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Socio-Economic and Demographic Correlates of Marriage Patterns in India

ONE of the important determinants of fertility is nuptiality. The ages at which men and women marry, the extent to which marriages occur among the single population have an important bearing on the number of children born. Marriage rates and age at marriage are significant factors in the determination of birth rates in the non-Western developing societies today. In India, marriages are almost universal and girls get married at a very early age. An analysis of the Indian marriage pattern in terms of socio-economic and demographic components should, therefore, be specially illuminating for an understanding of the processes of social change and social development.

As with fertility, there are various socio-economic and demographic factors Underlying the marriage pattern of a population. Important, among them are industrialisation, urbanisation, literacy, sex ratio of the unmarried population of marriageable age and per capita income. Their impact on the measures of nuptiality have been studied by several scholars in the Western developed societies of today (Walsh, 1970 ; Dixon, 1971). But causes of variation in Indian nuptiality have not received serious attention so far. It is notable that the impact of these variables on nuptiality patterns in India may be quite different in magnitude as well as in direction from those established in the West for various reasons. Its peculiar cultural heritage may lead to a marriage pattern very different from that of the West. For example, the level of urbani-

sation as indicated by the percentage of population living in urban areas may not be the same in the Indian context as that of the West. Modern amenities of urban life may increase the number of marriages, whereas the crowdedness of city life and other alternatives to marriages may have the opposite effect. Moreover, this index may not reflect the true effect of urban culture, for which at least the duration of stay in the urban areas seems to be important. The rural migrant to the city would not change his/her marriage behaviour much before some time has elapsed. Opposite forces are often at work and it is extremely difficult to build up an appropriate model incorporating the effect of a particular variable on nuptiality.

After a critical study of several variables at the state level in 1961 and of their inter-correlations, a set of eight variables, assumed to represent some broad measures of social, economic and demographic situation of the state, has, therefore, been taken for the study here. Likewise, after examining a number of measures of nuptiality like mean age at marriage, proportions single and marriage rates in different age brackets, two measures have been selected for both males and females for the analysis of state level data for 1961.

This framework has been used here to analyse inter-state variations in nuptiality patterns in India, in terms of different socio-economic and demographic components of nuptiality, using multivariate approach. A detailed list of the variables considered for this analysis is presented in the next section.

A number of hypotheses are proposed about the effect of the different socio-economic and demographic variables on the nuptiality pattern of the population. Our model outlined below is based partly on ideas in this regard prevailing among the students of Indian nuptiality and partly on the studies of Western scholars on the determinants of nuptiality in the developed countries.

Source of Basic Data and Description of the Model

The variables included in this analysis along with the symbols used are as follows :

Independent variables

Percentage of males literate	ML
Percentage of females literate	FL
Percentage of male workers (15-35)	ME

Percentage of female workers (15-35)	FE
Percentage of male labour force in agriculture	MLF
Index of per capita income	PC
Ratio of single males (15-45) to single females (10-40)	**SR**
Percentage of population living in urban areas	**UR**

Dependent variables

	Am
Mean age at marriage for males	Af
Mean age at marriage for females	Mm
Marriage rate for single males (20-40)	Mf
Marriage rate for Single females (15-35)	

The basic data for computing the indicators of nuptiality are the proportions single in *quinquennial* age groups in the 1961 Census, The singulate mean age at marriage has been calculated by using the method advocated by John Hajnal (1953). For calculation of marriage rate for single males (20-40) and single females (15-35), age specific marriage rates have been computed for *quinquennial* age-groups for the single population of India (Malaker, 1972). The graduated age distribution of single population has been obtained by applying the proportions single in *quinquennial* age groups over the graduated age distribution of population in the Census of India, 1961. Finally, the marriage rates for single males (20-40) and single females (15-35) have been obtained by using the age-specific marriage rates and the estimated number of single population in *quinquennial* age-groups in 1961.

Both the indicators of nuptiality seem to be useful for a correct appraisal of the nuptiality pattern of the population. Age at marriage is an important variable in the study of reproduction but from the point of view of behavioural hypothesis marriage rate is more useful (Walsh, 1970). In Western studies, the two measures are described as measures of timing and intensity of nuptiality. For the computation of nuptiality measures, for simplicity, census synthetic cohort method has been used. It is tacitly assumed that the difference, if any, would be of the same order for all the states.

One of the important variables affecting age at marriage and marriage rates seems to be literacy level of the population. There is considerable variation in the ages by wife's educational level (Majumdar and Das Gupta, 1969). It is, therefore, contended that the higher the literacy level of the population, the higher is the age at marriage and lower is the marriage rate.

Percentage of workers in the age-group 15-35 may be taken as an index of economic activity of the population. Our expectation is that economic activity of the population will have positive effect on the marriage rate and a negative one on the age at marriage. The reason behind this hypothesis is that those who are economically active can afford to marry and as such marriages are expected to occur earlier and more frequently.

It is supposed that farmers and cultivators find it comparatively more feasible to contract marriages. The proportion of labour force in agriculture is, thus, expected to be correlated positively with marriage rate and negatively with the age at marriage.

Per capita income is rough indicator of the economic status of the population. For more than a century economists have considered the relationship linking economic changes with changes in the age at marriage and marriage rates. Many scholars (Kirk, 1960) have observed that economic prosperity leads to a larger number of marriages. Per capita income is, therefore, taken to have a positive relation with marriage rate and a negative one with age at marriage.

About sex ratio of persons eligible to marry, masculinity ratios are expected to be positively correlated with marital delays among men and with bachelorhood and negatively with marital delays among women and with spinsterhood. A higher value for sex ratio results, thus, in higher age at marriage and smaller number of marriages among the male population and lower age at marriage and larger number of marriages among the female population.

A properly calculated index of urbanisation is expected to result in higher ages at marriage for both males and females.

It is proposed to test these tentative hypotheses about the impact of different factors on age at marriage and marriage rates using multiple regression analysis. The marriage patterns for the two sexes are studied separately, confining attention to the relevant variables for each sex. For male nuptiality, the six variables considered are : percentage of males literate (ML), percentage of male workers (15-35) (ME), percentage of male labour force in agriculture (MLF), index of per capita income (PC), ratio of single males (15-45) to single females (10-40) (SR) and percentage of population living in urban area (UR). For female nuptiality, four variables have been considered, viz., percentage of

females literate (FL), percentage of female workers (15-35) (FE), ratio of single males (15-45) to single females (10-40) (SR) and percentage of population living in urban areas (UR).

Methodology

As the 1961 data given in Table 1 shows, there is a great deal of inter-state variation in mean age at marriage and marriage rate for both sexes. The mean

TABLE i-AGE AT MARRIAGE AND MARRIAGE RATES FOR SINGLE MEN AND WOMEN IN DIFFERENT STATES IN INDIA : 1961

State	*Male*		*Female*	
	Singulate mean age at marriage	*Marriage rate per hundred single male (20-40)*	*Singulate mean age at marriage*	*Marriage rate per hundred single females (15-35)*
Andhra Pradcsh	22.2	16.0	15.3	25.0
Assam	25.8	11.2	18.6	16.0
Bihar	18.7	14.5	14.3	23.9
Gujarat	21.5	16.1	17.1	20.0
Jammu and Kashmir	22.5	13.0	15.9	22.3
Kerala	26.4	11.3	20.1	13.6
Madhya Pradesh	18.4	14.8	13.8	26.6
Madras	25.2	11.6	18.3	17.6
Maharashtra	22.5	15.2	15.8	21.8
Mysore	24.5	13.0	16.3	21.1
Orissa	21.9	16.7	16.3	22.0
Punjab	. 21.7	12.4	17.4	18.4
Rajasthan	19.1	14.0	14.2	26.0
Uttar Pradesh	18.8	11.4	14.4	24.7
West Bengal	24.2	12.6	15.9	20.4
Mean	22.23	13.59	16.25	21.29
Standard deviation	2.55	1.82	1.74	3.61
Coefficient of variation	.115	.134	.107	.170

age at marriage had the highest value of 26.4 years for males and 20.1 years for females in Kerala. The range of variation of mean age at marriage for males extended from 18.4 years to 26.4 years with a coefficient of variation of .115 years. The corresponding range for females extended from 13.8 years to

20.1 years with a coefficient of variation of .107 years. The average difference between male and female ages at marriage was 6 years.

Marriage rates for spinsters were conspicuously high, varying from 13.6 to 26.6. The rates for bachelors were much lower ranging from 11.2 to 16.7. In general, nuptiality patterns are similar for sexes. Where mean age at marriage is higher for one sex, it is higher also for the other. Such similarity between the sexes is observed also in respect of marriage rates, though to a lesser degree.

The correlation coefficients between the indicators of male and female nuptiality are .8641 (mean age at marriage) and .5417 (marriage rate) (Table 2).

TABLE 2-ZERO ORDER CORRELATION MATRIX : INDICATORS OF NUPTIALITY

	Singulate male mean age at marriage	*Singulate female mean age at marriage*	*Marriage rate of single males (20-40)*	*Marriage rate of single females (15-35)*
Singulate male mean age at marriage	1.0000			
Singulate female mean age at marriage	.8641	1.0000		
Marriage rate of single males (20-40)	-.4440	-.4553	1.0000	
Marriage rate of single females (15-35)	-.8494	-.9741	.5417	1.0000

There is a consistent relationship between the mean age at marriage and the marriage rate for a given sex. If the marriage rate is higher, the age at marriage is lower in general. The correlation coefficient between the mean age at marriage and the marriage rate is —.4440 for males and —.9741 for females.

The zero order correlations between the socio-economic and demographic variables and the indicators of nuptiality and the inter-correlations between different socio-economic and demographic variables in the model are given in Tables 3 and 4.

In broad conformity with the hypotheses noted earlier, it is observed that literacy, economic activity and male labour force participation in agriculture are highly correlated with measures of male nuptiality, particularly with the mean age at marriage. Sex ratio and urbanisation yield low correlations with

TABLE 3—ZERO ORDER CORRELATIONS BETWEEN SOCIO-ECONOMIC AND DEMOGRAPHIC VARIABLES AND INDICATORS OF NUPTIALITY

Male						
	%M literate	*% M. EA*	*% M If in agric.*	*Per-capita income*	*SM(15-45) SF(10-40)*	*% Living in urban areas*
Singulate Mean age at marriage	.6820	-.5913	-.6709	.3416	.1050	.2690
Marriage rate of single males (20-40)	-.2060	.5276	.3489	-.1070	-.1570	-.0073
Female						
		%F literate	*%F. EA*	*SM(15-45/SF (10 -40)*		*% Living in urban areas*
Singulate mean age at marriage		.8224	-.2622	-.3540		.1468
Marriage rate of single femaies (15-35)		-.8157	.3774	.3150		-.1489

TABLE 4-ZERO ORDER CORRELATION MATRIX : SOCIO-ECONOMIC AND DEMOGRAPHIC VARIABLES IN THE MODEL

	%M. literate	*%F. literate*	*%M. EA*	*%F, EA*	*%M. If in agric.*	*Per-capita income*	*SM(15-4S) SF(10-40)*	*% Living in urban areas*
% M literate	1.0000							
% F literate	.9167	1.0000						
% M EA	-.6756	-.8159	1.0000					
% F. EA	-.1963	-.2296	.5930	1.0000				
% M If. in agric.	—.8193	-.9403	.8106	.3180	1.0000			
Percapita income	.4343	.3691	-.4267	-.3144	-.4940	1.0000		
SM(15-45)	-.2875	-.2746	.1828	.0313	.0718	.2353	1.0000	
SF(10-40)								
% Living in urban areas	.3447	.2991	—.1403	-.0143	-.4757	.68	.3377	1.0000

male nuptiality. The relationship between per capita income and male nuptiality is not clear.

Amongst the four variables considered for females, literacy is highly correlated with nuptiality. Female economic activity and sex ratio have some effect, though not so strong, on female nuptiality. As with males, urbanisation has practically no effect on female nuptiality.

A significant result that may be noted from the above tables is that the correlation of nuptiality with any of the socio-economic and demographic variables is higher on the average with mean age at marriage than with marriage rate. It is difficult to interpret the results on account of the existence of inter-correlations between socio-economic and demographic variables. In the face of multi-collinearity probably the best that could be done is to compute the confidence intervals for the regression coefficients. We may, however, note that multi-collinearity is serious when emphasis is on the estimation of individual parameters but not as serious if the objective is prediction of dependent variables (Draper, 1966). The emphasis in our model on prediction justifies the use of simple regression analysis technique.

Under the usual regression assumptions, the linear regression equations obtained by using the ordinary least squares estimation procedures are :

$$\begin{aligned} Am = {} & 24.95 + .2131(ML) - .1993(ME) + .0292(MLF) \\ & (1.123) \quad (1.552) \quad (.629) \quad (.165) \\ & -.0173(PC) + 6.4878(SR) - .0064(UR) \\ & (.401) \quad (1.500) \quad (.041) \\ & R^2 = .6127, \text{ SEE} = 2.18, F = 2.110 \text{ df } (6, 8) \end{aligned} \quad \ldots(1)$$

$$\begin{aligned} A_f = {} & 16.07 + .1650(FL) - .0094(FE) - 1.2718(SR) - .0127(UR) \\ & (5.943) \quad (3.832) \quad (.442) \quad (.588) \quad (.242) \\ & R^2 = .7022, \text{ SSE} = 1.17, F = 5.895; \text{ df } (4,10) \end{aligned} \quad \ldots(2)$$

$$\begin{aligned} M_m = {} & -17.22 - .0105(ML) + .4280(ME) - .0605(MLF) + .0262(PC) - \\ & (.887) \quad (.087) \quad (1.546) \quad (.392) \quad (.694) \\ & - 3.9989(SR) - .0313 (UR) \\ & (1.058) \quad (.228) \\ & R^2 = .4179, \text{ SEE} = 1.90, F = .957 : \text{df } (6, 8) \end{aligned} \quad \ldots(3)$$

$$\begin{aligned} M_f = {} & 21.10 - .3333(FL) + .0497(FE) + 1.7809(SR) + .0296(UR) \\ & (3.846) \quad (3.814) \quad (1.152) \quad (.406) \quad (.278) \\ & R^2 = .7180, \text{ SEE} = 2.36, F = 6.303, \text{ df } (4, 10) \end{aligned} \quad \ldots(4)$$

The figures in the parentheses are the *t* values obtained by taking the ratio of any regression coefficient to its standard error. For each equation the square of the multiple correlation coeiBcient *(R^2)* and the standard error of the estimate (SEE) are given. To test the overall goodness of fit, *F* values are also shown. The results of the multiple regression analysis using stepwise regression procedure are given in Table 5.

TABLE 5—RESULTS OF MULTIPLE REGRESSION ANALYSIS IN THE MODEL

Predictor	Male			
	Singulate mean age at marriage		*Predictor*	*Marriage rate of single males (20-40)*
	R	R^2		*R*	R^2
% M literate	.682	.4651	% M. EA	.528	.2784
SM(15-45)	.751	.5639	SM(15-45)	.587	.3448
SF(10-40)			SF(10-40)		
% M. EA	.770	.5935	Percapita income	.633	.4008
Percapita Income	.781	.6100	% M. If in agric.	.643	.4140
% M If. in agric.	.783	.6126	% Living in urban area	.646	.4173
% Living in urban area	.783	.6127	% M literate	.646	.4179
Female					
Predictor	*Singulate mean age at marriage*		*Predictor*	*Marriage rate of single females (15-35)*	
	R	R^2		*R*	R^2
% F. literate	.822	.6763	% F. literate	.816	.6654
SM(15-45)	.833	.6941	SM(15-45)	.821	.6743
SF(10-40)			SF(10-40)		
% F. EA	.837	.7014	% F. EA	.845	.7157
% Living in urban area	.838	.7022	% Living in urban area	.846	.7160

A model consisting of Equations (1) to (4) provides a statistically satisfactory explanation of inter-state variation in nuptiality patterns in India. Regarding female nuptiality, the results of the analysis are very illuminating. Judged by

the value of R^2 as much as 70-72 per cent of the variation in mean age at marriage rate of the female population in India can be explained by only four socio-economic and demographic variables. The overall goodness of fit indicated by F-test is significant for both the indicators of female nuptiality.

Coming to the male pattern, the results of the analysis are less striking. The six variables taken here are shown to explain as much as 61 per cent of the variation in mean age at marriage but only 42 per cent of the variation in marriage rates. From the statistical point of view, Equation (3) is not quite satisfactory. How far is this due to our failure to make an appropriate choice for the independent variables is difficult to say. The results are not, however, totally discouraging. The findings do not mean that the relationships between the relevant variables are non-existent. They suggest the need to improve measurement of the socio-economic and demographic variables.

Referring to Table 5, it is observed that mean age at marriage and marriage rate for the female population are the most predictable type of marital behaviour. Male nuptiality and especially male marriage rate is much less predictable. The results are in accordance with the studies conducted by Dixon and Walsh (Dixon, 1971) ; (Walsh, 1970).

Regarding the role of different socio-economic and demographic variables, literacy level of the female population seems to be the best individual predictor for inter-state nuptiality variation of the female population. It is interesting to note that this variable alone accounts for about two thirds of the variation in mean age at marriage and marriage rate for the female population in India. In case of males, however, the effect of male literacy on nuptiality behaviour is much less prominent.

Economic activity has a positive influence on the marriage rate and a negative one on the mean age at marriage of the population. The same feature is observed for both males and females. The effect of sex ratio, though not very significantly brought out, once again accords well with theory. Thus, the sex ratio has positive association with mean age at marriage of the male population and a negative one with that of females. The effects on the marriage rates are reverse.

The index of labour force participation is a poor predictor for male nuptiality behaviour. We may ascribe two reasons for this. Firstly, India is pre-

dominantly an agricultural country with a low value for the coefficient of variation for this variable. Moreover, this index is highly correlated with male literacy (—.8493). If male literacy is excluded from the list of predictors, significant result with male labour force participation in agriculture may be expected.

In India, per capita income seems to be a poor predictor in explaining the nuptiality variation whereas in Western societies it explained half the nuptia-lity variation (Dixon, 1971). This may be partly ascribableto a very low level of per capita income in India. A suitable model seems to be justified only when some minimum standard is attained and variations are considered relative to it. It appears that urbanisation is not an important factor in nuptiality variation in India. The results are not discouraging ; in this connection Goode (1963) concludes that "though it was a belief in most Western countries that mean age at marriage had increased with industrialisation and urbanisation, data for the past half century don't show this".

Discussion

The present analysis reveals that female nuptiality can be predicted quite satisfactorily with the help of a few socio-economic and demographic variables like the percentage of females literate, percentage of female workers (15-35), •proportion of single males (15-45) to single females (10-40) and percentage of population living in urban areas. Male nuptiality, however, cannot be predicted so satisfactorily as that of females.

Female literacy plays a very crucial role in the determination of age at marriage and marriage rate for the female population. Higher levels of female literacy are conducive to higher age at marriage and lower marriage rate for the population. Female economic activity and sex ratio of the unmarried population are to some extent associated with female nuptiality. Urbanisation has practically no effect on the marriage pattern of Indian females.

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APPENDIX TABLE

SOCIO-ECONOMIC AND DEMOGRAPHIC VARIABLES FOR DIFFERENT STATES OF INDIA : 1961

State	*% Male literate*	*% Female literate*	*% Male EA (15-35)*	*% Female EA (15-35)*	*% Male labour force in agriculture*	*Index of per capita income*	*SM (15-45) / SF (10-40)*	*% Living in urban area*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(S)*
Andhra Pradesh	30.2	12.0	92.1	63.4	62.9	85.8	1.27	17.4
Assam	'37.3	16.0	85.8	55.8	68.6	99.6	1.11	7.7
Bihar	29.8	6.9	87.6	41.4	73.3	66.0	0.94	8.4
Gujarat	41.1	19.1	86.9	46.4	61.6	117.6	0.89	25.8
Jammu and Kashmir	17.0	4.3	88.3	42.6	74.3	86.4	1.27	16.7
Kerala	55.0	38.9	76.5	32.6	36.0	94.1	2.92	15.1
Madhya Pradesh	27.0	6.7	93.1	68.6	73.4	85.3	1.12	14.3
Madras	44.5	18.2	88.5	45.6	56.2	99.9	1.09	26.7
Maharashtra	42.0	16.8	87.4	60.9	58.8	140.0	1.24	28.2
Mysore	36.1	14.2	90.1	50.8	65.9	91.1	1.30	22.3
Orissa	34.7	8.6	91.2	40.3	74.9	82.6	.96	6.3
Punjab	33.0	14.1	85.0	23.4	60.3	134.9	1.00	20.1
Rajasthan	23.7	5.8	91.0	57.1	72.2	79.9	1.19	16.3
Uttar Pradesh	27.3	7.0	89.4	26.0	72.7	88.9	1.20	12.9
West Bengal	40.1	17.0	82.4	18.3	53.2	138.9	1.48	24.5
Mean	34.59	13.71	87.69	44.88	64.29	99.40	1.132	17.51
Standard deviation	9.08	8.29	4.05	14.56	10.25	22.12	.163	6.78
Coefficient of variation	.262	.605	.046	.324	.159	.222	.144	.387

SOURCES:

(1) and (2) : $\frac{\text{No. literates (M or F)}}{\text{Total population (M or F)}} \times 100$

Census of India, 1961, Vol. I., Part IIC(1), *Social and Cultural Tables.*

(3) and (4) : $\frac{\text{No. of workers (M or F) in (15-35)}}{\text{Total Population (M or F) in (15-35)}} \times 100$

Census of India, 1961, Vol. I. Part IIB(i) *General Economic Tables.*

(5) : $\frac{\text{No. of male workers under cultivator and agricultural labourer}}{\text{Total no. of male workers}} \times 100$

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(6) : National Council of Applied Economic Research, New Delhi. *Distribution of National Income by States : 1960-61.*

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