each sex will be achieved when the attained parity is equal to b+g (except when b+g = 1). These probabilities would however be higher if there was no mortality among children (see Chapter VI, Table 6.1). The effect of infant and child mortality on the results can also be seen by comparing the values of Q_m in Tables 7.1 and 7.2 where all the input parameters except mortality are the same. Thus, the expected family size is likely to be much larger than b+g if the couples continue to strive for the minimum desired number of living children of each sex. The effect of imposing an upper limit on family size(s), while allowing couples to satisfy their sex preferences, is shown (for upper limits of 3 and 4) in the last three rows of Tables 7.1 and 7.2. This is shown in case of certain common sex composition categories. The imposition of an upper limit has little effect on the results when the attained parity is equal to the ideal family size (b+g). At other (higher) parities, the probability of not achieving the desired family size composition is considerably reduced as a result of the upper limit on family size.

7.3.2 Impact on Total Fertility

Table 7.3 shows the Total Marital Fertility Rate (TMFR) for the control set and for certain selected stopping rules (regarding sex preference) under the experimental set. It is shown for one year because TMFR is independent of the year J and remains stable during the period of projection, 1981-96 (for details refer Chapter IV, Section 4.2.2). The fertility rates under the control set and their changes under the experimental set are presented corresponding to different values of fecundability (π) and rest period (θ). As can be seen from Table 7.3, the proposed model is sensitive enough to indicate the variation in the level of fertility between the sets of values of the parameters π

Table 7.3 : Total Marital Fertility Rate for the Control Set and for the Different Stopping Rules Under the Experimental Set,

Fecundability(π)	Total Marital Fertility Rate+ π = .384		π = .612	
Rest period (θ)	θ=1.75 years	θ=2.75 years	θ=1.75 years	θ=2.75 years
<u>Control Set</u>	5.02	4.15	6.49	5.09
<u>Experimental Set</u>				
Rule 1	2.05	2.05	2.07	2.07
Rule 2	3.00	2.97	3.09	3.09
Rule 3	3.79	3.61	4.05	3.96
Rule 4	2.83	2.74	2.99	2.93
Rule 5	3.40	3.18	3.72	3.52
Rule 6	3.84	3.55	4.26	3.99
Rule 7	3.80	3.53	4.21	3.95
Rule 8	4.34	3.89	4.97	4.51
Rule 9	4.49	3.96	5.25	4.64
Rule 10	2.53	2.52	2.58	2.58
Rule 11	3.49	3.36	3.68	3.63
Rule 12	2.75	2.74	2.83	2.83

\+ Based on single year age specific marital fertility rates derived from the model.

and θ under each stopping rule. However, the pattern of changes in the level of fertility over the various stopping rules (from the control set) is the same for all the sets of values of the parameters.

The impact of sex preference on current fertility is clearly evident when TMFR under different stopping rules of the experimental set are compared (see Table 7.3). For a given size of family (total number of living sons and daughters desired), the total fertility increases with increasing preference for one sex over the other. This holds true for a given set of values of the parameters π and θ . The lowest TMFR would obviously be achieved if there was no sex preference. It increases when the preference is for equal or nearly equal numbers of each sex. The maximum TMFR is reached when the desired number of living children consists of one sex only (all combinations are not shown in Table 7.3).

The findings seem to be basically consistent with those of the earlier results where mortality among children born was not considered (see Chapter VI). In fact, the results of both the models are the same except that for a given set of values of the parameters (π, θ) the values of TMFR under different stopping rules in case of the present one are relatively higher as a result of the effect of infant and child mortality. The results are also in line with those of other related studies where the variation in family size under different rules adopted by the parents regarding the sex composition of their children, are examined through probability models (Krishnamoorthy, 1974; Pathak, 1973; Sheps, 1963).

The total fertility rates obtained under different stopping rules are compared with those of the control set, where TMFRs are derived without any allowance for a stopping point. This is done in order to understand the implications that arise if couples continue childbearing so as to attain the desired family size and/or its sex composition, on their total fertility. It may be noted that since TMFR under the control set is derived without any restriction on couples' reproduction, any of the stopping rules under the experimental set would automatically give lower fertility rates than the control group. What the model aims for, is to judge the relative effects of different stopping rules regarding sex preference, in the light of the prevailing level of fertility in the population. It is evident from Table 7.3 that the current level of fertility in a population like India can substantially be reduced even if all couples continue reproduction till they have one living son and one living daughter (Rule 4) or two living sons and one living daughter (Rule 7). For example, a TMFR of 5.02 observed under the control set (corresponding to $\pi = .384$ and $\theta = 1.75$), reduces by 43.6 percent under Rule 4 and

24.3 percent under Rule 7. Such a reduction in fertility under these stopping rules is found to be relatively lower when θ is increased from 1.75 to 2.75 for the exposure of infant and child mortality. For example, a of TMFR of 4.15 observed under the control set (corresponding to π = .384 and θ = 2.75) reduces by about 34.0 percent and 14.9 percent under Rule 4 and Rule 7, respectively.

When higher preference for size and sex is considered the expected reduction in fertility is minimal. It can be seen from Table 7.3 that the TMFR for attaining the desired sex composition under Rule 9 (3 sons and 1 daughter) is higher when compared with the same in the rest of the hypothetical cases illustrated here. For Rule 8, where a couple gives equal sex preference in case of four living children, the TMFR is still less than that obtained under Rule 9. It is only for Rule 5 that the desire for a girl is not shown and a couple continues reproduction until a composition of two living sons in the family is achieved. The TMFR under this assumption is equal to that of having three to four living children, indicating that an extremely strong preference for sex of children can lead to a very high total fertility rate.

The stopping rules discussed above may be considered to be unrealistic since their underlying assumptions call for indefinite reproduction on the part of couples in order to satisfy their minimum sex preference. The effect of imposing an upper limit on family size is shown under Rules 10 to 12. The imposition of such a limit has affected the results. For example, TMFR under Rule 11 is lower than that observed under Rule 7. This is because under Rule 11 a couple is not expected to reproduce beyond four, even if the desired sex composition (two sons and one daughter) is not achieved.

7.3.3 Age Specific Marital Fertility Rate

Tables 7.4 to 7.7 show the ASMFR for the control set and for the different stopping rules under the experimental set during the year 1986, corresponding to various combinations of the parameters π and θ. The pattern of ASMFR for any other year within 1981-96 is close to that of 1986, for the control set and for each of the stopping rules under the experimental set. The impact of adopting stopping rules on ASMFR is clearly evident, especially in the later age groups. All the ASMFR under the experimental set are smaller than or equal to that of the control set for any age group. However, the fertility rates for the later age groups, under the experimental set, are much smaller than the corresponding rates observed under the control set, the probability of achieving the desired sex composition being relatively much higher by the time couples reach the higher

Table 7.4 : Age Specific Marital Fertility Rate (ASMFR) for the Control Set and for the Different Stopping Rules Under the Experimental Set for the Year 1986
(π = .384 and θ = 1.75 years)

	ASMFR (births per 1000 married women) Under Age Group					
	15-19	20-24	25-29	30-34	35-39	40-44
Control Set	136.45	211.19	217.63	197.84	158.19	100.50
Experimental Set						
Rule 1	136.09	166.28	85.94	28.76	7.24	1.33
Rule 2	136.45	205.57	161.54	79.73	27.10	6.37
Rule 3	136.45	211.06	204.85	139.63	64.17	19.38
Rule 4	136.27	187.32	136.13	75.30	34.34	12.24
Rule 5	136.36	198.02	166.43	110.25	59.84	24.89
Rule 6	136.45	209.10	193.69	136.93	76.68	32.35
Rule 7	136.45	209.01	192.73	134.79	74.29	30.74
Rule 8	136.45	211.15	212.53	170.95	106.72	48.34
Rule 9	136.45	211.16	214.01	177.98	118.22	57.95
Rule 10	136.27	185.93	123.75	54.26	17.16	3.84
Rule 11	136.45	208.96	188.28	116.72	49.98	14.40
Rule 12	136.36	195.33	141.82	66.45	21.92	5.06

Table 7.5 : Age Specific Marital Fertility Rate (ASMFR) for the Control Set and for the Different Stopping Rules Under the Experimental Set for the Year 1986
(π = .384, and θ = 2.75 years)

	ASMFR (births per 1000 married women) Under Age Group					
	15-19	20-24	25-29	30-34	35-39	40-44
Control Set	117.24	174.47	177.23	160.93	128.66	81.74
Experimental Set						
Rule 1	117.24	159.58	97.84	38.52	11.27	2.42
Rule 2	117.24	174.43	161.49	99.30	41.21	11.61
Rule 3	117.24	174.47	176.74	146.59	85.63	32.30
Rule 4	117.24	167.01	133.55	82.49	42.04	16.70
Rule 5	117.24	170.56	152.34	110.36	66.10	30.41
Rule 6	117.24	174.46	171.34	134.68	84.18	39.46
Rule 7	117.24	174.46	171.06	133.54	82.44	38.05
Rule 8	117.24	174.47	177.05	155.32	109.60	56.21
Rule 9	117.24	174.47	177.10	156.98	114.72	62.26
Rule 10	117.24	167.00	129.68	68.92	26.24	7.02
Rule 11	117.24	174.46	170.89	128.45	68.61	24.38
Rule 12	117.24	170.54	144.83	83.41	33.38	9.21

Table 7.6 : Age Specific Marital Fertility Rate (ASMFR) for the Control Set and for the Different Stopping Rules Under the Experimental Set for the Year 1986
(π = .612 and θ = 1.75 years)

	ASMFR (births per 1000 married women) Under Age Group					
	15-19	20-24	25-29	30-34	35-39	40-44
Control Set	179.00	272.59	280.11	254.55	203.54	129.30
Experimental Set						
Rule 1	177.70	176.74	61.37	12.78	2.04	0.22
Rule 2	179.00	253.06	149.38	46.60	9.43	1.31
Rule 3	179.00	271.73	232.85	111.12	31.01	5.45
Rule 4	178.34	219.56	131.69	58.72	21.64	6.26
Rule 5	178.65	242.39	179.83	101.28	45.87	15.79
Rule 6	179.00	265.22	219.13	129.58	59.78	20.87
Rule 7	179.00	264.89	216.83	125.72	56.45	19.09
Rule 8	179.00	272.27	260.28	179.68	90.89	33.18
Rule 9	179.00	272.36	265.86	197.34	111.39	45.77
Rule 10	178.34	214.77	105.39	29.69	5.73	0.77
Rule 11	179.00	264.59	200.89	86.42	22.75	3.87
Rule 12	178.65	233.08	126.44	37.78	7.50	1.03

Table 7.7 : Age Specific Marital Fertility Rate (ASMFR) for the Control Set and for the Different Stopping Rules Under the Experimental Set for the Year 1986
(π = .612 and θ = 2.75 years)

	ASMFR (births per 1000 married women) Under Age Group					
	15-19	20-24	25-29	30-34	35-39	40-44
Control Set	147.36	213.95	216.39	196.57	157.12	99.84
Experimental Set						
Rule 1	147.36	178.87	80.80	21.48	4.22	0.60
Rule 2	147.36	213.72	172.65	76.74	21.17	3.91
Rule 3	147.36	213.95	213.60	150.85	63.07	15.81
Rule 4	147.36	196.35	137.35	73.04	32.24	11.18
Rule 5	147.36	204.70	169.23	110.86	59.31	24.23
Rule 6	147.36	213.87	199.68	140.49	77.07	31.86
Rule 7	147.36	213.87	198.92	138.16	74.29	29.98
Rule 8	147.36	213.95	215.35	177.98	110.67	48.99
Rule 9	147.36	213.95	215.66	183.30	122.17	59.31
Rule 10	147.36	196.30	126.75	49.13	12.71	2.24
Rule 11	147.36	213.87	197.91	122.43	47.00	11.26
Rule 12	147.36	204.60	148.63	62.28	16.74	3.04

ages. Thus the greater reduction in annual fertility is because of reduction in fertility in the middle and older age groups.

7.3.4 General Marital Fertility Rate & Birth Rate

Table 7.8 shows the General Marital Fertility Rates (GMFR) while Table 7.9 shows the Crude Birth Rates (CBR) for the control set and for each of the stopping rules 1 to 12, during the period 1981-96. It can be seen from Tables 7.8 and 7.9 that the GMFR/CBR based on a given set of values of the parameters π and θ , for the period 1981-96 are more or less steady, except for a tendency to decrease slightly in the initial years and then to increase slightly in the later years (not shown for all the years in the Tables). As mentioned earlier, this is perhaps due to the interaction between the changing age structure of the population and fertility rates.

The impact of sex preference on current fertility is clearly evident from Tables 7.8 and 7.9. The interpretation of the results in Tables 7.8 and 7.9 is more or less similar to that of Table 7.3 where TMFR based on the same sets of parameters are presented for a year. For a given number of living children desired, the lowest GMFR or birth rate would be achieved if there was no sex preference. It is also evident from Tables 7.8 and 7.9 that the level of

Table 7.8 : General Marital Fertility Rate for the Control Set and for the Different Stopping Rules Under the Experimental Set, 1981-1996.

Year	Fecundability π	Rest period θ (in years)	General Marital Fertility Rate (Births per 1000 married women) Under :												
			Control Set	Experimental Set											
				Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8	Rule 9	Rule 10	Rule 11	Rule 12
1981	.384	1.75	179.05	75.76	112.82	141.15	104.66	125.08	141.48	140.30	158.60	163.16	94.29	130.31	103.16
		2.75	146.99	75.75	110.28	131.41	100.61	115.74	128.83	128.12	139.76	141.63	93.71	123.31	101.61
	.612	1.75	230.98	73.86	116.06	152.94	109.84	137.38	158.36	156.37	183.80	192.91	94.96	138.82	105.06
		2.75	180.19	73.86	116.01	146.27	107.28	128.33	145.67	144.43	163.02	167.12	94.31	134.83	104.76
1986	.384	1.75	173.93	74.01	108.55	136.15	101.46	121.09	136.71	135.54	153.54	158.09	91.28	125.59	99.54
		2.75	143.32	74.00	106.76	127.76	97.74	112.51	125.23	124.52	136.12	137.98	90.87	119.71	98.45
	.612	1.75	224.58	73.96	111.98	147.03	107.33	133.37	152.94	151.00	177.61	186.66	92.97	133.61	102.06
		2.75	175.98	73.95	112.00	142.05	104.70	125.04	141.64	140.11	158.83	162.93	92.32	130.79	101.03
1991	.384	1.75	173.73	78.47	111.35	136.92	104.46	123.07	127.07	136.76	153.74	158.18	94.91	127.14	102.78
		2.75	143.29	78.47	107.87	127.83	99.60	113.73	125.64	124.95	136.12	137.97	93.20	120.18	100.20
	.612	1.75	224.37	80.11	117.32	149.90	112.28	137.[illegible]7	155.90	154.06	178.78	187.46	99.02	137.65	108.[illegible]
		2.75	175.06	80.10	115.41	142.51	108.12	127.22	142.74	141.35	158.[illegible]8	163.02	96.22	132.12	106.[illegible]
1996	.384	1.75	174.74	80.94	115.07	140.10	107.22	125.[illegible]	140.59	139.53	155.84	160.01	98.01	130.53	106.17
		2.75	144.12	80.93	110.32	129.44	102.15	115.7[illegible]	127.[illegible]5	126.80	137.26	139.02	95.99	122.31	103.[illegible]
	.612	1.75	225.67	82.11	122.39	155.47	115.50	140.[illegible]	160.03	158.26	182.68	190.82	102.26	142.80	111.[illegible]
		2.75	176.97	82.13	119.74	145.67	111.02	129.94	145.57	144.46	160.92	164.71	101.64	135.73	110.26

Table 7.9 : Crude Birth Rate for the Control Set and for the Different Stopping Rules Under the Experimental Set, 1981-1996.

Year	Fecundability π	Rest period θ (in years)	Crude Birth Rate (Births per 1000 population) Under :												
			Control Set	Experimental Set											
				Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8	Rule 9	Rule 10	Rule 11	Rule 12
1981	.384	1.75	30.32	13.06	19.32	24.06	17.95	21.38	24.11	23.92	26.95	27.71	16.20	22.25	17.70
		2.75	25.03	13.06	18.90	22.43	17.27	19.61	22.01	21.89	23.83	24.14	16.10	21.06	17.44
	.612	1.75	38.78	12.73	19.87	26.02	18.82	23.43	26.91	26.58	31.10	32.59	16.31	23.68	18.02
		2.75	30.51	12.72	19.81	24.91	18.39	21.92	24.81	24.60	27.68	28.36	16.20	23.01	17.96
1986	.384	1.75	29.45	12.75	18.59	23.20	17.39	20.69	23.30	23.10	26.09	26.84	15.66	21.44	17.07
		2.75	24.40	12.75	18.29	21.80	16.77	19.25	21.38	21.26	23.20	23.51	15.61	20.46	16.89
	.612	1.75	37.71	12.74	19.16	25.01	18.38	22.74	25.99	25.67	30.06	31.54	15.96	22.78	17.50
		2.75	29.79	12.73	19.17	24.18	17.94	21.35	24.12	23.91	26.96	27.64	15.86	22.31	17.23
1991	.384	1.75	29.47	13.53	19.09	20.37	17.93	21.05	25.53	23.34	26.16	26.90	16.32	21.74	17.64
		2.75	24.43	13.53	18.50	21.85	17.14	19.49	21.48	21.37	23.23	23.54	16.03	20.57	17.21
	.612	1.75	37.73	13.81	20.19	25.53	19.24	23.39	26.52	26.22	30.30	31.72	17.01	23.49	18.53
		2.75	29.83	13.79	19.77	24.30	18.55	21.75	24.34	24.14	27.03	27.70	16.68	22.57	18.26
1996	.384	1.75	29.76	14.01	19.80	24.00	18.47	21.59	24.08	23.91	26.63	27.32	16.91	22.40	[illegible]
		2.75	24.67	14.01	19.08	22.22	17.62	19.91	21.88	21.77	23.53	23.82	16.57	21.02	17.77
	.612	1.75	30.10	14.21	21.03	26.56	19.57	24.39	27.32	27.03	31.07	32.41	17.63	24.45	19.26
		2.75	30.13	14.22	20.59	24.93	19.12	22.30	24.92	24.73	27.47	28.10	17.53	23.27	18.99

fertility in a population like India could be greatly reduced by an effective campaign whereby couples are encouraged to limit family size to three or less. For example, in 1986, the birth rate of 29.45 per 1000 population observed under the control set (corresponding to $\pi = .384$ and $\theta = 1.75$) which is close to the present level of birth rate in India, reduces by about 56.7 percent under Rule 1 (two living children) and 36.9 percent under Rule 2 (three living children). The corresponding reduction in the index of GMFR is almost the same (see Table 7.8). Considering the prevailing sex preference pattern in a developing country like India, if couples are allowed to continue reproduction beyond two or three children until they satisfy their desired sex composition, the birth rate could still be reduced substantially. For example, if couples are allowed to have one living son and one living daughter (Rule 4) but stop reproduction as soon as they achieve this, the same birth rate of 29.45 reduces by 41.0 percent, while the corresponding reduction is 21.6 percent under Rule 7 (2 living sons and 1 living daughter). However, if they are allowed to have one living son and one living daughter subject to a maximum of three living children (Rule 10), the expected reduction in the birth rate is still more (46.8 percent) than that obtained under Rule 4. The corresponding reduction under Rule 11 (2 sons and 1 daughter subject to a maximum of 4 living children) is 27.2 percent as against 21.6 percent under Rule 7. It is noted that the extent of decline in the level of birth rate as a result of adopting any particular stopping rule, depends on the prevailing level of birth rate in a population, as observed through control set in the present model. In a population where the level of fertility is relatively low, the expected reduction under the above mentioned stopping rules will be relatively less. On other hand, in a population where the level of fertility is relatively high, the expected reduction under the same stopping rules will be relatively more. For example, if the current level of birth rate in a population is considered to be 37.71 (as observed under control set corresponding to parameters π = .612 and θ = 1.75) during the year 1986, its expected reduction under Rule 11 is about 39.6 percent instead of 27.2 percent as obtained earlier under the same stopping rule (corresponding to parameters π = .384 and θ = 1.75).

The results are thus, in line with those presented in the preceding chapter. The only difference is that for a given set of values of the parameters (π, θ) the level of fertility under different stopping rules in case of the present set of results is relatively higher due to the additional effect of infant and child mortality. For example, a comparison of the birth rates obtained under different stopping rules in Table 7.9 with those in Table 6.8 (Chapter VI) indicates that as a result of the additional effect of infant and child mortality on fertility, the birth rate in the former case increases by as much as 10 percent under Rule 1 ($\pi = .384$, $\theta = 1.75$) whereas a minimum increase of 3 percent is observed under Rule 9 ($\pi = .384$, $\theta = 1.75$). As a result the expected reduction in the level of fertility under different stopping rules in case of the present set of results is relatively less. For example, in 1986 a birth rate of 29.45 (as observed under the control set corresponding to parameters $\pi = .384$ and $\theta = 1.75$) reduces by 57 percent under Rule 1 in the present case, as against 61 percent obtained earlier (Chapter VI, Section 6.3.4), under the same stopping rule. The corresponding figures under Rule 9 are as low as 11 percent and 9 percent, respectively. This difference is due to the effect of infant and child mortality on fertility.

7.4 CONCLUSIONS

The findings that emerge from the above discussion are basically consistent with the earlier results where mortality among children was ignored, to separate out the pure effect of sex preference on fertility (see Chapter VI). The only difference is that the expected level of fertility under different stopping rules in case of the present model is relatively higher as a result of the effect of infant and child mortality.

The results once again indicate that sex preference does affect current fertility. For any given size of family, the expected total fertility rate or the birth rate of a population increases with increasing preference for one sex over the other. Even if couples have a preference for one living son and one living daughter and continue to have children until they attain this desired minimum, the total fertility rate or the birth rate of the population would always be higher than what it would be if they stop as soon as a family size of two living children (irrespective of sex) is achieved. The results further reveal that in a population like India where the birth rate is still very high, it could be greatly reduced by an effective campaign by which family size is limited to three or less children. For example, a birth rate of 29-30 per 1000 population, which is quite close to the present level of birth rate in the country, reduces by more than one-third if all couples are allowed to have three living children. Considering that son preference is still high in most developing nations, even if all couples wish to have at least two living sons and one living daughter in the family and are allowed to continue beyond three living children to attain this minimum of each sex, the same birth rate could still be reduced by more than one-fifth. However, in a population where the level of fertility is relatively low, the percentage reduction in the level of birth rate under the same strategy is expected to be relatively less.