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STRUCTURAL TRANSFORMATION OF WORKING FORCE IN IRAN

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Abstract

The present paper aims to identify the sectoral/spatial pattern of working force in Iran and tries to find out structural shift in this context. The study was carried out at province level and it covers three points in time, 1976, 1986, and 1991. The index of structural change was used to work out structural transformation of working force over time. The paper has been organised in three parts. The first part provides a necessary background for whole discussion, the second part deals with sectoral distribution of working force, and the third part finds out sectoral transformation of working force in various provinces. The study ends by way of conclusion.

It is found that the diversification of the Iranian economy since 1976 has resulted in structural change in working force over time. On the whole the pattern of change in the economy and that of working force is towards tertiarisation rather than the secondarisation of the economy.

Introduction

As the process of development proceeds, the economy becomes more diversified in occupations and specialised in organisation. This becomes manifest in enlargement of the non-agricultural sector through shifting workers from agriculture to industry and service sectors. Clark (1957), Chenery and Syrquin (1975) confirm these structural changes with changes in technology, mode of production and composition of demand.

These changes in occupation structure also get manifested in space. As the process of development moves forward, economy expands spatially and workers shift not only from agricultural to non-agricultural sector but into non-local economy.

The present study is an attempt to study spatial aspects of structural change in occupation composition in Iran. Based on data by provinces, the study covers three points in time, 1976, 1986 and 1991 for which comparable data are available. The index of structural change was used to work out degree of change in occupation composition over time.

The Background

Before the commencement of the national development plans, the Iranian economy was fundamentally agricultural and underdeveloped. A majority of the country's active work force was engaged in agriculture. A gradual change was visible with the implementation of the two Seven Year (1949-1956 and 1956-1963) and three Five Year (1963-68, 1968-73 and 1973-78) plans prior to the 1979 Islamic Revolution.

The first two Seven Year plans had as their

basic thrust the country's infrastructure, such as roads, dams and canals, and social welfare, including health and education. The Third Plan, while continuing with its focus on infrastructure, paid special attention to the iron and steel industry, petrochemicals, and rural development. The Fourth Plan adopted industry as the lead sector. This plan initiated the process of changing the oil-based economy into a non-oil-based one through the adoption of an inward-looking industrialisation strategy. Agriculture and rural development were given secondary importance. The Fifth Plan again called for the development of capital-intensive industries, such as petrochemicals, petroleum refineries and the hydrocarbon, steel and cement industries. The plan adopted the 'big push' type of strategy, financed by oil revenue. Thus, the planning era prior to the Islamic Revolution aimed at infrastructural development and industrialisation. Comparatively less attention was given to agriculture and rural development.

The success of the Islamic Revolution in 1979 was followed by the outbreak of war with Iraq. The war spanned over 1980-88 which happened to be a plan holiday period, with only annual budgets. It was only after the war that the first post-Revolution plan could be implemented during 1989-93.

During the third and fourth plans, employment rate was high and the swelling

Table-1
Iran : A profile of Employment by Sector, 1991

Ecnomic Sectors	Number (in thousand)	%age in total workers	Number (in thousand)	%age in total male workers	Number (in thousand)	%age in total female workers
1. Agriculture	**3205**	**24.47**	**3046**	**25.67**	**159**	**12.92**
2. Industries & Mines	**3615**	**27.61**	**3299**	**27.80**	**317**	**25.75**
Manufacturing & mining	2115	16.15	1809	15.24	306	24.86
Water, electricity & gas	129	1.00	126	1.06	3	0.24
Construction	1372	10.47	1364	11.49	8	0.65
3. Services	**6276**	**47.92**	**5520**	**46.53**	**755**	**61.33**
Wholesale and retail services, restaurant and hotel management	1238	9.45	1222	10.30	17	1.38
Transportation and communication	762	5.82	75	6.33	11	0.89
Financial, insurance, property and legal services	195	1.49	179	0.14	16	1.30
Public social and private services	3518	26.86	2909	24.52	609	49.47
Others	563	4.29	460	5.24	102	8.29
Total	13097	100.00	11865	100.00	1231	100.00

Source : *Statistical Yearbook of Iran,* 1993, p. 62

population of the cities was absorbed in the industrial sector. By the beginning of the fifth plan (1973-78), the situation was changed dramatically. Between 1956 and 1972 most of the workers leaving agriculture were absorbed by the industrial sector, while in the subsequent period a higher proportion of workers began to be absorbed by the service sector.

This shift, which resulted in a reduction of industrial job opportunities in the face of substantial rural-urban migration was more or less contemporaneous with a severe shortage of skilled, technical and professional workers. By mid-1975, shortages of skilled manpower in most industries and occupations were beginning to pose a serious constraint on growth (Looney : 1977).

The increasing trend of the economy towards capital intensive activities kept the total number of jobs created by the fifth plan below target (Amuzegar : 1977).

This process also resulted in emergence of a "dual economy". The gap between the traditional agricultural sector and modern industry and service sectors widened, which in turn affected the sectoral transformation of working force in the country.

Sectoral Distribution of Working Force

According to 1991 data, Iran's economically active population accounts for 26.39 per cent of the total population. Among them, 11.1 per cent are females of which two-third are engaged in service sector and the proportion for the male workers is less than half. The breakdown of the work force by economic activity is presented in Table 1.

It is learnt that of the total working force, 24.47 per cent are engaged in agriculture, 27.61 per cent in industries and mining, and 47.92 per cent in the services sector. This pattern indicates the domination of the tertiary sector over the primary and secondary which has emerged through a sectoral transformation of work force in the planning process.

Sectoral Transformation of Working Force

Sectoral distribution of employment displays fundamental change over time. In 1976, the share of primary, secondary and tertiary sectors was 34, 20.02 and 45.98 per cent respectively. The primary sector included agriculture, fishing, animal husbandry and forestry. The secondary sector comprised manufacturing, construction, electricity, water, oil, gas and mining. The tertiary sector included the wholesale and retail services, comprising restaurant and hotel management, transportation, storage and communications, financial, insurance, property and legal services, public social and private services. Over the years the share of the primary sector declined from 34 per cent in 1976 to 29 per cent in 1986 and then to 24.47 per cent in 1991. The share of the secondary sector also declined from 20.02 per cent in 1976 to 13.49 per cent in 1986 but increased to 27.61 per cent in 1991.

The spatial pattern indicates that, various provinces differed in the structure of their working force (Table 2). In 1976, the share of the primary sector in Markazi was only 10.07 per cent. The comparable figures for Kuhkiluyeh-Boierahmad, Ilam and Sistan-Baluchestan were 70.66, 68.43 and 56.43 per cent respectively. The share of the primary sector in the working force declined in virtually all the provinces during 1976-86 and further during 1986-91. The magnitude of change was greater during the period 1986-91 than during the period 1976-86. The index of change for the country as a whole was 11.53 during 1976-86 and 14.12 during 1986-91.

The sectoral pattern of working force for the year 1991 and structural change over the years 1976-91 is presented on Figure 1. As the Figure indicates the index of change for the country as a whole was 9.53 during 1976-91. Of 23 provinces, in 16 provinces structural change was higher than the national average. It was of a higher order in provinces where the existing share of the primary sector was large. The backward region-oriented policy of the post-Revolution period helped in the diversification of

Table-2

Iran : Index of Structural Change in Working Force

Province	1976 Per cent			1986 Per cent			Index of Change from 1976 to 1986	1991 Per cent			Index of Change from 1986 to 1991
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary		Primary	Secondary	Tertiary	
Markazi	10.07	23.87	66.06	8.01	19.74	72.25	6.19	6.27	33.76	59.97	14.02
Gillan	44.64	13.20	42.16	51.20	9.27	39.53	6.56	41.35	16.53	42.12	9.85
Mazandaran	51.56	12.19	36.25	42.89	9.60	47.51	11.26	38.68	19.01	42.31	9.41
E. Azarbaijan	37.80	22.76	39.44	33.73	13.33	52.94	13.50	28.97	28.65	42.38	15.32
W. Azarbaijan	53.95	9.41	36.64	39.37	7.12	53.51	16.87	3573	23.53	40.74	16.41
Kermanshan	38.69	13.71	47.60	27.39	5.99	66.62	19.02	25.65	21.18	53.17	15.19
Khuzestan	26.02	15.69	58.29	24.05	8.72	67.23	8.94	17.91	27.59	54.50	18.87
Fars	35.38	13.54	51.08	27.44	8.51	64.05	12.97	24.17	23.39	52.44	14.88
Kerman	38.78	24.44	36.78	35.01	14.66	50.33	13.55	30.55	24.95	44.50	10.29
Khoransan	41.57	23.83	34.60	33.57	15.74	50.69	16.09	29.79	30.74	39.47	15.00
Esfahan	23.49	37.96	38.55	19.97	24.63	55.40	16.85	17.16	35.47	47.37	10.84
S. Baluchestan	56.43	5.44	38.13	43.46	4.34	52.20	14.07	40.64	22.21	37.15	17.87
Kordestan	43.03	19.80	37.17	46.08	4.70	49.22	15.10	34.72	22.42	42.86	17.72
Hamadan	40.94	18.59	40.47	38.17	8.16	53.67	13.20	33.11	25.99	40.90	17.83
Ch. Bakhtiari	41.33	26.54	32.13	35.95	7.74	56.31	24.18	29.65	29.18	41.17	21.44
Lorestan	51.79	7.94	40.27	39.89	6.25	53.86	13.59	32.38	22.01	45.61	15.76
Ilam	68.43	1.84	29.73	41.68	3.23	55.09	26.75	27.18	18.59	54.23	15.36
K. Boierahmad	70.66	4.70	24.64	45.25	2.71	52.04	27.40	38.40	16.67	44.93	13.96

Continued Table-2

Province	1976 Per cent			1986 Per cent			Index of Change from 1976 to 1986	1991 Per cent			Index of Change from 1986 to 1991
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary		Primary	Secondary	Tertiary	
Bushehr	27.76	5.55	66.69	17.77	4.78	77.45	10.76	17.43	18.14	64.43	13.36
Zanjan	49.30	18.40	32.30	41.55	15.02	43.43	11.13	35.31	27.53	37.16	12.51
Semnan	33.13	16.80	50.07	25.47	13.69	60.84	10.77	24.03	25.66	50.31	11.97
Yazd	25.51	40.73	33.76	17.62	24.71	57.67	23.91	16.66	41.94	41.40	17.23
Hormozgan	33.52	4.66	61.82	26.82	4.45	68.73	6.91	24.79	20.42	54.79	15.97
Iran	34.00	20.02	45.98	29.00	13.49	57.51	11.53	24.47	27.61	47.92	14.12

Source : *Computed from* Statistical Yearbook of Iran. *1976, 1986 and 1991.*

$$\text{Index of Structural change} = \frac{[(P_1-q_1) + (P_2-q_2) + (P_3-q_3)]}{2}$$

Where:

P and q present the percentage distribution of working force for two points in time : 1976 and 1986 or 1986 and 1991 respectively.

P_1q_1 = Primary sector
P_2q_2 = Secondary sector
P_3q_3 = Tertiary sector

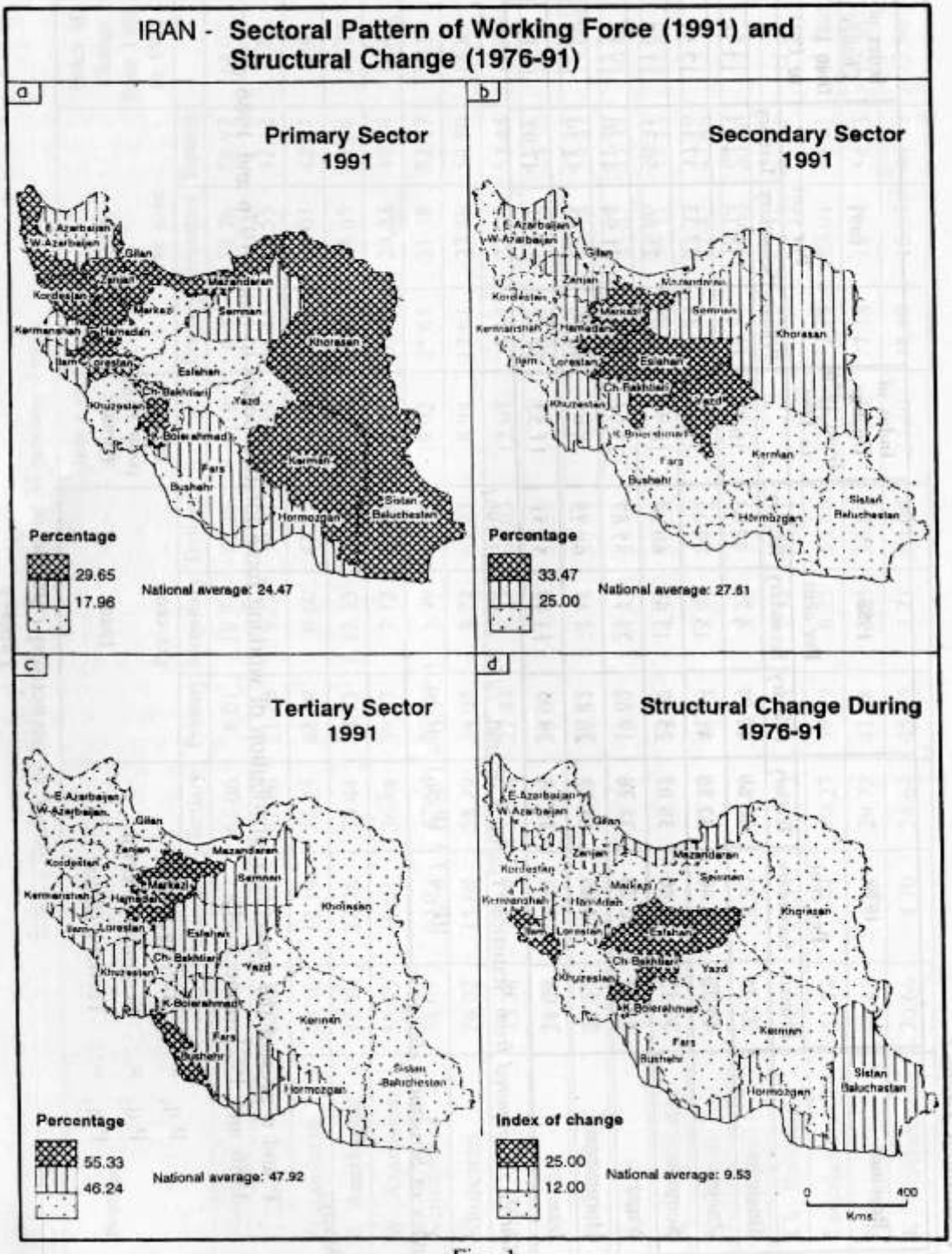
IRAN - Sectoral Pattern of Working Force (1991) and Structural Change (1976-91)
a
Primary Sector 1991
Percentage
29.65
17.96
National average: 24.47
b
Secondary Sector 1991
Percentage
33.47
25.00
National average: 27.81
c
Tertiary Sector 1991
Percentage
55.33
46.24
National average: 47.92
d
Structural Change During 1976-91
Index of change
25.00
12.00
National average: 9.53
0
400
Kms
E.Azarbaijan
W.Azarbaijan
Gilan
Zanjan
Mazandaran
Kordestan
Markazi
Semnan
Kermanshah
Hamadan
Khorasan
Ilam
Lorestan
Esfahan
Ch. Bakhtiari
Yazd
Khuzestan
K. Boierahmad
Kerman
Fars
Bushehr
Sistan Baluchestan
Hormozgan

Fig. 1

Table-3
Percentage change in Sectoral Distribution of Working Force and its Share in the GDP

Sector	Change in working force		Change in GDP	
	From 1976 to 1986	From 1986 to 1991	From 1976 to 1986	From 1986 to 1991
Primary	-5.00	-4.53	13.5	-3.4
Secondary	-6.53	14.12	-31.5	14.2
Tertiary	11.53	-9.59	18.0	-19.8

economy of such provinces. Likewise, the post-war reconstruction Plan (1989-93) for the affected provinces reduced their dependence on the primary sector. This was true particularly of the provinces located in the peripheral areas.

On the whole, during 1976-86 the change in composition of the working force was more towards the tertiary sector rather than the secondary sector (Table 3).

The post-Revolution period saw the expansion of a variety of social services and new revolutionary organisations. On the other hand, the pace of industrialisation was constrained by the problem relating to the war and international trade. As a result, the tertiary sector got statistically enlarged. This pattern was changed in the post-war reconstruction era and a significant increase in the share of secondary sector workers took place.

It is notable that while the share of the primary sector in the working force declined by 5 per cent points during the war years, its share in the GDP went up by 13.5 per cent points. This was partly because of a sharp rise in the agriculture prices and partly as a result of the rise in agricultural productivity. Agriculture was accorded priority by the government during the war years. A decline of working force in the secondary sector by 6.53 percentage points was associated with a sharp decline in its share in GDP by 31.5 percentage points. The underlying factor was the sharp decline in oil production and oil export. The tertiary sector, on the other hand increased its work force by 11.53 per cent during 1976-86 while its share in GDP went up by 18 per cent (Table 3). An overall inference would be that while the primary and tertiary sector workers experienced a rise in their income level, the secondary sector workers suffered a fall.

In the post-war era, the secondary sector went up in its share of working force by 14.12 per cent. Almost a similar increase took place in its share in GDP (14.2%). The primary and tertiary sectors also displayed similar tendencies. It shows that the relative income levels of different sectors of economy remained the same.

Conclusion

The Iranian economy has undergone significant diversification since 1976. This has resulted in structural change in working force over time. The share of primary sector declined while that of secondary sector and tertiary sector marked an increase. During 1976-86 the enlargement of the tertiary sector was greater than that of the secondary sector. The post-Revolution years saw a rapid expansion

of social services. In the years following 1986, the secondary sector also actively participated. On the whole, the pattern of change in structure of economy and that of work force is towards tertiarisation rather than secondarisation of the economy during 1976-91.

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DEVELOPMENT AND POPULATION GROWTH : THE INDIAN EXPERIENCE

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The development processes in association with the demographic trends prevailing in India have been examined in the context of such processes prevailing in South Asia in general and in comparison to East Asian Experience, in particular. For its database, the paper banks heavily upon the latest World Development Report and the Human Development Reports of S. Asia, India and the World, brought out by the United Nations; Census of India; Government of India's Economic Survey; and NCAER's Surveys.

Both economic progress and human development in South Asia have been lagging far behind those in East Asia. Just three decades ago, both the regions had almost the same income levels but today the income levels in East Asia are 27 times higher and the human development index double than that in South Asia.

Within South Asia, India, with the exception of Sri Lanka, had performed better on the economic front. However, despite significant economic growth during the past 30 years, the human deprivations in India continue to speedbreak the country's emergence as an politico-economic power on the international scene. Other factors apart, it seems that India is still in search of essential elements of good governance.

Within India, the inter-state diversity in population growth and development has been analysed on the basis of a few select indicators including average annual population growth, couple protection rate, infant mortality rate, female literacy, mean age at marriage for females, infrastructural facilities, proportion below poverty line and the per capita income.

The National Health Policy adopted by the Parliament in 1983 had targetted to bring the country's population growth rate down to 1.2 per cent per annum by the turn of present century by slashing the birth rate to 21 per thousand and death rate to 9 per thousand. It was projected that it could be achieved by limiting our infant mortality rate to 60 per thousand and by extending the couple protection to 60 per cent couples. However, the latest 1994 data on these aspects reveal that we have met with only a limited success in this regard. Our annual growth rate of population is still as high as 1.94 per cent, while our crude birth and death rates are 28.6 and 9.2 per thousand, respectively (Table 1). Only 41 per cent couples have been protected and the IMR is still as high as 73 per thousand. These statistics siren very clearly the dangers of the gap between our policy prescription and the attainments. It puts a big question mark on our demographic evolution process.

The Indian demographic scene displayed the first symptoms of its transformation in early 1920s, when its mortality began to

Table - 1

India : Estimates of Birth Rates and Death Rates (Provisional), 1994

(per thousand)

Sates / Union Territories	Birth Rate			Death Rate		
	Total	Rural	Urban	Total	Rural	Urban
India #	28.6	30.5	23.1	9.2	10.1	6.5
Major States						
Andhra Pradesh	23.7	24.1	22.8	8.3	9.0	6.3
Assam	30.7	31.8	22.2	9.1	9.3	7.2
Bihar	32.5	33.5	24.3	10.4	10.8	6.7
Gujarat	27.1	28.5	24.5	8.7	9.6	6.9
Haryana	30.5	32.0	25.8	7.8	8.0	7.2
Karnataka	24.9	26.0	22.6	8.1	9.3	5.5
Kerala	17.3	17.3	17.5	6.0	5.9	6.3
Madhya Pradesh	32.8	35.0	24.3	11.5	12.6	7.3
Maharashtra	24.9	26.8	22.6	7.4	9.2	5.4
Orissa	28.0	28.8	22.5	11.1	11.7	7.2
Punjab	25.0	26.2	22.0	7.6	8.2	6.2
Rajasthan	33.7	35.2	26.9	8.9	9.3	7.1
Tamil Nadu	19.0	19.6	18.0	7.9	9.0	5.9
Uttar Pradesh	35.4	36.8	29.6	11.0	11.8	7.8
West Bengal	25.1	28.1	17.4	8.3	8.8	6.8
Smaller States						
Arunachal Pradesh	27.4	27.7	24.2	9.3	10.1	1.9
Goa14.3	14.8	13.6	6.5	6.1	7.1	
Himachal Pradesh	26.2	26.9	18.7	8.6	8.9	5.6
Jammu & Kashmir	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Manipur	21.1	22.7	17.0	6.6	6.8	5.1
Meghalaya	29.5	32.1	16.7	7.1	7.6	4.3
Nagaland	19.0	20.4	10.8	4.2	4.8	0.7
Sikkim	24.6	25.0	15.1	2.9	2.9	3.0
Tripura	21.9	22.5	18.6	5.3	4.7	8.1
Union Territories						
Andaman & Nicobar	18.0	17.2	20.6	3.2	2.9	3.9
Chandigarh	18.6	24.0	18.1	3.6	2.8	3.7
Dadra & Nagar Haveli	34.4	34.4	—	9.4	9.4	—
Daman & Diu	24.8	26.6	23.4	5.9	7.6	4.5
Delhi	24.2	27.5	23.8	6.7	6.4	6.7
Lakshadweep	26.3	26.9	25.8	7.1	5.0	8.8
Pondicherry	17.8	19.8	16.6	7.5	7.2	7.7

Excludes Jammu & Kashmir and Mizoram
N.A. - Not available
— No Urban sample

decline. Why then after 70 years, the country still continues to be in the explosive second stage of demographic transition. Perhaps the time gap between our mortality decline and fertility decline offers part of the explanation. Our fertility started showing some signs of gradual decline only after 1971, and 50 years is not a short period, especially when fertility rates during this period continued to remain as high as 40 per thousand.

The long term projections on the country's population given by Planning Commission's standing committee of experts are worth examining. It is estimated that if the Net Reproduction Rate (NRR) could be reduced to unity (1) by the turn of present century, the country's population could be expected to stabilize at 1250m by the year 2040. But going by the 1991 census figures, the NRR in India is likely to approach unity somewhere between 2011 and 2016 only. In that case, the population of the country is likely to reach 1500m by 2041. Even after that, it would continue to grow at the rate of 0.5 per cent per annum.

On the other hand, the World Bank's estimates of China's population reveal that China will have a population of 1413m by 2035 which will stabilize at 1426m. It means that India's population shall outstrip China's population sometime around 2030. What is more significant is that even at that time, while China's population would stabilize, our population shall continue to grow at 0.5 per cent per annum. Therein lies the significance of greater and concerted effort on our part so that we could avert such a situation by quickening the pace of our population control so as to reach stabilization stage at the earliest possible.

When India's demographic transition began in 1921, its population was only 250m. At the given pace of transformation process, it seems that the country shall take about 120 years to complete its transformation and by then it would have 1500m heads to count. Though the Western world, where the demographic transition originated, also took around a century or so to complete the transition, yet those were the times when the Church was opposed to the fertility controls, the State was indifferent to the cause and the technologies regarding birth control were yet developing and were spatially confined. The examples of accelerated transition in East Europe, Japan and China were more recent and nearer home. In these countries, the time span between mortality decline and fertility decline was too short which accelerated their demographic transition process. In India, the mortality rate has been dominating the demographic scene for far too long, while the fertility has been stubbornly unobliging. Above all, India has huge population base in comparison to West European countries and a prolonged period of population explosion could set aside all our gains on the economic front.

However, the 1991 census did reveal some significant developments in the Indian demographic scene. For instance : (i) mortality decline has decelerated sharply; (ii) fertility decline has accelerated; (iii) fertility decline has outmatched the mortality decline for the first time; (iv) the decline in fertility seems to have got established, rural-urban and inter-state variations notwithstanding (Fig. 1); (v) total fertility rate has declined significantly in many states, both in rural and urban areas (Fig. 2); (vi) mortality has declined significantly in many states, both in rural and urban areas (Fig. 3); (vii) infant mortality rate for the country has declined to 73 and in many states it is below the national average both in rural and urban areas (Fig. 4); (viii) growth rate of population has declined for the first time; (ix) female life expectancy (59.0) has outmatched the male life expectancy at birth (58.6) for the first time, wide inter-state variations notwithstanding (Table 2 & Fig. 5); (x) 16 states in the country recorded a lower growth rate during 1981-91 than that during 1971-81 (Table 3); and (xi) 10 per cent districts spread over 8 states recorded a growth rate of

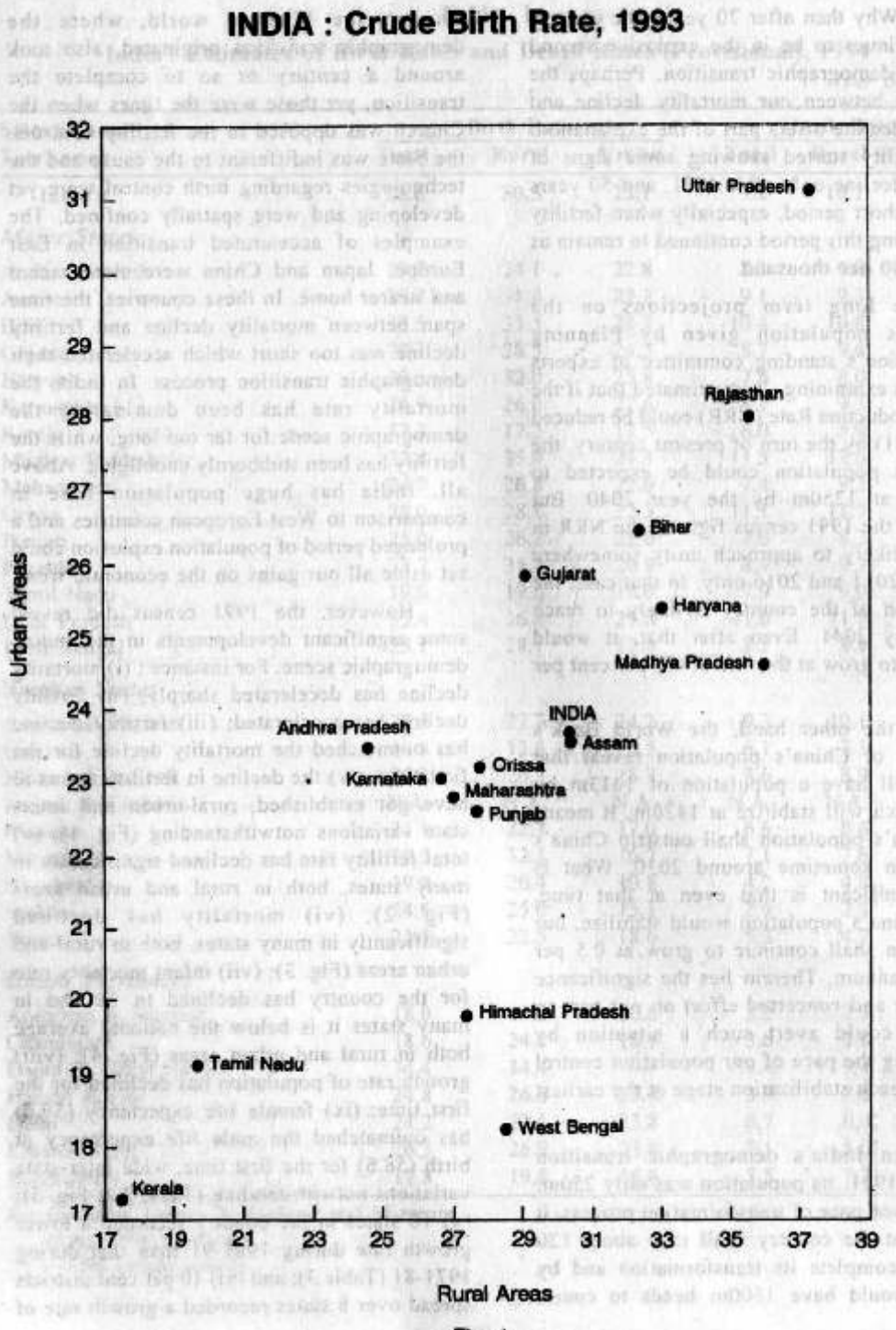
INDIA : Crude Birth Rate, 1993
Urban Areas
Rural Areas
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
17
19
21
23
25
27
29
31
33
35
37
39
Uttar Pradesh
Rajasthan
Bihar
Gujarat
Haryana
Madhya Pradesh
INDIA
Assam
Andhra Pradesh
Orissa
Karnataka
Maharashtra
Punjab
Himachal Pradesh
Tamil Nadu
West Bengal
Kerala

Fig. 1

INDIA : Total Fertility Rate, 1993

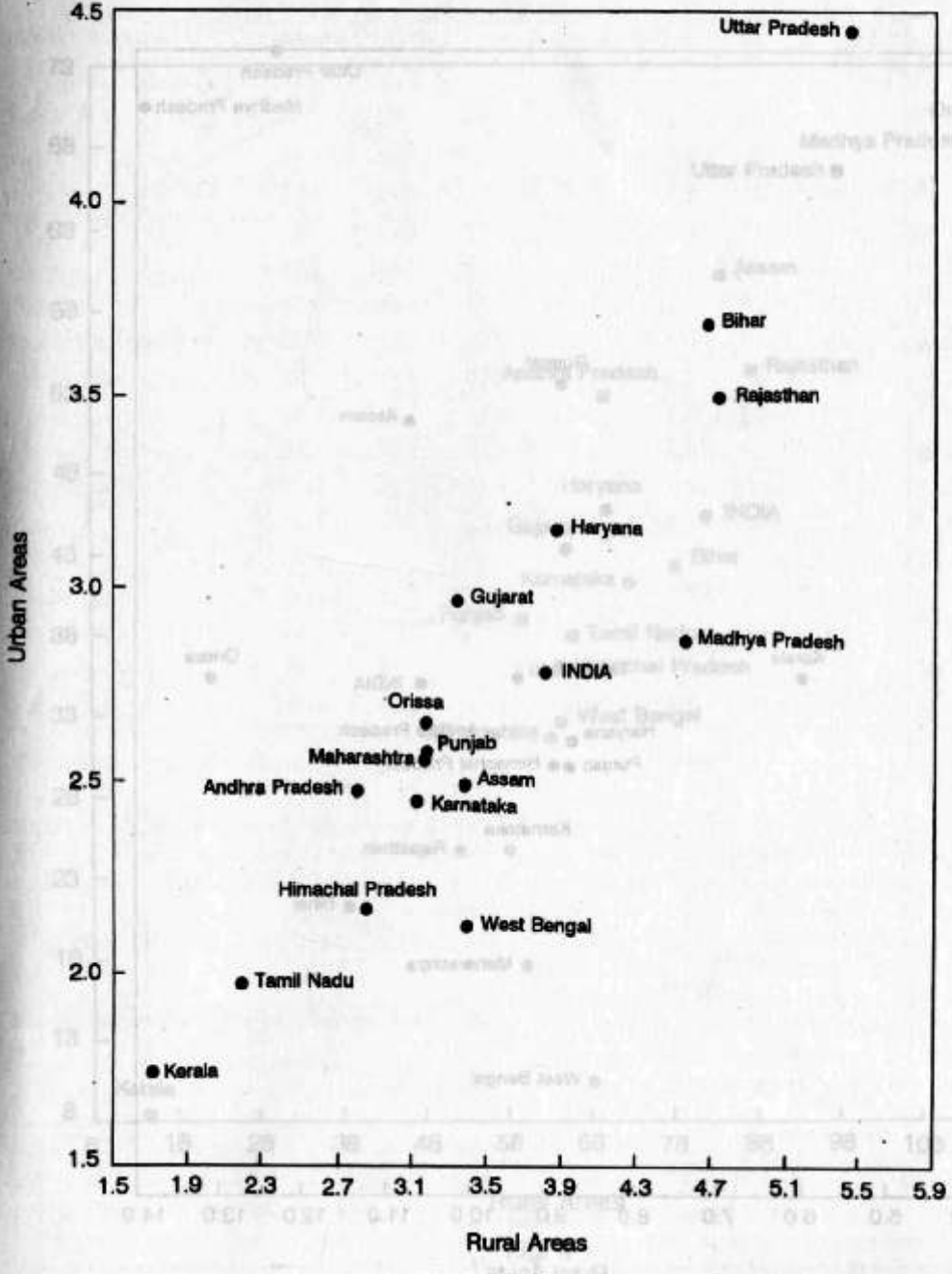

Fig. 2

INDIA : Crude Death Rate, 1993

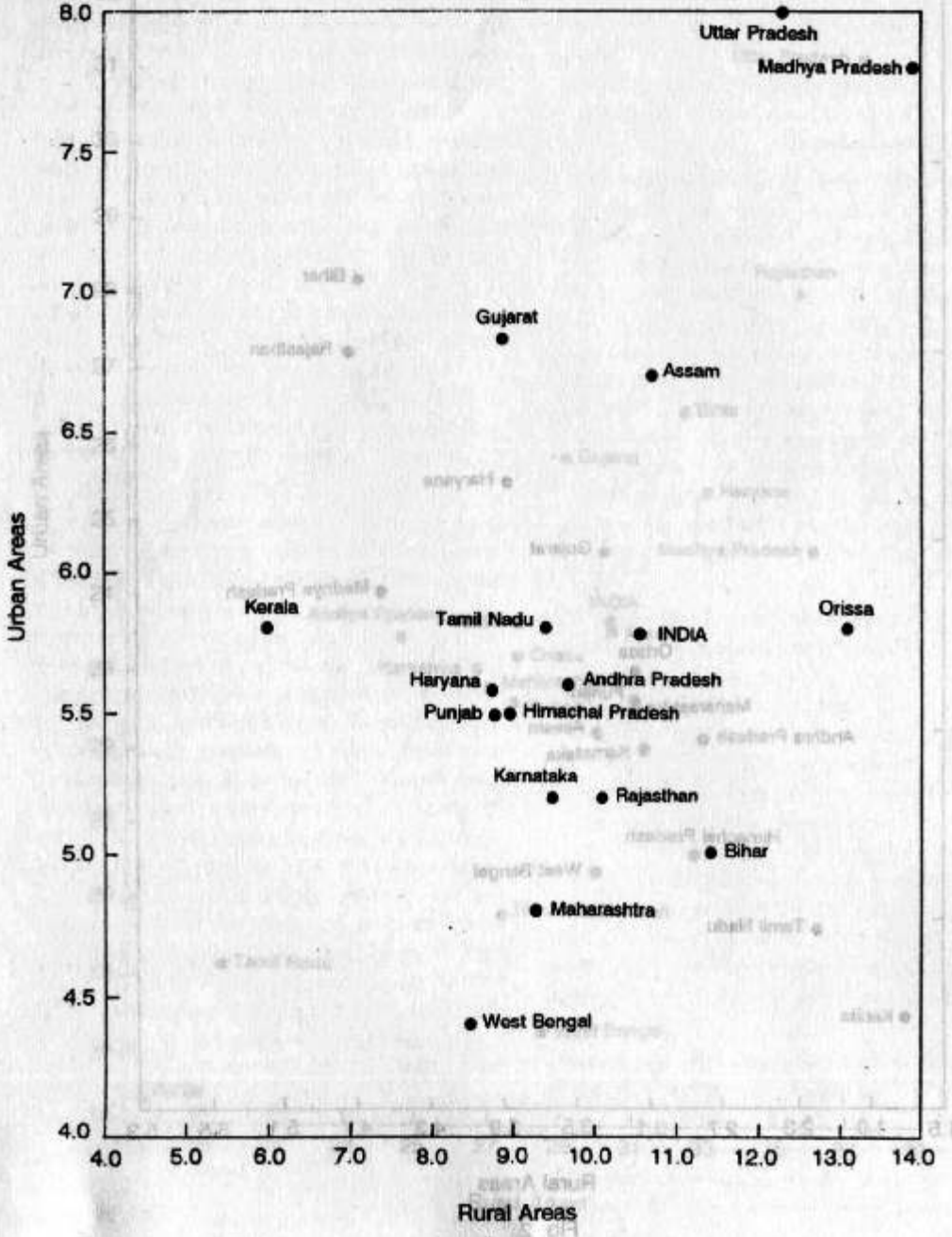

Fig. 3

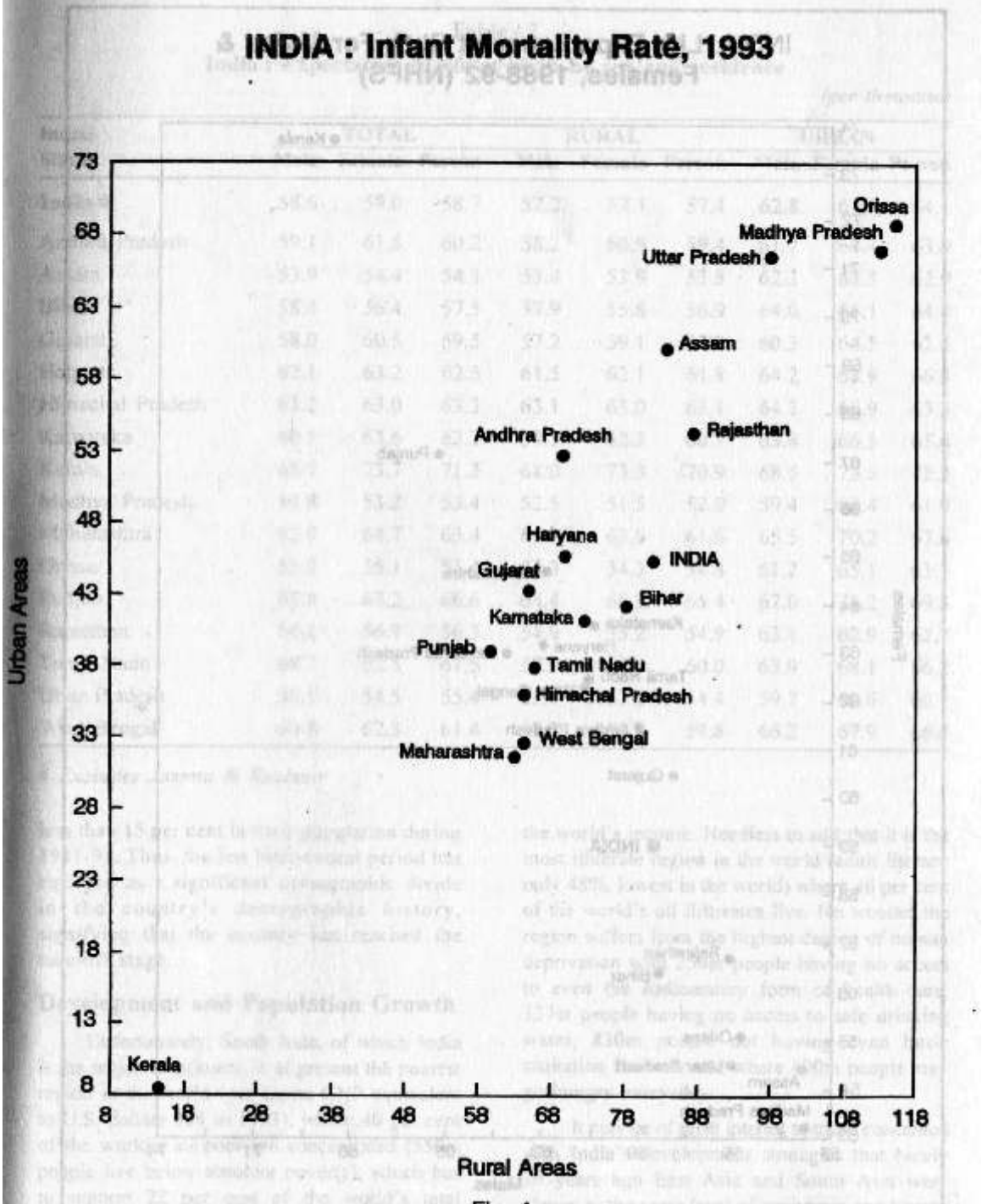
INDIA : Infant Mortality Rate, 1993
Urban Areas
Rural Areas
73
68
63
58
53
48
43
38
33
28
23
18
13
8
8
18
28
38
48
58
68
78
88
98
108
118
Orissa
Madhya Pradesh
Uttar Pradesh
Assam
Andhra Pradesh
Rajasthan
Haryana
INDIA
Gujarat
Bihar
Karnataka
Punjab
Tamil Nadu
Himachal Pradesh
West Bengal
Maharashtra
Kerala

Fig. 4

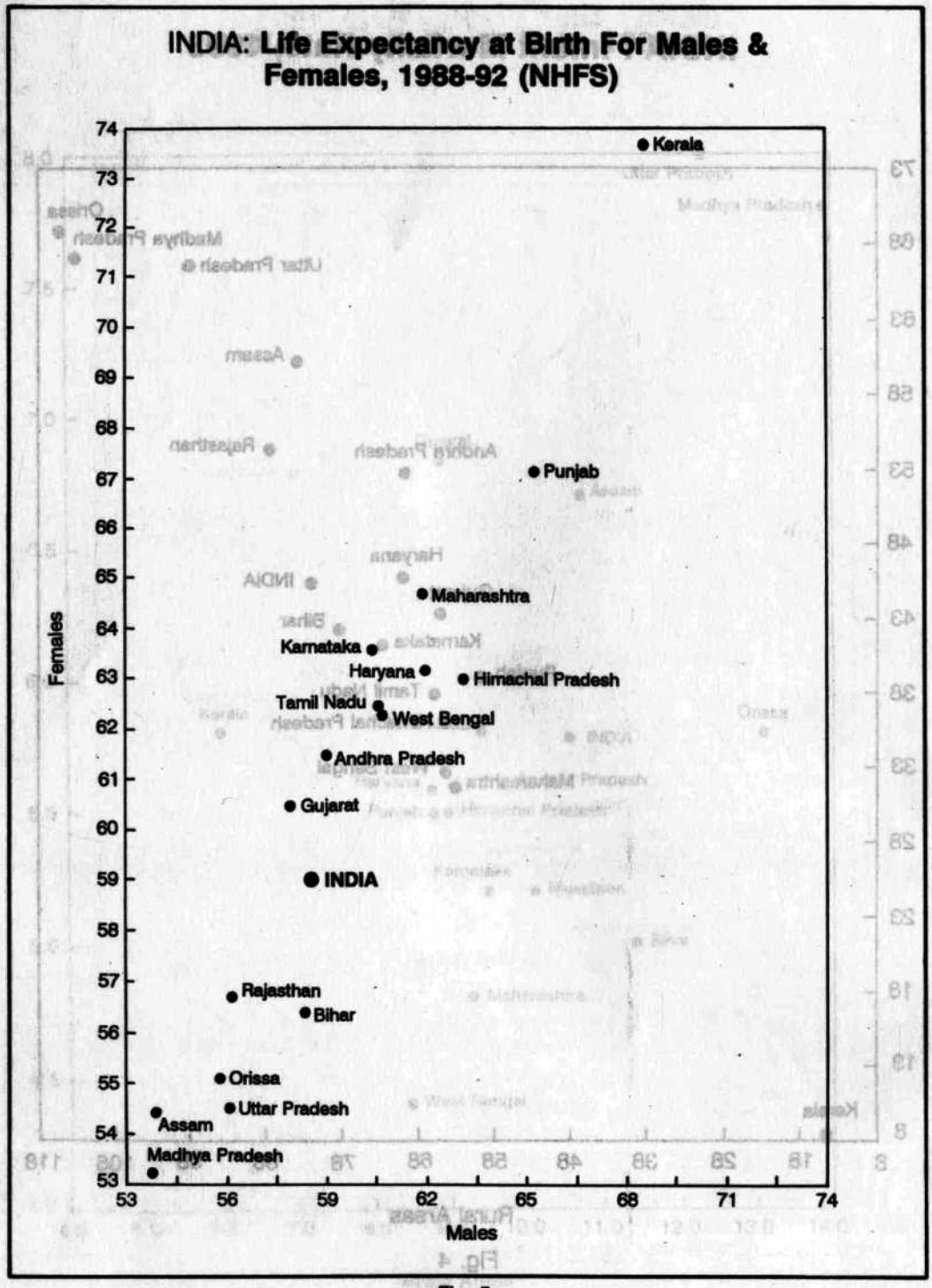
INDIA: Life Expectancy at Birth For Males & Females, 1988-92 (NHFS)
Females
Males
74
73
72
71
70
69
68
67
66
65
64
63
62
61
60
59
58
57
56
55
54
53
53
56
59
62
65
68
71
74
Kerala
Punjab
Maharashtra
Karnataka
Haryana
Himachal Pradesh
Tamil Nadu
West Bengal
Andhra Pradesh
Gujarat
INDIA
Rajasthan
Bihar
Orissa
Uttar Pradesh
Assam
Madhya Pradesh

Fig. 5

Table - 2

India : Expectation of life at birth by sex and residence

(per thousand)

India/ States	TOTAL			RURAL			URBAN		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
India #	58.6	59.0	58.7	57.2	57.4	57.4	62.8	65.5	64.1
Andhra Pradesh	59.1	61.5	60.2	58.2	60.9	59.4	61.7	64.4	63.0
Assam	53.9	54.4	54.1	53.4	53.9	53.5	62.3	63.3	62.9
Bihar	58.4	56.4	57.5	57.9	55.6	56.9	64.0	66.1	64.8
Gujarat	58.0	60.5	59.5	57.2	59.1	57.9	60.3	64.5	62.4
Haryana	62.1	63.2	62.5	61.5	62.1	61.8	64.2	68.9	66.3
Himachal Pradesh	63.2	63.0	63.3	63.1	63.0	63.1	64.2	66.9	63.3
Karnataka	60.5	63.6	62.2	59.3	62.3	60.7	63.8	66.5	65.6
Kerala	68.7	73.7	71.3	68.0	73.3	70.9	68.5	73.5	72.3
Madhya Pradesh	53.8	53.2	53.4	52.5	51.5	52.0	59.4	63.4	61.9
Maharashtra	62.0	64.7	63.4	60.7	62.6	61.6	65.5	70.2	67.6
Orissa	55.8	55.1	55.4	55.3	54.3	54.8	61.2	65.1	63.1
Punjab	65.4	67.2	66.6	64.4	66.9	65.4	67.0	71.2	69.3
Rajasthan	56.2	56.7	56.3	54.9	55.2	54.9	63.1	62.9	62.7
Tamil Nadu	60.7	62.5	61.5	59.9	60.4	60.0	63.9	68.1	66.2
Uttar Pradesh	56.1	54.5	55.4	55.4	53.2	54.4	59.7	60.6	60.1
West Bengal	60.8	62.3	61.4	59.2	60.9	59.8	66.2	67.9	66.4

 # Excludes Jammu & Kashmir

less than 15 per cent in their population during 1981-91. Thus, the last inter-censal period has emerged as a significant demographic divide in the country's demographic history, signifying that the country has reached the take-off stage.

Development and Population Growth

Unfortunately, South Asia, of which India is the major constituent, is at present the poorest region in the world (per capita GNP equivalent to U.S. dollars 309 in 1993), where 40 per cent of the world's all poor are concentrated (550m people live below absolute poverty), which has to support 22 per cent of the world's total population while generating only 1.3 per cent of the world's income. Needless to add that it is the most illiterate region in the world (adult literacy only 48%, lowest in the world) where 46 per cent of the world's all illiterates live. No wonder the region suffers from the highest degree of human deprivation with 250m people having no access to even the rudimentary form of health care, 337m people having no access to safe drinking water, 830m people not having even basic sanitation facilities and where 400m people may go hungry every day.

It may be of great interest to those concerned with India's development strategies that barely 30 years ago East Asia and South Asia were almost at the same level of economic and human development but today East Asia (excluding

Table - 3

India : Change in Growth Rate, 1971-1991 (Per cent)

State / Union Territory	1971-81	1981-91	Change in Growth Rate
States			
Sikkim	50.77	28.47	-22.30
Goa	26.74	16.08	-10.66
Mizoram	48.55	39.70	-8.85
Gujarat	27.67	21.19	-6.48
Karnataka	26.75	21.12	-5.63
Kerala	19.24	14.32	-4.92
Rajasthan	32.97	28.44	-4.53
Manipur	32.46	29.29	-3.17
Himachal Pradesh	23.71	20.79	-2.92
Punjab	23.89	20.81	-2.92
Tamil Nadu	17.50	15.39	-2.11
Haryana	28.75	27.40	-1.35
Jammu & Kashmir	29.69	28.92	-0.77
Bihar	24.06	23.54	-0.52
Orissa	20.17	20.06	-0.11
Uttar Pradesh	25.49	25.48	-0.01
Meghalaya	32.04	32.86	+0.82
Assam	23.36	23.58	+0.22
Andhra Pradesh	23.10	24.20	+1.10
Maharashtra	24.54	25.73	+1.21
West Bengal	23.17	24.73	+1.56
Madhya Pradesh	25.27	26.84	+1.57
Arunachal Pradesh	35.15	36.83	+1.68
Tripura	31.92	34.30	+2.38
Nagaland	50.05	56.08	+6.03
Union Territories			
Chandigarh	75.55	42.16	-33.39
Andaman & Nicobar Islands	63.93	48.70	-15.23
Dadra & Nagar Haveli	39.78	33.57	-6.21
Delhi	53.00	51.45	-1.95
Lakshadweep	26.53	28.47	+1.94
Daman & Diu	26.07	28.62	+2.55
Pondicherry	28.15	33.64	+5.49
INDIA *	24.66	23.85	-0.81

Source : Census of India 1991, Final Population Totals, India Paper II of 1992

* Including projected population of Assam.

China) enjoys 27 times higher incomes than South Asia and its human development index is also double than that of South Asia. A comparative analysis of the economic and social attainments of the two regions would be quite helpful to those engaged in the policy formulation process in India.

While the East Asia has enjoyed macro-economic stability over the past 30 years, the scene in South Asia has been dominated by huge budgetary deficits. Consequently, the former enjoyed a relative price stability, while the latter suffered high rates of inflation. The basic difference perhaps has been in the approach of the two regions in addressing themselves to their respective problems of socio-economic development. While East Asia followed a liberal open approach permitting large inflow of foreign equity investments, open international competition and merit based intra-national competition, South Asia, by and large, followed a protectionist approach depending largely upon foreign assistance and loans, where its feudal structure of power and patronage did not permit merit based competition and instead gave rise to vested interests all around. Even in seeking limited foreign investment rent-seeking/commissions/ kickbacks and not the merit, guided the final decisions.

East Asia also invested heavily in human capital and technology (2-3 times more on education than that by South Asia), while South Asia allowed itself to drain in the vast desert of illiteracy and ignorance. East Asia's focus in education has been on primary education and technology, which claimed more than 75 per cent of its expenditure on education. Besides, the institutional reforms in East Asia too have met with much greater success than that in South Asia. It relied on high quality, merit-based economic technology, reliable and just legal system, serious and well thought out land reforms and equitable credit system and was fortunate in having long periods of political stability. As against this, South Asia still continues to remain mixed with feudal structures dominating political and economic power. For example, the economic manifesto of Independent India, unfortunately so, instead of becoming a symbol of distributive justice, has rather become a symbol of State intervention. No wonder, even India has evolved such a functioning system of democratic governance, which is yet dominated by various political and economic power structures. Other factors that may have contributed to East Asia's economic stride include : out-ward looking trade strategies with large exports and high degree of intra-regional trade; high degree of mobilisation of domestic savings and investments; good governance with merit based nexus between State, bureaucracy and big business; rule of law, fair competition and well entrenched institutions of accountability. By comparison, South Asia, including India, is still in search of essential elements of good governance. All these factors have created wide gap in the progress made by the two regions of East Asia and South Asia in just 30 years.

Fortunately, the averages for South Asia do not apply entirely to India as most of the South Asian countries, except Sri Lanka, are far behind India in many respects. In fact, since India is the largest constituent of South Asia and in many respects, has progressed far more than many of the region's constituents, it has been responsible for improving the averages for the region as a whole. But for India, the averages for South Asia would have been still more depressing.

Credit must be given to India for having engineered a few fairly basic reforms. For example, the land reforms in India did succeed in containing excessive concentrations of agricultural lands; better opportunities have been made available to the scheduled castes, the scheduled tribes and other backward classes; the institutions of judiciary, the press and the bureaucracy compare fairly well with those of the advanced countries in many respects; the recently revived Panchayats have ensured as many as 800,000 women a place in the decision making bodies at the grassroot level; reservation of 30 per cent seats in Parliament for women also does not seem to be a far cry now; the country's economy has also been opened up to the international

market; domestic investments have been revived considerably and private foreign investment has begun to flow in. All these efforts on the part of India have yielded it an average growth rate of 3 per cent p.a. in its agricultural production for the past 30 years; an average growth of 6 per cent p.a. in its industrial production; an average growth rate of 5 per cent p.a. in its GNP over the past 30 years; and doubling of its per capita GDP during 1960-90 despite doubling of its population during the same period. It needs stressing here that all through these decades the country's population continued to grow almost at a constant rate of 2 per cent p.a.

The basic question that needs to be examined here is that why economic growth in India has not had the desired impact upon the life of ordinary people in the country. It has largely been due to the country's backwardness in the field of human development. Out of 174 countries ranked for human development index, India ranked 135th. Various indicators of human development for the country reveal that the extent of human deprivation in India was really staggering : 135m people had no access to basic health facilities, howsoever rudimentary these may be; 226m people had no access to safe drinking water; about 50 per cent of country's population aged 7 and above was illiterate; about 70 per cent population had not even the basic sanitation facilities; 46 per cent of the country's population was in absolute poverty having a daily per capita income of less than Rs. 40 only; and 66 per cent of the country's total population could be classified as capability poor meaning thereby that it did not receive minimum level of education and health care necessary for functioning human capabilities (UNDP, 1997, pp. 31-37). No wonder, India had the largest illiterate population in the world and one-third of all poor in the world. The human deprivations are severest in case of children and women : 62m children below 5 years of age are malnutritioned; 33 per cent of children below 16 years of age are forced into child labour; 88 per cent of the excpectant mothers in the age group of 15-49 are normally anaemic; and 61 per cent of females above the age of 7 years are illiterate.

Unemployment is emerging as the most serious problem in India. Although it may not be possible to obtain accurate estimates of the unemployment situation in the country, yet some of the statistics are startling: 7m people are being added to labour every year who are increasingly educated and the country's economic growth is unable to create enough jobs for them. It is estimated that during 1980s, while the labour force grew by 3 per cent p.a., the employment expansion rate stagnated at 2 per cent p.a. Thus, the incidence of both unemployment and under-employment in the country has been increasing despite rising GNP ratios. Creating employment opportunities is an essential strategy for linking development with population growth because "jobless growth" leaves a majority of population unaffected by or dissatisfied with the forces of economic growth. One of the methods of linking development with human lives is to invest liberally in education and health. Such an investment in India has been rather too low being only Rs. 560/- per person as compared to Rs. 4800/- in Republic of Korea. How rich dividends such investments in education and skill training of people can yield is evident from the fact that graduates from Indian Institute of Technology carry a fairly high price-tag or pay package not only in India but also in the most advanced country like the U.S.A. The country is unable to reap the benefits of such future technocrats simply because it cannot pay them at world market rates. It simply speaks of the high quality of training the country is able to impart as well as the genius of the Indians. Gradually, India is emerging the largest exporter of softwares in the world and Bangalore and Hyderabad are fast emerging as Indian Silicon Valleys. The country enjoys the advantage of possessing a rich tradition of scientific and technological research, has a reservoir of lowpaid hardworking people, has largest middle class in the world, fairly well established democratic institutions but lacks in its investment capability. Only a massive investment in education, health care, sanitation facilities etc. coupled with a reasonable price

Table - 4

India : Population Growth and Development Indicators

States	Average annual exponential growth rate	Couple protection rate 31.3.91	Infant mortality rate 1990	Female literacy rate 1991	Mean age at marriage of females 1981	Infra-structural facilities Road length 100 km² 1988	Percentage of people below poverty line 1983-84	Per capita income (at current prices) in 1987-88
Kerala	1.31	55.6	17	86.9	21.8	290.9	26.8	2828
Tamil Nadu	1.39	57.3	67	52.3	20.3	110.5	39.6	3362
Himachal Pradesh	1.77	52.1	68	52.5	19.1	38.2	13.5	3122
Punjab	1.85	75.8	55	49.7	21.1	94.98	13.8	5572
Karnataka	1.88	46.9	71	44.3	19.2	60.0	35.0	3254
Gujarat	1.89	57.8	72	48.5	19.5	33.8	24.3	3509
West Bengal	2.20	33.7	63	47.1	19.2	64.8	39.2	3046
Maharashtra	2.26	56.2	58	50.5	18.8	59.8	34.9	4558
Haryana	2.33	56.6	69	40.9	17.8	56.6	15.6	4312
INDIA	**2.11**	**44.1**	**80**	**39.4**	**18.3**	**49.3**	**37.4**	**32.86**
Jammu & Kashmir	2.58	21.1	70	N.A.	19.6	5.8	16.3	2701
Rajasthan	2.47	29.0	83	20.8	16.1	24.4	34.2	2197
Madhya Pradesh	2.37	40.3	111	28.4	16.6	26.2	46.2	2433
Uttar Pradesh	2.24	35.5	98	26.0	16.7	55.6	45.3	2382
Andhra Pradesh	2.14	44.3	70	33.7	17.3	48.8	36.4	2741
Assam	2.12	28.2	77	43.7	16.6	76.7	23.5	2589
Bihar	2.11	26.0	75	23.1	16.6	48.1	49.1	1846
Orissa	1.78	41.0	123	34.4	19.1	78.5	41.8	2194
Co-efficient of Correlation		**-0.4900**	**+0.3400**	**-0.7656**	**-0.7900**	**-0.6700**	**+0.0429**	**-0.2109**

Source : (i) Census of India, Final Population Totals, Paper 2 of 1992.

(ii) Government of India (1992) Economic Survey 1991-92, Ministry of Finance, pp. 5-12.

(iii) Data on Poverty Line are from the Planning Commission of India, New Delhi.

stability can help the country in its take-off.

However, within India, there are wide inter-state variations in the state of human development. For example, the human development index for Kerala was highest (0.597), while that for Madhya Pradesh was lowest being only 0.341. Similarly, per capita income level of Punjab (Rs. 6380/-) was more than double that of Orissa (Rs. 3028/-); 55 per cent people lived below poverty line in Orissa as against 27 per cent in Haryana; and adult literacy in Rajasthan was only 41 per cent as against over 90 per cent in Kerala. Vertical inequalities in rural literacy were equally sharp. For instance, rural literacy among persons having an income of less than Rs. 20,000/- p.a. was 45 per cent as against 72 per cent among persons having an income of more than Rs. 62,000/- p.a.; rural male literacy rate among Hindus was 72 per cent as against 55 per cent among Muslims and 53 per cent among scheduled castes; rural female literacy rates for Hindus, and the scheduled castes were 45 per cent and 28 per cent respectively (NCAER - 1996, p. 87). Although these statistics based on NCAER Survey may not be precisely accurate, yet these indicate the kind of vertical inequalities in human development prevalent in India.

The scope of present analysis has been limited to only those indicators of development which are closely associated with the demographic ethos of our country. For instance, percentage of female literacy, and mean age at marriage of the females have been chosen to indicate the state of social development, keeping in view the significance of the females' role in the reproductive process. Added to it are the indicators of infant mortality rate and couple protection rate which reflect the health status of a population and hence a vital dimension of overall development from the point of view of population. Per capita income and percentage below poverty line have been included as these indicate economic dimension of development. Infrastructural facilities determine the pace of overall development in any area and road length is an important indicator of infrastructural facilities. Therefore, total road length per hundred square kilometres has been selected as another indicator as it promotes both economic and socio-cultrual development of any area. The linkages between development and population can well be grasped by analysing the relationship between these selected independent variables and the dependent variable of growth of population.

Table 4 reveals that annual growth rate of population in the country was negatively correlated with mean age at marriage of the females (-0.7900), female literacy rate (-0.7656), road length per 100 Km^2 (-0.6700), couple protection rate (-0.4900) and per capita income (-0.2109) and was positively correlated with infant mortality rate (+0.0429). Thus, as regards population growth, indicators of social development yield faster results than those of economic development as is indicated by their co-efficient values. Mean age at marriage of the females, female literacy rate, infrastructural facilities, couple protection rate and per capita income in this order are the areas where our population programmes need to strike the most.

India is a fairly large country with wide horizontal as well vertical inequalities in the levels of its socio-economic development which get reflected in its demographic ethos. While Kerala with its fertility rate of 17.3 and mortality rate of 6.0 in 1994 was promising to enter into the final stage of the demographic transition, Uttar Pradesh with its fertility rate of 35.4 and mortality rate of 11.0, was far behind. Unfortunately, in case of large and most populous states of India, not only the fertility rates had defied any climbdown but also the war on their mortality rates had yet not been fully won (Table 1). Thus, there are states like Kerala, which have attained high level of socio-economic development and are fast approaching the state of population stabilization and extremely backward conditions prevail in some of the states like Uttar Pradesh, Bihar etc.

Keeping in view the population growth and development scenario of various major states in the country, it is possible to distinguish between the developed and the underdeveloped states with the help of the selected indicators. The small

states have been excluded from the analysis as these may introduce unwarranted inexplainable distortions.

The Developed States

The states that qualify to be classified as the developed states include Kerala, Tamil Nadu, Himachal Pradesh, Punjab, Karnataka, Gujarat, West Bengal, Maharashtra and Haryana. In most of these states, with a few exceptions, the population growth rate was lower than the national average (2.11); the infant mortality rate was less than the national average (80); the percentage below poverty line was lower than the national average (37.4); the mean age at marriage of the females was higher than the national average (18.3); the couple protection rate was higher than the national average (44.1); the female literacy rate was higher than the national average (39.4); the infrastructural facilities index measured in terms of road length per 100 square kilometers was higher than the national average (49.3); and per capita income was higher than the national average of (3286). Of course, there were a few exceptions in the pattern of some of these indicators but in case of at least four out of seven indicators the values corroborated the pattern.

Within the developed states, Kerala had the distinction of having been able to reduce its population growth rate to only 1.3 per cent. It was followed by Tamil Nadu which had a growth rate of 1.39 per cent. Although Kerala was not placed very favourably with respect to per capita income (2828), its attainments in case of other variables especially mean age at marriage of the females (21.8) and infant mortality rate (17) were indeed remarkable. It speaks of the relative significance of indicators of social development vis-a-vis economic development as far as their role in influencing the population growth is concerned.

Tamil Nadu too was favourably placed in respect of most of the variables except that it had relatively higher percentage of its population below poverty line (39.6). That is why, its population growth rate was also fairly matchable with that of Kerala, which was far ahead of Tamil Nadu with respect to its female literacy rate and infant mortality rate. Moreover, though in both these states the Net Reproduction Rate (NRR) was fast approaching unity (1), yet the life expectancy in Kerala had reached 73 years for females and 69 years for males (1988-92), and Tamil Nadu it was still 60 and 62 years for males and females, respectively (Fig. 5). Thus, with improvements in the life expectancy in the coming years, Tamil Nadu will have larger number of surviving people and hence attain population stabilization stage much later than Kerala. Going by the present trend, it is estimated that Kerala will be able to achieve the goal of stabilized population in another 30 years or so, while Tamil Nadu shall require much greater effort to be in line with Kerala.

Himachal Pradesh, a small hill state in the North, is credited with third position after Kerala and Tamil Nadu with respect to population stabilization. It has succeeded in curtailing its average annual growth rate of population to 1.77 per cent. Relatively higher status granted to women by its society seems to have been responsible for its attainments on this front. Very high female literacy rate (52.5), next only to Kerala, and high mean age at marriage of the females (19.1) together indicate the status granted to the women of this hill state. But for its poor development of infrastructural facilities, due to its moutainous terrain, speed-breaking its march towards economic development, the state could have competed with Kerala in the area of population stabilization.

Punjab, which has the highest per capita income, ranks only fourth as far as the attainment of population stabilization is concerned. The state's poor performance in the field of female literacy perhaps explains to a great extent its slow progress on the demographic front. Punjab seems to have invested more on providing infrastructure for its economic development (network of canals, tubewells, roads etc.) while neglecting its social development. The comparison between Punjab and Kerala with respect to their attainments on demographic and socio-economic fronts probably indicates that economic development alone cannot help the country in

achieving its goal of population stabilization. The parameters of social development, thus, have to be granted equal significance, if not more.

Punjab's neighbouring state of Haryana, which otherwise has third highest per capita income among major states, displayed the highest population growth rate (2.33) from among the developed states. Again it is the status of women in this state which seems to have curtailed its decline of population growth rate. It has the lowest female literacy and the lowest female's age at marriage among the developed states. That probably explains, to a large extent, the state's poor performance on the demographic front.

Maharashtra and West Bengal also do not seem to have fared well on the demographic front, their attainments on the economic front notwithstanding. Their average annual growth rate of population was 2.26 and 2.20 per cent respectively. In case of West Bengal, poor couple protection rate and slow progress of female literacy, perhaps explain the state's poor performance on the demographic front. In case of Maharashtra relatively low female age at marriage may offer some explaination for the state's slow progress on the demographic front. Similarly, Gujarat, with its multi-dimensional development could have fared better but for its poor development of infrastructural facilities. And the same could have been the case with Karnataka, but for its poor female literacy rates.

The preceding discussion establishes that economic development alone cannot help the country in attaining its objective of stabilized population. The parameters of social development in this regard seem to be more significant.

The Underdeveloped States

By comparison, the states of Jammu and Kashmir, Rajasthan, Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, Assam, Bihar and Orissa could be classified as underdeveloped in this regard. Surprisingly, Orissa was leading as far as population control is concerned. From among the listed underdeveloped states, it has displayed the lowest average annual growth rate of only 1.78 per cent. It could be associated with higher mean age at marriage of the females (19.1), fairly good couple protection rate (41.0) and fairly high rate of its development of infrastructural facilities (78.5). On the other hand, its poor performance with regard to the infant mortality rate (123), reveals that improvements in survival rate in the coming years shall keep on adding to the state's population growth rate for quite some time more. Its slow growth rate of population at present, which is due to high mortality rate, cannot be considered development.

Bihar is the most backward state among the listed underdeveloped states. It had second lowest female literacy rates in the country. It had very low rate of couple protection, very low age at marriage of females, lowest per capita income in the country, and highest percentage of people below poverty line in the country.

Unfortunately, most of the states falling in the category of underdeveloped states were large and populous states, together accounting for about 55 per cent of country's total population. It seems impossible for these states to achieve a Net Reproduction Rate of Unity (1) by 2001 as had been targetted for the country. It is interesting to note that the Planning Commission of India had identified 90 districts in the country as high priority districts, because these still displayed a high birth rate of above 39 in 1990. Most of such districts were confined to these underdeveloped states. The number of such districts with a birth rate of more than 39 (1990) was highest is Uttar Pradesh (32), followed by Madhya Pradesh (23), Rajasthan (23), Bihar (5) and Orissa (1). Thus, 84 out of 90 such districts were confined to the underdeveloped states. Not only that, the infant mortality rate, especially in Orissa (123), Madhya Pradesh (111), Uttar Pradesh (98), and Rajasthan (83) still continued to be significantly high. Any future decline in their infant mortality rate shall lead to a significant improvement in their survival rate which would slacken their pace of population stabilization. The female literacy rates in most of these states were much below the national average as was the case with their mean age at marriage of the females. The per capita income in case of

most most of these states was pitiably low and hence the percentage of people below poverty line was high. Nothing much could be expected from such a dismal state of various variables in most of the states included in the category of less developed states.

Summing Up

Though the fertility rate in India has started declining at a faster rate than the mortality rate and has reached below 30, yet the country may have to struggle very hard to accelerate further the rate of decline in its fertility. The fertility in no case cold be allowed to stagnate at this level. The 90 districts identified as having very high fertility rate in the country should constitute the priority region in the country's future fertility controlling strategies.

Secondly, the most critical variables that could help the country in its fertility control drive include mean age at marriage of the females, female literacy, infrastructural facilities, couple protection rate and infant mortality rate in this order. It clearly indicates the grey areas. Population control programmes of the country must strive to increase female's age at marriage in real terms, promote education among females, reduce infant mortality rate through various health programmes and work for expanding the network of infrastructural facilities for promoting economic development and socio-cultural interaction. Certainly these are not the variables that are difficult to manipulate. What is needed is, determination, political will, continued administrative support, imaginative programmes, involvement of people etc. which can turn any population programme into a peoples' programme.

Thirdly, the present analysis has also established that the parameters of social development are likely to yield faster results than those of economic development. Examples of Kerala, Himachal Pradesh and Punjab hold the testimony in this regard. On international scale too, the East Asian experience (including that of China) puts the social development variables, particularly primary and technical education and health care far ahead of economic variables. The economic development alone may fail to expedite the demographic transition. In fact, it is a judicious mix up of the parameters of economic and social development which has to be worked out for each state separately to acclerate the demographic transition in Indian states. The vast inter-state diversity in physico, socio-cultural and economic setup does not permit a common recipe for the country as a whole.

Fourthly, the states of Kerala, Tamil Nadu, Himachal Pradesh and Punjab may be able to attain population stabilization with little more effort, while the states of Jammu and Kashmir, Rajasthan, Uttar Pradesh, Andhra Pradesh, Bihar, Assam and Orissa may pose serious problems even with well-intentioned population programmes.

The present analysis would be incomplete without specific suggestions for accelerating the fertility transition in the country. These may include :

(i) Central assistance to the states must be linked with their genuine performance in family planning programmes.

(ii) Mean age at marriage of the females must be raised to 20 years and effective steps should be taken for its adherence.

(iii) Female literacy programmes should be promoted in all states. Each village in the country must be provided with a school for girls.

(iv) Long terms financial bonds schemes for girl child on the lines that of Maharashtra, Haryana, Gujarat etc., should be adopted in all the states.

(v) Basic minimum sanitation facilities, safe drinking water and sound multi-pathy based health care system must be provided to the entire population at the earliest possible on priority basis with

the help of both private and public sector investments.

(vi) Road construction activity should be acclerated in every state to promote acclerated economic activities and socio-cultural interaction.

(vii) Special effort should be made in the 90 districts, identified by the Planning Commission, to bring their fertility rate close to the national average immediately.

(viii) Investments in primary and technical education and general health care be increased significantly to eliminate human deprivations among the downtrodden.

(ix) Feudal structures of power and patronage must be demolished to integrate the process of economic and human development.

(x) Electoral reforms be initiated to improve the quality and commitment of the political leadership in the country.

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GEOGRAPHY AND MIGRATION POLICIES : THE INDIAN EXPERIENCE

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This paper highlights the concerns of public policy research. Sketching geography's forays into this emerging field it uses the spatio-temperal trends in interstate and intrastate migrations in India to comment on various policy issues. The arguements are woven around the linkages between explicite development policies and their implicit impact on migration. Certain strategies have been indicated to correct the distortions associated with these linkages.

I Geography and Public Policy Research :

Policy research in geography is still in its infancy though it has caught the attention of researchers and since the early nineties there have been several spirited calls for greater attention to this neglected thrust area including Beery's exhtortion to have sharper focus on policy issues in our research designs (Berry, 1994). Earlier the ball was set rolling by the Institute of British Geographers by deliberating on the theme in its annual meeting and the effort culminated in a publication which constitutes a widely referenced volume (Coppock & Sewell, 1976). The current status of geographical researches on public policy, strengths of such efforts notwithstanding, has been meaningfully, though somewhat sarcastically, summed up as 'all washed up and nowhere to go' (Hoggart, 1996). Public policy investigations have generally been approached from two extreme positions : either by totally distancing from politics or by regarding political issues as central. The former approach fails to provide answer to questions of changes in policies as also the structural aspects of policies which favour particular areas (and particular social groups and economic classes within areas) and simulatenously prove restrictive for others. While focusing on specific public policies we need to go into question of, whether or not, these policies promote growth; how they impact on social justice; how they help/hinder effective allocations. Tasks of policy research include : identification of causes of policy enactment and their effects-spatial and temporal. Other relevant questions which have been addressed in some geographical studies include : What would have happened along with what actually occurred as a fall out of a particular policy (White, 1976)?; What was intended when the policies were introduced ? What was the intended or unintended dissonance between aims and effects (Hoggart, 1996). Political context emerges as critical both in the formulation of a policy and its outcomes.

The imperatives of public policy research go beyond simple evaluation of past policies to provide inputs for alternative strategies for future and also attempt predictions of their likely effects. For geographers those policies are of special interest which have a clear bearing on areas. Policies which shape the nature of areas, directly as well as indirectly through their operations, need to be subjected to a geographical scrutiny. Migration policies certainly meet this requirement and thus offer a great challenge as also opportunity to population geographers as a research theme.

International migration policies have received adequate attention at international fora including the Commission on Population and Development in the Population Division of the Department of Economic and Social Information and Policy Analysis (DESIPA). The United Nations High Commissioner for Refugees (UNHCR) and the International Labour Organization (ILO) provide inputs for analysis of international migration policies. However, these analyses largely lack well defined and systematic research frameworks. Nevertheless, macro studies have helped in highlighting some global concerns relating to population. Internal migration policies in general and of developing countries in particular also warrant critical evaluations. The present paper focuses on India and addresses some crucial questions relating to India's migration policies from a political-economy perspective.

II Migration Policy in India :

In India, name any dimension of land, economy and society and we have an explicit/ implicit policy corresponding to various dimensions. If there is no policy in India so far it is for migration. An initial reaction to the nonexistence of a migration policy in India may be one of 'satisfaction'. If there is no policy one need not bother to explore (i) the area specific considerations which might have influenced formulation of a policy; (ii) spatial variations in the seriousness with which a policy decision has been implemented; (iii) the regional differences in the degree of success which has been met (iv) the spatial impact of a nonspatial policy or the non-spatial impact of spatial policies. But the immediate satisfaction is soon transformed into discomfort as it raises several questions and forces one to look for relevat answers.

The first crucial question is : why we do not have an explicit policy on migration? Does the constitution of India stand in the way ? Among the fundamental rights listed in Part III of our constitution, Article 19 subclauses (d) (e) and (f) give the right to move freely throughout the territory of India; to reside and settle in any part of the territory of India; and to acquire, hold and dispose off property. Accordingly, as per the constitution we cannot have a migration policy which restricts/.regulates/directs migration of people, for people are free to reside and settle in any part of the country and they all have the right to engage in any vocation anywwhere within the country. Addressing the issue of 'no policy on internal migration' it has been argued by some that this could be attributed to : (i) as yet non-problematic magnitude of migration in our country and the unnecessary tagging of problem of slums with migration; (ii) the perception of migration as a problem vis-a-vis other problems confronting the country (poverty, unemployment, population et.); (iii) the small proportion of migrants to non-migrants; (iv) the supposedly positive role played by migration process in (a) reducing the inequalities in social, cultural and economic development; and (b) diffusing technological innovations from the more developed areas to less developed ones; and (v) the complex nature of migration as a phenomenon not permitting formulation of a policy (Ram, 1993). In a study of socio-economic characteristics of migrants and non-migrant households in Kosi plain of Bihar the absence of a national migration policy is attributed to the lack of relevant information at micro levels (Nizam and Siddiqui, 1996). This fact may not be contested that we do not have any explicity stated, formulated and implemented migration policy like the ones we have for industrial and urban development; on reservations, population, education, defence,

foreign affairs etc. It may be noted that all the development-related policies and their objectives are incorporated in the plan documents - from the First Five Year Plan (1951-61) through the Eighth Five Year Plan (1992-97). It is presumed that these policies, besides directly targeting at their respective foci, indirectly shape the volumes and directions of migration flows withint he country. However, presumed causal links between development policies aiming at income generationa and their impact on human choices need some questioning. These links have to be consciously created by public spending on social services, fiscal policy for redistribution of incomes and assets and many other conscious decisions (Haq, 1996).

III Interstate Migration : Policy Issues :

Even in the absence of an expressive migration policy per se, migration patterns in India over time and as revealed by the census data raise several questions. In a seperate study focusing on spatial mobility in India interstate migration patterns were examined for the post-Independence period (Mehta, 1990). A comparision of the contemporary patterns (from 1951-1981) with those which evolved in the first half of the twentieth century revealed that one of the most striking features of spatial mobility was the stability and persistence of patterns[1]. Whereas some dispersal in destinations of migrants took place during the post-Independence period, areas/ states of considerable population dislocation have changed little[2]. In terms of the dominating positions of large cities and ports in different regions of the country with respect to destinations of migrants, the pre-Independence scenario has been consolidated further during four decades of planned development[3&4]. Such a trend warrants serious reflection and questioning. Given the absence of an explicit migration policy, how a large number of implicit policies of an explicit migration policy, how a large number of implicit policies including the economic and social policies which are formulated for purposes other than migration and population redistribution have made limited impact atleast at the interstate level is a crucial question[5]. What is the nature of implicit policies which have impacted on or bypassed or only marginally influenced the migration patterns in the country? What have been the changes in thrusts of these policies and how these have manifested in spatial terms ? In India, the explicit policies on urbanization, especially those pertaining to restricting the growth of metroplitian areas; agricultural, rural and industrial development; and area-specific policies, as those designed for the backward regions, among others, may have spatial implications. It may be noted that part of the impact of these policies may be unintented. While these policies may exert strong impact on economic activities this may not necessarily manifest in marked redistribution of population through migration[6]. In India while we have explicit policies on urbanization, rural development, industrial locations which have been extended and reformulated from time to time, their impact at the interstate scale is only mild. Otherwise, why should states like Orissa, Uttar Pradesh and Bihar continue to have peculiarly low ranks (in terms of index of per capita state domestic product-SDP) than relatively developed states[7]. And why should some states continue to be characterized by high extent of total, rural and urban poverty[8] ? Another related question is : various policies notwithstanding, why should the economic and social bckwardness of selected states persist and characterize these states with continuing outmigration and others (more developed ones such as Punjab and Maharashtra) with massive influx of migrants[9]. Given this situation of spatial mobility which theoretically should have transformed the prevailing socio-economic context, and/or acted as equalizer of regional disparities in development, the empirical evidences remain a problematic. Why ? In a country where productive forces continue to be spatially polarized and within individual states are concentrated at a few locations; where internal economic linkages within states and regions suffer adversely with national economy keeping up a professed/genuine export orientation; where market forces are increasingly being bestowed

with free play, where is the logic for a rational migration policy ?

Migration policies in countries covered by Economic and Social Commission for Asia and the Pacific (ESCAP) have generally addressed issues of poverty alleviation through economic growth and social development. A concern for fast population increase in the large urban centres has been the main driving force of most migration policies in the region, the complex mix of the positive and negative consequences of migration for the sending and receiving areas is little researched and hence theoretical - empirical formulations are yet lacking at least in geographic studies.

IV The British Migration Policy for Northeast India : Some Lessons from the Colonial Experience :

A perusal of explicit migration policies adopted by the British in the Northeastern region of India and their immediate and long term fallouts would enrich the debate. The British found the whole of the Northeast a region characterised by primitive agriculture. To modernise agricultural practices and patterns huge investments in irrigation, flood control measures were crucial but the British were not willing to invest and instead resorted to a cheaper alternative : search for cheap human labour which was not available locally. So the British adopted a permissive migration policy resulting in, to begin with, migration of Bengali Muslim cultivators from East Bengal (now Bangladesh). These migrants settled on lands in the valley of the Brahmputra and its tributaries. The second wave of migration in the region (in Assam) was associated with the discovery of tea and which involved tribal labour from Chotanagpur and Orissa. Simulatenously, generous land leases were granted and some 1,629,529 acres of wasteland were allocated to planters on which 1.2 million migrant labourers were working in 1928 (Singh, 1987). The migrant labourers came to constitute nearly one-sixth of the total population of Assam. These policy initiatives apart, the traders (mainly the Marwaris) got attracted to the region because of the increased production of grains and the 'wonder crop' of tea. Construction of rail tracks and roads attracted labourers from Bihar, initially seasonal, but many settled down in the region subsequently. The net result of policies promoting and encouraging migration was ever increasing numbers of inmigrants also leading to tensions with the indigenous population and this called for a qualitative change in the policy. Against this background the 'Inner Line Policy' was introduced mainly to mitigate confrontation between the inmigrants and the locals. This policy, aiming at simply isolating the locals from the outsiders, arbitrarily decided upon a line beyond which people could not move without explicit permission of the district authorities. Also possession of land by non-residents was forbidden under the policy. The policy wished to curb both the British administrators and the greedy tea planters in Arunachal Pradesh, Nagaland and Mizoram areas. Since the policy did help in checking alienation of tribals from their land as also in curbing influx of inmigrants into these areas, it has been continued in the post-Independence period as well. While there have been demands from other states of the Northeast to introduce the Inner Line Policy as such, in some other Indian states such as Himachal Pradesh and Jammu-Kashmir (and now Rajasthan) purchase of agricultural land by the non-residents is legally not allowed.

Clearly the motive of the British in encouraging migration in the northeast was to help meet the labour requirements in the region. That the policy not only resulted in alarming increase in population (from barely 1 million in 1826 to 31.5 million in 1991) but it also brought about changes in ethnic composition, sharpened confrontation between the indigenous people and the outsiders, triggered cultural/linguistic conflicts (which in the post-Independence period have some time bordered on secession) all making the land of 'seven sisters' a region of turmoil. The 'Inner Line Policy' was a success in checking land alienation but often proved ineffective in checking physical movement of inmigrants.[10]

The British experiment has proved to be a mixed bag. If anything, the migration policy hardly helped in reducing the pressure of population in the sending areas. This in any case was not the intention underlying the policy. Most of the consequences, some intended and others unintended, have also adversely impacted on the region particularly its social fabric. It seems that the British and since the Independence, the Indian ruling classes have been motivated more by considerations of administration than by genuine concern for the people in the formulation of explicit development policies. Such policies influenced population compositions in some crucial areas such as the northeast. Migrations into the region contributed to ethnic diversities, and conflicts between group identities. Such situations are helpful for the ruling classes and force them to concentrate largely on problems of administration of maintining law and order. Fundamental issues of development slide to a position of low priority.

V Intrastate Migrations : Recent Trends and Policy Issues :

Having considered the broad trends in interstate migrations and the questions which emerge therefrom let us also look into th migration scence within Indian states. Confining ourselves to some of the larger states we find that the pecentage of migrants as one component inthe urban population increase was significantly higher inthese states than the national average[11]. We may also consider some important socio-economic indicators for these states to infer the positive/ negative impact of migration on the percentage of population living in slums, percentage of population below the poverty line, population having access to water and sanitation[12]. Migration streams do not seem to be consistently impacting positvely/negatively on the urban scene (Mathur, 1992). Besides migration, many other factors are also contributing to the deteriorating quality of life in urban India. These trends, among others, do call for policies which should slow down migration from the rural areas, both within and across states. As observed earlier migration itself whether it originates in rural or urban areas does not seem to be a solution to the problem of population pressure. Policies focusing on social and economic development of rural areas can be instrumental in checking the flight from villages. Ironically, the thrust of our development policies has remained weak in so far as the rural areas and populations living there are concerned. Simulatenously, loud but well placed concerns have been expressed about crowding of urban centres, their explosive gtrowth and many attendant problems. Migration policies need to take care of both ends of migration streams.

Considering the composition of migrants flowing into urban areas would be crucial for designing appropriate strategies for correcting the emerging distortions. The 1991 census data on migration for Punjab reveal a preponderance of the illiterates and the unskilled followed by those with low levels of education and skills; the overwhelming numbers and proportions of the young i.e. prime working age-group of 20-34 years; the enhanced mobility among females; and employment reported as one of the most dominating reasons for migration[13]. Explicit development policies which implicitly regulate migration and mould the directions and composition of migrants have to take cognizance of these trends which are ubiquitious spatially and temporally although latest census data permit some generalizations for Punjab only.

A frontal attack on illiteracy in rural areas and improving the quality of general and technical education would be crucial but equally, if not more, important is creating job opportunities within the rural areas and in the small and medium urban centres themselves in order to hold the people back from moving out. Migration policies will have to set the goals clearly for which matching strategies can be worked out. Since the early 1990s when the process of 'economic reforms and adjustments' was accelerated it was hoped that market forces would bring about changes in the spatial distribution of population as also in the migratory flows. However, recent data on foreign direct investments (FDI) seem to belie those hopes[14]. Larger share of FDI is going

to the developed states and within those states to the industrially developed and urban nodes. The existing disparities in levels of development are getting further consolidated.

Migration in the developing countries is no unmixed blessing. Spatial dislocation of people in arge numbers may not be necessarily an index of a dynamic economy benefitting all regions and all people. Rational migration policies for future, therefore, need to be based on the experiences of the past and the prevailing economic and social realities.

Notes :

1. Census data from 1881 onwards till the partition of the country indicate that migration streams were following three main directions : towards the northeastern region, the western region and the region around Delhi and neighbouring parts of the then Punjab including present Haryana. Besides, influx of people into towns and cities (especially the largest one in each region: Calcutta in the east, Bombay in the west, Delhi in the northwest and to some extent Madras in the southeast (which otherwise witnessed considerable outmigration) continued throughout this period.

2. During 1951-61 the major flows were again found to be focussed on : West Bengal, (net gain by about 0.99 million); Assam (0.19 million); Maharashtra (0.84 million); Delhi (0.54 million). Major losses through net outmigration were witnessed by Uttar Pradesh (1.01 million); Bihar (0.72 million); Tamil Nadu). 0.36 million); and Punjab (0.35 million). By 1971, interstate migration flows became larger in volume (partly because of taking up life-time migration as against decadal migration). But in so far as major directions were concerned the patterns which emerged in 1971 were largely similar to those obtained in he earlier decade. Net loss through outmigration amounted to 2.1 million for Uttar Pradesh; 1.5 million for Bihar, 0.67 million for Rajasthan; and 0.65 million for Kerala. Punjab, Andhra Pradesh and Gujarat also experienced net loss through migration. During 1971-81 decade also no major disruptions in the established pattern of migration flows were noted. The destination-states were much familiar : West Bengal (5.58 million); Maharashtra (4.67 million); Madhya Pradesh (2.36 million); Delhi (2.82 million), among some others. In the whole of the northeastern region as also in Maharashtra the proportion of in-migrants among gross migrants was more than 75 per cent. By comparison Kerala, Uttar Pradesh, Bihar, Andhra Pradesh, Himachal Pradesh, Tamil Nadu and Rajasthan emerged as states with net loss with outmigrants far outnumbering inmigrants (Mehta, 1990).

3. The general urbanwards flows have not only continued through the decades, their direction-bias in favour of big cities with population exceeding 1 million each has been further sharpened. Migration flows, expectedly have been following urban-industrial nodes/zones, as also towards areas with multipurpose development projects.

4. In a study focusing on trends, patterns and implications of rural-urban migration in India (Pathak and Mehta, 1995) it has been observed that in terms of streams and volume of internal inmigration, Punjab during 1981-91 presents largely a continuation of the past trend one obtained in the previous decades.

5. Conflicts between explicit and implicit population distribution policies have been subjected to a rigorous theoretical-empirical analysis for Taiwan and Thailand (Fuchs, 1981). The study suggests that quantitative measurement of the effects of implicit policies (comparison in terms of money values) though ideal, would be a difficult task.

6. Fuchs lists some thirteen areas of government policies and how these may

have impact on population redistribution: foreign exchange (existing industrial and commercial areas vis-a-vis rural and peripheral regions); trade and tariff (accentuation of concentration of population and economic activities in a few locations planting the seeds for further cumulative imbalances); sectoral public investment priorities (favouring selected areas); industrial and agricultural incentives (the structure of specific programmes would stimulate/stifle growth of rural and peripheral regions or may tend to further strengthen the primate and other large cities); interest rates (high rates may dampen investments in rural, backward regions and low rates may be conducive in certain areas); tax policies; agricultural price supports and ceilings, wage regulations; transport tariffs and policies; pricing of energy and public utilities; accessibility to social welfare programmes; the degree of spatial concentration of fiscal resources and government decision making; and miscellaneous policies relating to landuse, environment, etc. (Fuchs, 1981).

7. Comparative data given in the following table for selected states are revealing :

State:	Index of per capita SDP		Rate of Growth of SDP
	1960-61	1978-80	1960-61 to 1979-80
Orissa	71	76	3.1
Uttar Pradesh	82	72	1.9
Bihar	70	62	2.0
Punjab	120	198	5.5
Maharashtra	134	162	4.0
Gujarat	118	147	4.4
India	100	100	3.4

Source : Sundram, K.V. (1987) : *Growth and Income Distribution in India*, Sage, New Delhi, Appendix 2.3 p. 47.

8. As against the all India averages of 33.4, 20.1, 29.9 per cent for rural, urban and combined population respectively, poverty figures for the states under reference are as under :

State	Population below poverty line (1987-88)		
	Rural	Urban	Combined
Uttar Pradesh	37.2	27.2	35.1
Bihar	42.7	30.0	40.8
Orissa	48.3	24.1	44.7

Source : *Report of the Expert Group on Estimation of Proportion and Number of Poor.* Perspective Planning Division, Planning Commission, Govt. of India, New Delhi, 1993.

9. It may be noted that the plight of the migrants involved in distress-migration does

undergo some improvement from their lot in their native areas. But within the destination areas their relative economic situation may not be any better. In the case of Punjab families of agricultural labourers (with a concentration of migrants from Bihar and eastern parts of Uttar Pradesh) accounted for 59.4 per cent of the total classified as 'below povertyline' as per an official survey conducted in 1992.

10. Students in Nagaland detected hundreds of people on a single day who had violated the 'Innerline' in Kohima, the capital city. How effective has been the policy in the interior and remoter parts of some northeastern states is anybody's guess (Singh, 1987).

11. The national average in 1971-81 was 40.15 per cent while it was 54.81 for Karnataka, 50.67 for Andhra Pradesh; 49.27 for Maharasthtra; 45.10 for Delhi; 44.93 for Orissa; and 43.42 for Gujarat (Source : Table 4, Mathur, 1992).

12. Percentage of population in slums was : 30.47 for Andhra Pradesh; 32.62 for Maharashtra; 14.43 for Karnatka; 18.84 for Gujarat as against a national average of 23.00. (Source : Table 5, Mathur, 1992).

13. Although preparations for the 2001 census are on, migration data for 1991 census are still not availabel for all the states. These have become available for Punjab and we can use these to illustrate the migration trends during 1981-91. A comparison of 1981 and 1991 migration data for Punjab (for migrants with duration of residence below 5 years) helps in identifying elements of continuity and change in volume of internal migration as also in the characteristics of migrants.

Table A

Stream	1981 (per cent)	1991 (per cent)	Change per cent points
Rural-rural	50.48	52.26	+ 1.78
Rural-urban	19.36	20.28	+ 0.92
Urban-urban	21.34	19.25	- 1.09
Urban-rural	8.82	8.21	- 0.61

Table B

Punjab : Sex composition of internal migrants

Year	Females	Males	Total
1981	59.68	40.32	100
1991	65.55	34.45	100

Table C

Punjab : Migrants in the age-group of 15-34 years reporting employment as the main reason for migration

Stream	1981		1991	
	Female	Male	Female	Male
Rural-urban	56.99	71.93	62.53	65.20
Urban-urban	59.62	64.91	51.18	53.30

Table D

Punjab : Educational level of internal migrants reporting employment as reason for migration by sex 1981 and 1991*

Educational level	Rural-urban		Urban-urban	
Illiterate	Female	Male	Female	Male
Illiterate	56.22 (43.80)	44.06 (33.61)	35.33 (31.70)	28.07 (26.66)
Literate but below matric	18.69 (27.85)	25.98 (25.00)	29.21 (22.35)	23.36 (24.55)
Matric but below graduation	15.16 (17.77)	22.11 (29.75)	20.29 (20.95)	28.02 (27.02)
Technical diploma or certificate not equal to degree	3.07 (1.77)	1.22 (1.48)	4.51 (2.09)	2.38 (2.49)
Graduate and above other than tech. degree	4.14 (6.46)	5.03 (8.48)	11.35 (16.90)	14.25 (15.93)
Tech. degree or diploma equal to degree or post-graduate degree	2.73 (2.15)	1.59 (1.68)	5.46 (6.01)	3.92 (3.35)

* Values in parenthesis are for 1991. All values are in percentage

Source : Census of India, 1981 and 1991, Migration Tables.

14. The statewise distribution of total Foreign Direct Investments from 1991 to 1996 is very revealing. Delhi got the largest share 22.79; the state of Maharshtra received 14.83 per cent of the total followed by West Bengal (5.94), Tamil Nadu (5.20) Gujarat (4.01), Karnataka (3.98). The inflow into the backward states has been very small. With the exception of Orissa which could manage 3.73 per cent, Bihar and Rajasthan received less than 1 per cent each. As against the coastal states the interior states of Punjab and Haryana could attract small amounts. For more detals following table maybe useful :

Statewise Break-up of Foreign Direct Investment Proposals Approved (August 1991 to June 1996)

State	FDI Amount (Rs. billion)	Per cent to All India
Andhra Pradesh	17.41	2.45
Bihar	1.00	0.14
Gujarat	28.51	4.01
Haryana	6.62	0.93
Himachal Pradesh	3.09	0.43

Karnataka	28.29	3.98
Kerala	1.09	0.15
Madhya Pradesh	10.47	1.47
Maharashtra	105.51	14.83
Orissa	26.54	3.73
Punjab	7.79	1.09
Rajasthan	5.08	0.71
Tamil Nadu	37.00	5.20
Uttar Pradesh	16.87	2.37
West Bengal	42.27	5.94
Delhi	162.20	22.79
Others	211.85	30.00
All India	711.61	100.0

Source : Economic and Political Weekly, November 23, 1996.

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SEX PREFERENCE AND FERTILITY IN HARYANA

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Abstract

In developing countries like India, male children have always presumed to have a greater utility over females because of religious, social and economic reasons. This resultantly leads to increased fertility, and ultimately towards higher growth rate of population. This sex preferential phenomenon is very common showing spatial variations from one region to other, and one country to another. A lot of work has been done so far in this direction (Arnold, 1985; and Zhaoxiang 1986 etc). These studies have established the fact that there has been marked prevalence of sex preference and further there is a marked relationship between son preference and family size. In Indian context Das (1972), Pathak (1974, 1977), and Krishnamoorthy (1974) and Mukherji (1977), analyzed the relationship between male child preference and family size.

The present paper is an attempt to analyze the variation of sex preference in the State of Haryana among various age groups and further its impact on fertility behaviour. The data have been collected from National Family Health Survey report, 1993. The intensity of sex preference, impact of sex preference on fertility have been computed on the basis of contraception methods, their uses or to say on the basis of family planning acceptors group. Further, more detailed analysis has been carried out on the basis of desired additional children and their sex ratio. The study further extends to examine whether in the Indian system the family planning measures, sex ratio of desired additional children may be taken as a basis for the measurement of overall effect of sex preference on fertility.

Introduction :

The State of Haryana is basically an Agrarian society. Like other agrarian states, it has very rigid social and cultural texture. As in other States, son craze is a very common phenomenon here, too. Male children have always presumed to have a greater utility than females. Further, the State is dotted with high fertility rate, lower age at marriage, big family size, less importance and knowledge of family planning measures, high infant mortality rate etc.

The rapid population growth has posed a serious hindrance for the overall socio-economic development in the state. It is, therefore, necessary to restrict the pace of population growth. One of the major reasons for high fertility and low acceptance of small family size norms in Haryana, as in other parts of the country, is the prevalence of son-preference among couples. This is believed to have a powerful impact on the numbr of additional children desired by the parents, which in turn influence their family size. So the desired sex preference of the siblings becomes an

increasingly important factor in population growth.

In past, a few studies have been conducted on the theme of son preference. Arnold (1985), and Arnold & Zhaoxiang (1986) have found prevalence of son preference in many parts of the world. Repetto (1972), Das (1972 & 1984), Pathak (1974), Krishnamoorthy (1974), and Mukherji (1977),. have analyzed and found a marked preference for son in developing countries. Das (1972), Pathak (1974), Krishnamoorthy (1974), Mukherji (1977) and Das (1984) have found relationship between son preference and family size. Mukherji (1977) has found a week relationship between sex preference and fertility through empirical evidences. Although Das (1984) found that the desire for additional child is strongly related to sex ratio of living children. It is therefore interesting to see the relationship between desire for additional child and son preference. Haryana has been selected for the analysis due to its high fertility and comparatively high level of son preference.

Objectives :

The main objective of the study is to find out the nature and extent of son preference prevailing in Haryana at present. To be specific, the objectives of the study are as follows :

1. To examine the variation in son preference among contraception users in Haryana.
2. To assess the applicability of contraception use as the indicator for measuring the overall impact of son preference on fertility in the context of Haryana.
3. To analyze the extent of desire of additional children by number of living children; current age of women; place of residence; education; and religion.
4. To examine the son preference by number of living children; their sex composition and some of the background characteristics.

Sources of Data and Methodology :

The study is based on data from the National Family Health Survey Report (NFHS, 1992-93) for Haryana.

The variation in sex preference among couples in Haryana has been computed to analyze the extent of contraceptive use by each parity and sex composition. It has been done with the view that the couples who use more contraception are more satisfied with the sex composition of their siblings. The intensity of son preference has been computed by ideal family size approach (Lahiri, 1974), while the impact of son preference has been based on Parity specific contraceptive use approach (Arnold, 1985). The methodology for intensity of son preference and for the impact of son preference are as follows.

(1) Ideal family size approach (Lahiri, 1974) for intensity

$$\text{Intensity of son preference} = \frac{\text{number of sons desired by the respondent over the number of daughters}}{\text{no. of children desired by the respondents}}$$

or $I = (E/C) * 100$

Where I = intensity of son preference

E = excess of number of sons desired by the respondent over the number of daughters

C = the number of children desired by the respondent

(2) Impact of sex preference

Parity specific contraceptive use approach (Arnold, 1985)

$(Ci * Pi) / Pi$

where Ci * = The maximum contraceptive use rate at each parity i, and

Pi = The number of women at each parity i

This measure answers the question "What would happen to fertility if all son preferences are to disappear suddenly?". The measure assumes that all couples at each parity will act in the same manner as these couples at the same parity who are currently most satisified with sex composition, since sex of chldren would no longer be important.

Now,

Extent of son preference = [Contraceptive use in the absence of sex preference (%) - contraceptive use (%) Actual contraceptive use (%)]

= Value of the above defined measure (%) - Actul contraceptive use %

Most of the studies including present one of son preference are based on family planning information. Sex composition of children

belonging to Family Planning acceptors is used to study the son preference of the couple. The study of son preference will be confined only to Family Planning acceptors. The indices of son preference based on family planning acceptors in a society where family planning acceptance is quite low are not advisable as a majority of currently married women are not eligible for analysis.

On the other hand, some studies included ideal sex composition of children and parity specific contraceptive use approach to measure the intensity and impact of sex preference. It is very likely that in case of information related to ideal sex composition people generally rationalise the actual sex composition of their children as also ideal sex composition prevailing in the society.

In view of these facts the present study further has taken into consideration the sex of the wanted additional child. Sex of the wanted additional child reflects the current status of mind of the women with reference to sex preference. Using information on the sex of the desired additional child given by the currently married women, desired sex ratio can be calculated by the following formula

$$\text{DSRAD} = \frac{\text{No. of desired additional female children}}{\text{No. of desired additional children}}$$

where DSRAD denotes desired sex ratio for additional children.

Hence, the desired sex ratio reflect the number of desired additional female children per 1000 desired additional children. It deserves pointing out that lower the value of desired sex ratio, higher the prevalence for son preference.

Findings :

The total fertility rate as per survey conducted by NFHS in 1993 has been 3.98, which has gone down by 0.2 over a period of three years (TFR = 4.0, 1990). The TFR of 4.3 is substantially higher in rural Haryana than urban which is 3.1.

Substantial differences have been noted in the fertility levels with respect to educational attainments of women. The current fertility level of illiterate women is 4.7 children per woman compared with 2.8 children per woman for women with atleast a high school education. Religion based, caste based and economic level based variations in fertility are also signifi ant.

The computed values of son prefer ntial fertility through ideal family size inde: are depicted in Table 1. It gives a view o the prevalence of contraceptive use at each pari y by sex composition of children. This clearly ind cates the importance of having atleast one son to vards the use of contraception. At each parity, c uples who have only daughters are less likely to use contraception than those who have atleast one son. As far as the use for any contraception method is concerned for parity 1, it is 19.8% any method (12.5% any modern method, 7.3% any traditional method), which is very low. Further at this parity, the use of contraception with atleast one son is consistently higher than those who have no sons. The prevalence and use of contraception (no matter, what method) increases as the parity of children and number of sons goes higher.

A significant change in use of contraception has been observed at parity level 3. There is a steep fall in use of contraception if there is no son at this level. This clearly indicates the son preference almost upto the highest limit of bias towards female children. In the analysis on the other hand, use of contraception is highest at parity level 3. So if we consider the above pattern as the use of contraception after achieving a particular parity with having one son as the indicator of son preference, the intensity of son preference is more visible at higher parities. Very interestingly at parity level 3 the intensity index is highest (25.0), which strongly indicates the sex preference. It is lower than the zero parity by 1.3, and obvious.

In Table-2, the impact of son preference on contraceptive use has been analysed to verify and support the intensity index. The analysis through this method has again strengthened the concept that the sex preference is a determinant of fertility. The Impact of sex preference has been found highest (11.2) in case of the use of any modern method of contraception. A few couples use traditional methods, too. The parity 3 has more impact as compared to other parities. This confirms the sex preference at higher parity. This gives boost to high fertility by means of desire to have more children in the absence of sons.

Again it is very interesting to observe that the couples who do not have any living children also went for the use of contraception, though very low in percentage. The possible reasons may be; (a) they might have lost their children and are at zero parity at the time of survey; (b) poor health conditions may be another possible reason; (c) postponement of birth due to any possible reason etc.

It is clear from both intensity impact index analysis that couples with less than two children use spacing method. Now we can say that the intensity of son preference so found is very high in Haryana.

Once again the intensity of sex preference by ideal family size approach, specially, developed to measure the intensity of sex preference, it has been observed that the son prference is very high again in the state. It is now confirmed that the woman's perception of having the number of children she would like to have had if she could start over again.

Till this stage of analysis the effects of sex preference on fertility have been kept aside. Now in order to get the overall impact of sex preference on fertility, the parity specific contrceptive use approach has been implied. As in Table-2, the impact of sex preference on contraceptive use is found very strong and high. Though with some contrary results, it is interesting to examine the reasons for the contradictions. The state belongs to high fertility group (TFR - 3.98). It is having different effects of sex preference on contraceptive use. The impact is quite high. However, this explanation does not hold good. It may be because Haryana has crossed a certain threshold level of the use of contraception and that is why the impact of sex preference measured is significant. A few basic questions strike the mind. How far this method is significant to analyse the impact of sex preference on fertility?, and how far the use of contraception can be taken as base for such types of studies where the prevalence of contraception is very low ?

To overcome this problem DSRAD approach has been adopted to further analyse the problem. Most of the previous studies are based on family planning information; sex composition of children belonging to family planning acceptors is used to study the sex preference of the couple. The sex composition of the children at the time of acceptance of family planning may or may not be the same as wanted by the acceptors. The study of sex preference will also be confined only to family planning acceptors. The indices of sex preference based on family planning acceptors in a society where family planning acceptance is quite low are not advisable as majority of currently married women are not eligible for analysis.

Further, analysis in present study has been made on the basis of the sex of the wanted additional child. Sex of the wanted additional child reflects the current state of mind of the women in regard to her sex preference.Using information on the sex of the additional child given by the currently married women, desired sex ratio has been computed.

The view of desire for additional child with number of living children has been given in Table-3. It is clear from the analysis (Table-3 & 4) that the desire for additional child reduces with the increasing number of living children. In case of Haryana also the same pattern has been observed though it is slightly higher in case of rural Haryana. Further the sex preference again is dominant at least upto parity level 2. In case of state as a whole 32.66 percent women desired for another child, whereas it varies from 27.39% in urban areas to 34.55 percent in rural areas. At parity 1, the desire is as high as 91.94%. The desire for additional children is more significant in rural Haryana. In addition, the sex preference (having son as an additional child) has also followed the same pattern as simple desire of additional children. At higher parities this desire is significant even at fifth parity. Resultantly, it can easily be said that even at higher parities the desire of additional child is there among women.

The desired sex ratio on higher parities is very high. But at state level it is 104, which is significantly high. The reasons behind this may be that these women might have not attained their desired sex composition of living children even upto fifth parity. This could be one of the probable reasons for desire of increase in the family size.

Further DSRAD approach has been

employed to analyse the desire for additional child with reference to age specific fertility of currently married women. Fertility preference by age, depicted in Table-4, has also given interesting results which again confirm this desire for the additional child even on higher parities. In this analysis most of the women who reported their desire for additional child are below 30 yrs of age. Naturally, the desire to have child among younger ages is more irrespective of rural or urban background. Further the desire for a son as an additional child is more and more in younger women due to social, cultural as well as economic factors. In case of the state of Haryana too, it is true. Taken the state as a whole, the desire for additional child is significantly higher (32.66). Further the desire to have son as additional child again is on higher side 16.48 due to social structure in both rural and urban areas. This can be true if analysed for various characteristics such as literacy, caste base, religion base etc.

Further the study has been extended to analyse the above said factors of desire for additional children, desire for additional son even at high parity and lower age of women. Some precipitation techniques have been used here by analysing parity level, living children vs no desire to have additional children, and current age of women vs no desire for additional children. In Table-5, distribution of currently married women with no desire to have additional child/children on the basis of living children has been analyzed. In this case the desire to have no additional children is more at higher parity level. State as a whole has quite significant percentage of women who do not want to have additional children. Here the urban women have more desire regarding not to have additional children as compared to rural women, which is resultant of social structure irrespective of caste and religion. Education and economic emancipation seem to play major role in it, though in rural urban there is not much of a difference between rural and urban areas in this regard.

Here it can easily be said that higher the number of living children, higher the desire not to have additional children. But interestingly, even in 6th parity neither the state nor rural women have crossed 50% level to not to have additional children.

Further as in DSRAD analysis the distribution of women by their current age has been analysed, the same age aspect has been taken with the women who have shown desire not to have additional child. Once again the results are as in parity case. A very few women (24.9%) have responded in a positive way i.e. not to have additional child. This level has reduced only upto 33.3% in 45-49 age (current age). Only in urban areas after the 30-34 age 50.5% women have responded not to have additional child. Once again in higher age group among urban women this has gone down. This may be due to the fact that they might not have given births to male children by that age. Hence they desire to have more children.

Conclusions :

On the basis of the above analysis it is clear that there is strong son preference in Haryana. All the approaches used here are indirect measures of sex preference. Although ideal family size approach is more indicative to the situation. DSRAD approach has indicated that the sex preference is pronounced among women aged 20-29 yrs in rural areas and 30-39 years in urban areas. By and large women have been found to be most satisfied with the combination of atleast two sons and one daughter.

Rural women are more willing to enlarge their family size in comparison to urban women, though there is a narrow gap only in this connection. This seems to be because of typical Haryanvi social structure. Further the desired sex ratio is highly favourable towards male children. No systematic relationship has been found between son preference and number of living children, and also between son preference and age of currently married women. High desire for sons at Zero parity reveals the deep rooted son preference in the state. But the desire for the daughters increases when the number of living children and the number of living sons are equal.

At high parity the desire for no more children is high.It may be due to the fact that they are trying to compromise with the prevailing sex composition or they might have obtained their desired sex composition by chance. Therefore one cannot say with confidence that the desire for son increases in the parity.

Limitations of approaches & analysis

All the approaches employed have some limitations because these are indirect approaches to compute fertility with reference to sex preference. For instance ideal family size approach gives socially desirable responses rather than their true preference. There may be inconsistency in responses simply because, respondents have not thought about the topic or who do not take the task seriously and respond almost randomly. "The parity specific contraception use approach" does not give a very clear picture of overall effect of sex preference and fertility for which it is developed. Its applicability in Indian set up is questionable because this method is conditional on contraceptive use. Hence there is a need to evolve a new methodology to study the effect of such strong sex preference on fertility in India at aggregate level in which the "parity specific contraceptive use approach" may be just a component of the technique. A more comprehensive methodology would be if it incorporates the varying socio-economic and behavioural factors in different states of the country.

Further DSRAD technique is a bit refined and more appropriate tool. It has also limitations at both parity approach and current age approach. It significantly indicates the sex preferences at parity and current age levels.

Table 1

Current use of Contraception by currently married women

Number & Sex of living children	Percentage distribution of currently married women using contraception			Not using contra-ception	Total number of women*	Number of surviving children and sex preference Ideal family size approach Index (I)
	AM[1]	AMM[2]	ATM[3]			
1	2	3	4	5	6	7
No Children	3.4	1.7	1.7	96.6	313	26.3
One Child	19.8	12.5	7.3	80.2	411	22.2
One Son	20.6	14.2	6.4	79.4	219	
No Son	18.8	10.6	8.2	81.2	192	
Two Children	48.1	42.6	5.4	51.9	559	20.0
Two Sons	65.3	58.4	6.9	34.7	196	
One Son	42.6	39.0	3.6	57.4	279	
No Sons	26.0	17.9	8.1	74.0	84	
Three Children	70.6	64.8	5.9	29.4	622	25.0
Three Sons	84.9	79.6	5.3	15.1	78	
Two Sons	81.9	78.4	3.5	18.1	344	
One Son	51.3	40.3	11.0	48.7	171	
No Sons**	(12.8)	(7.7)	(5.1)	(87.2)	29	
Four Children	67.1	61.9	5.2	32.9	838	21.4
Two Sons	71.0	66.8	4.2	29.0	666	
One Son	55.8	46.5	9.3	44.2	155	
Total	**49.7**	**44.3**	**5.3**	**50.3**	**2743**	**21.7**

1.A.M. = Any Method 2. A M M = Any Modern Method 3. A T M = Any Traditional Method

Source : *National Family Health Survey, Haryana 1993.*

Note * Total include 10 women belonging to other religions and 17 women having 4 + children.
** (-) Based on 25-49 unweighed cases.

Table 2

Impact of sex preference on contraception use

Number & sex of living children	Percentage using contraception currently			Percentage using contraception absence of son preference			Total number of women* TFR = 3.98
	AM1	AMM2	ATM3	AM1	AMM2	ATM3	
1	2	3	4	5	6	7	8
No Children	3.4	1.7	1.7	3.4	1.7	1.7	313
One Child	19.8	12.5	7.3				411
One Son	20.6	14.2	6.4	20.6	12.5	6.4	219
No Son	18.8	10.6	8.2	20.6	14.2	6.4	192
Two Children	48.1	42.6	5.4				559
Two Sons	65.3	58.4	6.9	65.3	58.4	6.9	196
One Son	42.6	39.0	3.6	65.3	58.4	6.9	279
No Sons	26.0	17.9	8.1	65.3	58.4	6.9	84
Three Children	70.6	64.8	5.9				622
Three Sons	84.9	79.6	5.3	84.9	79.6	5.3	78
Two Sons	81.9	78.4	3.5	84.9	79.6	5.3	344
One Son	51.3	40.3	11.0	84.9	79.6	5.3	171
No Sons**	(12.8)	(7.7)	(5.1)	(84.9)	(79.6)	(5.3)	29
Four Children	67.1	61.9	5.2				833
Two Sons	71.0	66.8	4.2	71.0	66.8	4.2	666
One Son	55.8	46.5	9.3	71.0	66.8	4.2	155
Total	**49.7**	**44.3**	**5.3**	**57.7**	**55.5**	**2.2**	**2743**

Ipct. = 8.0 Ipct. = 11.2 Ipct. = 3.2

1. A M = Any Method 2. A M M = Any Modern Method 3. A T M = Any Traditional Method

Source : *National Family Health Survey, Haryana 1993.*

Note : * Total include 10 women belonging to other religions and 17 women having 4 + children.

** (-) Base on 25-49 unweighed cases.

Ipct. = Impact

Table 3

Fertility Preference by living Children (DSRAD Approach)

No. of living Children	Per cent women who want another Child			Per cent women who want son as another Child			Desired Sex ratio for additional child by no. of living children		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	94.32	94.55	94.25	30.13	20.00	33.33	201	65	20
1	91.94	85.24	93.77	37.44	27.45	40.30	169	270	148
2	31.77	19.90	37.50	23.78	13.61	28.91	116	172	103
3	10.00	7.47	10.95	8.46	4.02	11.58	48	NC	NC
4	6.14	3.97	7.01	5.23	NC	7.32	488	NC	NC
5	5.10	4.65	5.20	NC	NC	NC	NC	NC	NC
6+	2.86	3.23	3.25	NC	NC	NC	NC	NC	NC
Total	**32.66**	**27.39**	**34.55**	**16.48**	**10.37**	**18.66**	**104**	**186**	**87.52**

Source : *National Family Health Survey, Haryana 1993.*

Table 4

Fertility Preference by age of Currently married women (DSRAD Approach)

Current age of women	Per cent women who want another Child			Per cent women who want son as another Child			Desired Sex ratio for additional child by no. of living children		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15-19	88.75	85.42	89.34	37.50	27.08	39.71	87	295	63
20-24	64.29	60.87	65.30	33.55	23.19	36.64	134	139	134
25-29	24.49	25.16	24.21	14.02	12.90	14.79	70	154	41
30-34	12.88	14.01	12.35	7.85	6.37	9.71	85	233	38
35-39	6.41	8.77	5.71	4.46	NC	NC	90	NC	NC
40-44	1.06	1.52	1.09	NC	NC	NC	NC	NC	NC
45-49	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total	**32.66**	**27.39**	**34.55**	**16.48**	**10.37**	**18.66**	**104**	**186**	**87.52**

Source : *National Family Health Survey, Haryana 1993.*

Table 5

Desire to have no more children by number of living children

Number of living children	Per cent Distribution of currently married women who do not want more children		
	Total	Urban	Rural
0	0.5	-	0.7
1	4.7	9.6	3.2
2	39.8	60.9	29.3
3	33.9	44.2	30.1
4	34.3	43.8	30.4
5	36.2	46.6	33.6
6+	49.2	64.3	46.5
Total	**29.3**	**41.3**	**24.9**

Source : *National Family Health Survey, Haryana, 1993.*

Note : Pregnant women are excluded.

Table 6

Desire to have no more children by Current age of currently married women

Number of living children	Per cent Distribution of currently married women who do not want more children		
	Total	Urban	Rural
15-19	6.6	10.9	5.9
20-24	21.8	27.7	20.1
25-29	36.7	46.6	32.6
30-34	34.7	50.5	27.4
35-39	35.3	45.1	30.7
40-44	33.4	38.6	31.5
45-49	39.9	59.0	33.3
Total	**29.3**	**41.3**	**24.9**

Source : *National Family Health Survey, Haryana, 1993.*

Note : Pregnant women are excluded.

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A DEMOGRAPHIC PROFILE OF THE MARATHWADA EARTHQUAKE VICTIMS

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Abstract

Marathwada earthquake, one of the worst natural calamities in India so far, happened to be a factor in the loss of thousands of human and animal lives and the destruction of a vast stretch of natural environment. In this study an attempt has been made to enlist the quake affected victims and to analyse their demographic characteristics in terms of their distribution at district level. The paper is divided into three sections as to place the magnitude of the affected households and their socio-economic structure in the beginning, the demographic characteristics of deads in the middle and the distribution of the injureds as well as the secondary victims like widows, widowers and the orphans at the end. The findings show that because of the various factors including the local materials used in the construction of houses the higher number of deaths found to be concentrated in 9 out of 38 clustered villages of Latur and 15 out of total 31 clustered villages of Osmanabad, covering about 88 and about 94 per cent of total deaths. Following the sudden loss of 7797 human lives, both males and females of various ages, the demographic equilibrium in the region stands disturbed.

Introduction :

Earthquake - a natural disaster - brings out the havocs for the human survival, environmental and ecological set up, social and economic sustenance and sometimes to the political stability with which the government or community concerned find it difficult to fully cope alone. So the simultaneous efforts from government agencies as well as non-governmental organisations are expected for immediate relief to the victims.

Marathwada Earthquake, which occurred in the night of 30th September, 1993 , at the magnitude of 6.4 degrees on Richter Scale, shook up the Southern Marathwada and a part of Northern Karnataka Plateau. However, its devastating impact was observed in and around 80 villages with a population of about 1.5 lakh in Latur and Osmanabad districts of South Maharasthra. Tata Institute of Social Sciences (TISS) alongwith other colleges of Social Work and government as well as non-governmental organisations volunteered to take the task of the collection and compilation of detailed data on different aspects of impact of earthquake on man, animal and environment.

The paper is structured into three sections. The section first introduces this paper i.e. its objective and methodology and the socio-economic characteristics of affected households.

The second section deals with the demographic characteristic of those who perished while the discussion about other victims is placed in the last section.

Objective and Methodology

The objective of this paper is to analyse the nature and magnitude of loss of human lives, physical disability of the injured persons and the suffering of the surviving family members among the affected households.

Three types of victims of Marathwada earthquake were identified during the survey of 34258 households of 69 quake affected villages of Latur and Osmanabad. They were the dead, injured people and the survivors at family level i.e. widows, widowers and the orphans. Out of these victims the detailed analysis is made only in the case of the dead regarding their demographic characteristics. Originally, the data were collected and compiled at household and village level. However, for this paper the same data were recompiled at district level in order to have their comparative analysis. Attempts were made to rearrange the entire data by categorising them into several standard classifications. Wherever required, the statistical results are supplemented with field observations.

Socio Economic Structure of Affected Households

The entire affected villages are Maratha dominated population (as the region Marathwada denotes) followed by scheduled population i.e. scheduled caste (SC), nomadic tribe (NT), denotified tribe (DNT) and scheduled tribe (ST). This is clear from the Table 1 that in each of the two districts more than one-third of the total affected households are Maratha. The dalit and tribal households together share about 32 per cent. Upper Caste Hindus also are in large number and along with Maratha they dominate the social as well as economic scenario in the region.

So far as the economic status of the affected households is concerned the higher caste households own the maximum of the economic assets including land. Although the landlessness as well as the poverty are the general phenomena

Table 1

Social Background of Affected Households

Sl. No.	Caste	Percentage of Affected Households		Percentage of House-holds with Deaths	
		Latur	Osmanabad	Latur	Osmanabad
1.	Maratha	33.86	33.80	41.54	37.23
2.	Scheduled Caste	21.50	18.80	15.18	17.23
3.	Upper Caste	13.11	16.80	16.78	16.75
4.	Muslim	10.22	8.50	11.51	11.41
5.	Nomadic Tribe	5.33	7.30	3.92	6.70
6.	Other Backward Caste	7.10	6.40	6.37	6.18
7.	Denotified Tribe	2.90	1.70	0.64	0.42
8.	Scheduled Tribe	1.80	3.00	1.03	2.04
9.	Others	4.15	3.70	3.02	2.25
	Total	**100.00**	**100.00**	**100.00**	**100.00**
		(16884)	**(17562)**	**(1555)**	**(1910)**

Figures in parentheses are total number of affected households.

Source : Household survey, TISS, Bombay, 1993

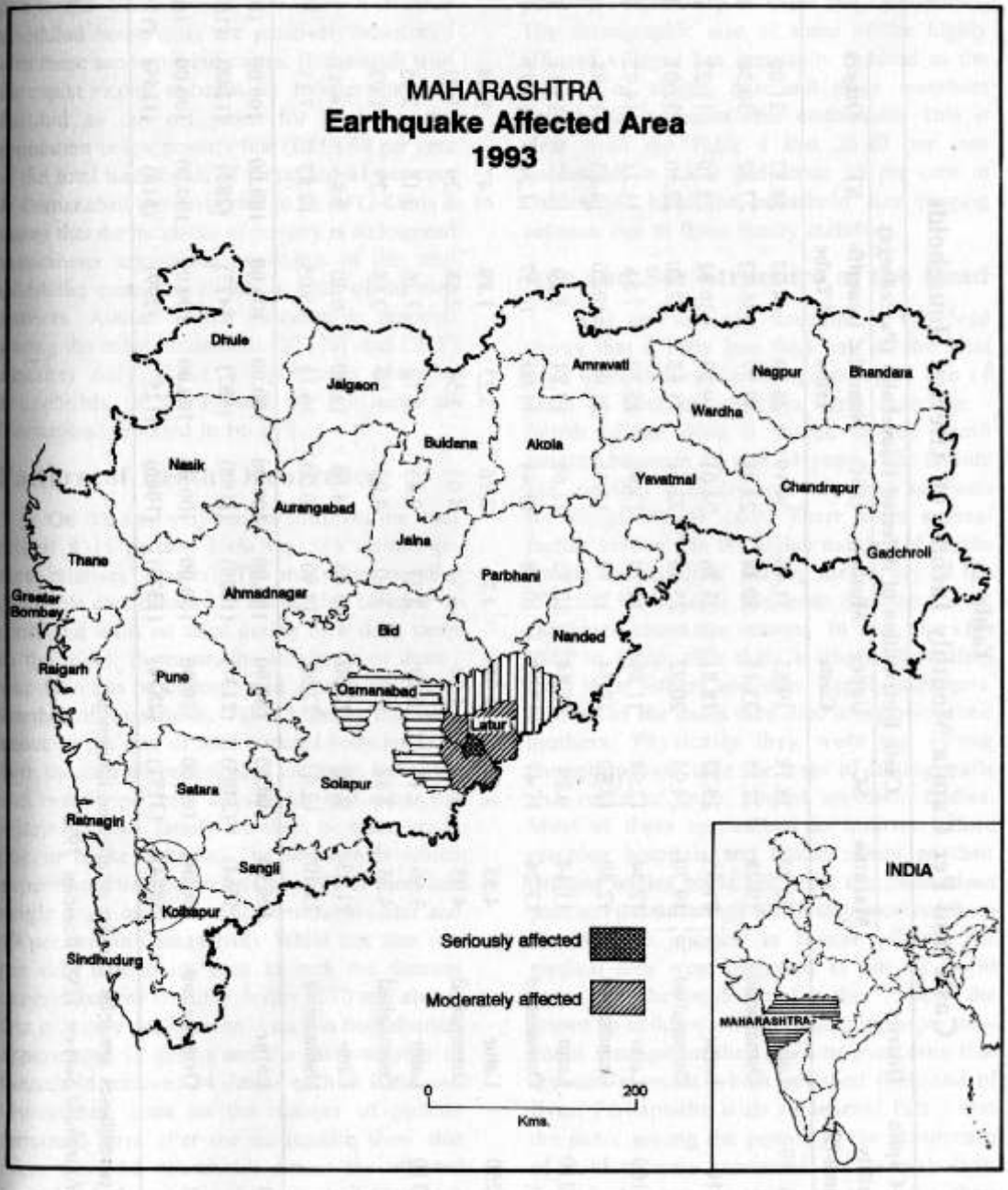
MAHARASHTRA
Earthquake Affected Area
1993
Dhule
Jalgaon
Amravati
Nagpur
Bhandara
Wardha
Buldana
Akola
Nasik
Yavatmal
Chandrapur
Aurangabad
Jalna
Gadchroli
Thane
Parbhani
Greater Bombay
Ahmadnagar
Bid
Nanded
Raigarh
Pune
Osmanabad
Latur
Satara
Solapur
Ratnagiri
Sangli
Kolhapur
Sindhudurg
Seriously affected
Moderately affected
0
200
Kms.
INDIA
MAHARASHTRA

Table 2
Caste and Per Capita Monthly Income of Affected Households

Sl. No.	Per Capita Monthly Income (Rs.)	District	Caste Distribution of Affected Households (Percentage)									Total
			Maratha	SC	Upper Caste	Muslim	OBC	Nomadic Tribe	Denotifi-ed Tribe	ST	Others	
1.	< Rs. 60	Latur	25.23	38.18	19.65	31.40	29.19	26.30	44.03	38.87	31.00	29.31
		Osmanabad	19.78	32.15	23.15	30.34	23.26	33.57	36.12	27.32	30.36	25.97
2.	60-110	Latur	21.35	25.22	18.81	21.76	24.01	19.39	30.82	22.70	17.22	21.93
		Osmanabad	19.70	24.95	20.92	25.40	22.61	21.88	22.40	22.10	33.01	22.88
3.	111-160	Latur	12.54	12.94	11.89	14.24	13.90	15.20	7.55	11.31	14.72	12.94
		Osmanabad	12.80	12.60	12.74	12.19	13.41	11.00	10.70	14.53	13.98	12.74
4.	161-210	Latur	11.14	9.24	11.84	10.73	12.60	12.24	8.20	12.72	13.33	11.06
		Osmanabad	13.24	11.47	12.35	10.18	11.44	11.00	10.37	11.24	12.77	12.20
5.	211-260	Latur	4.55	3.21	4.91	4.73	2.76	5.22	1.89	2.47	8.84	4.09
		Osmanabad	4.95	3.32	4.20	3.50	4.03	3.50	2.68	3.29	1.03	3.75
6.	261-310	Latur	3.56	2.15	5.29	3.27	2.85	4.76	1.26	3.18	3.45	3.40
		Osmanabad	4.23	2.88	4.20	3.50	4.03	3.50	2.68	3.29	1.03	3.75
7.	311+	Latur	21.63	9.10	27.60	13.88	14.68	16.90	6.30	8.83	16.43	17.28
		Osmanabad	25.40	12.63	22.60	14.90	20.00	16.15	15.05	17.83	7.15	18.86
	Total	**Latur**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
			(5564)	**(3485)**	**(2137)**	**(1650)**	**(1158)**	**(882)**	**(477)**	**(283)**	**(1248)**	**(16884)**
		Osmanabad	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
			(5884)	**(3191)**	**(2834)**	**(1370)**	**(1066)**	**(1257)**	**(299)**	**(516)**	**(1145)**	**(17562)**

Figures in parentheses are total number of affected households.

Source : *Household Survey, TISS, Bombay, 1993.*

across the caste groups, the dalit and other scheduled households are positively associated with these economic indicators. Households with per capita income of below Rs. 160 per month, if decided as cut off point for deciding the population below poverty line (BPL) 64 per cent of the total households of Latur and 61 per cent of Osmanabad were reported to be BPL. Table 2 shows that the incidence of poverty is widespread phenomena among the two-thirds of the total scheduled caste households in each of the two districts. Almost similar situation is reported among the tribal households (ST, NT and DNT) whereas only about 59 per cent Maratha households of Latur and 52 per cent of Osmanabad reported to be BPL.

Pattern of Death Occurrence

On the spot verification confirms the total toll of 8311 persons including 514 visitors (at their relatives' houses). The maximum number of people died because of the sudden collapse of roofs and walls on them during their deep sleep in the night. However, the incidence of deaths was found to be concentrated among the lesser number of households. Table 3 shows that only about 10 per cent of total affected households of both the districts experienced the death incidence and rest 90 per cent households had either the injuries to their family members or other losses due to house collapse. The households which experienced the human loss majority of them had single death incidence (42 per cent in Latur and 49 per cent in Osmanabad). While less than one per cent households each in both the districts experienced the multiple deaths of 10 and above. Out of it only one household each in both districts experienced 13 deaths and the same number of household received 14 deaths each in Latur and Osmanabad. Data on the number of persons remained alive after the earthquake show that there were 80 households across the affected households (Latur-28 and Osmanabad-52) which got perished completely. In other words not even a single family member was found alive in these households. The households with the single survival were recorded 3.65 per cent and 4.64 per cent respectively in Latur and Osmanabad. The demographic size of some of the highly affected villages has drastically reduced as the number of single, two and three members households increased after earthquake. This is clear from the Table 4 that 26.40 per cent households in Latur and about 30 per cent in Osmanabad have the household size ranging between one to three family members.

Age and Sex Structure of the Dead

The age and sex structure of the dead shows that a little less than half of the total dead were children in the age group of 1 to 14 years in both the districts. Less than one - fourth of the dead is shared by the youth ranging between 15 and 34 years. The middle age together with old age deceased accounts for about 29 per cent. There were several factors involved in the higher number of deaths among the children. During the survey of the affected households the team members were explained about the reasons. In fact, the kids used to sleep with their mothers, separately from their fathers and other family members. In most of the cases they died along with their mothers. Physically they were not strong enough to overcome the traps of falling walls and roofs of their houses on their bodies. Most of them succumbed to injuries before reaching hospitals and rescue camps as their delicate bodies could not resist the tremendous pain and the sufferings which they received from the multiple injuries. In remote villages the medical aids were delivered as late as 24-30 hours after the incidence of quake. Some of the grown up children who were sleeping separately could manage on their own to overcome that dreaded moment which perished thousand of lives. Perhaps the most significant factor was the panic among the people as the occurrence of mild tremors continued for several days. Everybody was worrying more about their own life and less about others. Moreover, the rainy season created problems in tracing and rescuing out the victims. Thus, the children became the victim of these factors together.

Table 3
Death Among Affected Households

Sl. No.	Number of Persons died in each Household		Total number of Households Surveyed		Percentage of Households with Death Incidence	
	Latur	Osmanabad	Latur	Osmanabad	Latur	Osmanabad
1.	Without Death	Without Death	15329	15652	90.790	89.124
2.	1	1	714	863	4.200	4.900
3.	2	2	316	455	1.900	2.600
4.	3	3	212	277	1.300	1.600
5.	4	4	173	153	1.00	0.900
6.	5	5	62	66	0.400	0.400
7.	6	6	30	50	0.200	0.300
8.	7	7	18	18	0.100	0.100
9.	8	8	15	10	0.090	0.060
10.	9	9	5	7	0.030	0.040
11.	10	10	4	4	0.020	0.020
12.	11	11	3	2	0.020	0.010
13.	12	12	1	3	0.006	0.020
14.	13	13	1	1	0.006	0.005
15.	14	14	1	1	0.006	0.005
Total	**3557***	**4240***	**16884**	**17562**	**100.00**	**100.00**

* Excluding Relatives.

Source : *Household Survey, TISS, Bombay, 1993.*

Table 4
Distribution of Households by Number of Persons Found Alive After Earthquake

Sl. No.	Number of Persons died in each Household		Total number of Households Surveyed		Percentage of Households with Death Incidence	
	Latur	Osmanabad	Latur	Osmanabad	Latur	Osmanabad
1.	Non-Alive	Non-Alive	28	52	0.17	0.30
2.	1	1	616	815	3.65	4.64
3.	2	2	1626	1909	9.63	10.87
4.	3	3	2216	2364	13.12	13.46
5.	4	4	2989	3219	17.70	18.33
6.	5	5	3539	3904	20.96	22.23
7.	6	6	2480	2435	14.69	13.87
8.	7	7	1523	1330	9.02	7.57
9.	8	8	795	696	4.71	3.96
10.	9	9	404	232	2.39	1.32
11.	10 & above	10 & above	668	515	3.96	2.93
Total	**83091**	**80067**	**16884**	**17562**	**100.00**	**100.00**

Source : *Household Survey, TISS, Bombay, 1993.*

Data show that the percentage of deceased females was higher in each age group except in children category. However, the deeper analysis of the data reveals different facts. The male-female comparison by re-classifying their age category shows that the percentage of the female deceased is less only in the age group of 1-4 and that too with very nominal difference. In the age group of 5 to 9 and 10-14 the proportion of female deceased is little higher than the male (Table 6). The higher number of female children died only because of the local factors as happened in the case of other children. The adult males who used to sleep in the front part of the houses were rescued easily than the females inside the premises.

Educational Background of the Deceased

Table 7 presents the educational level of the dead. Accordingly, about 25 per cent dead of Latur and about 22 per cent of Osmanabad were literate with the completed year of their education. Among the dead, a little less than one third were the students at different level of their schooling. Thus, the literacy rate among the deceased (A+B) was more than 55 per cent in Latur and about 53 per cent in Osmanabad. Among the illiterates, if the children below schooling age (upto 5 years) are also included, the total figure works out to be about 45 per cent in Latur and 47 per cent in Osmanabad. The higher proportion of female

Table 5
Percentage Distribution of the Dead by their Age and Sex

Sl. No.	Age group (Years)	Percentage Distribution of the Dead					
		Latur			Osmanabad		
		Male	Female	Total	Male	Female	Total
1.	Children (1-14)	55.21	41.19	47.43	55.22	43.72	48.89
2.	Youth (15-34)	18.65	27.96	23.81	19.30	25.29	22.60
3.	Middle Age (35-59)	16.68	19.71	18.36	15.15	20.19	17.92
4.	Old (60+)	9.48	11.14	10.46	10.33	10.80	10.59
	Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
		(1583)	**(1974)**	**(3557)**	**(1907)**	**(2333)**	**(4240)**

Figures in parentheses are total number of the Dead.

***Source** : Household Survey, TISS, Bombay, 1993.*

Table 6
Percentage Distribution of Deceased Children by their Age and Sex

Sl. No.	Age group (Years)	Percentage Distribution of Deceased Children					
		Latur			Osmanabad		
		Male	Female	Total	Male	Female	Total
1.	1-4	30.67	29.03	29.88	30.10	27.75	28.94
2.	5-9	35.81	37.27	36.51	39.32	39.71	39.51
3.	10-14	30.52	33.70	33.61	30.58	32.55	31.55
	Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
		(874)	**(813)**	**(1687)**	**(1053)**	**(1020)**	**(2073)**

Figures in parentheses ae total number of Deceased children

***Source** : Household Survey, TISS, Bombay, 1993.*

illiteracy, which is more than double that of males in both the districts, indicates the general apathy towards female education in the region as also at the national level. However, among the students the proportional gap seems to be declining. The distribution of dead by their completed years of education shows that a majority of them had schooling upto high school. A very few could manage to have higher education, diploma and professional courses. Another observation which needs to be highlighted is the higher representation of females in the primary and middle level schooling in Latur and in the primary level in Osmanabad. Data show that the overall level of education in Latur seems to be improved as compared to Osmanabad.

Occupational Status of the Dead

Table 8 shows that about 29 per cent of the dead in Latur and about 27 per cent in Osmanabad were the workers i.e. the economic earners either for themselves or for their family members. About 71 per cent of the dead in Latur and 73 per cent in Osmanabad were dependent on the working family members. In other words, they were either children, housewives or aged. The male/female comparison shows that the proportion of male working population was higher than female. On the contrary, the percentage of non-working women was more than males in both the districts.

The break-up of the percentage of occupational categories shows that the majority of the dead were engaged in occupations related to agriculture and allied activities. In Latur cultivation was the major occupation of the deceased engaging about one-half of the total working population followed by agricultural workers in which about 30 per cent labour force was engaged. These two occupations together account for about 80 per cent of the total workers. Whereas in Osmanabad cultivation was the

Table 7
Percentage Distribution of the Dead by their Educational Level

Sl. No.	Age group (Years)	Percentage Distribution of the Dead					
		Latur			Osmanabad		
		Male	Female	Total	Male	Female	Total
A.	Literate	27.81	22.75	24.99	25.62	18.36	21.62
1.	Primary	10.10	10.50	10.32	9.13	7.77	8.38
2.	Middle	5.08	7.39	6.36	5.74	6.94	6.40
3.	High School	9.59	4.03	6.50	7.41	3.20	5.10
4.	Intermediate	1.90	0.56	1.16	1.50	0.31	0.85
5.	Graduation	0.44	0.05	0.28	0.86	0.09	0.43
6.	Post Graduation	0.13	-	0.06	0.11	-	0.05
7.	Diploma	0.19	0.05	0.11	0.27	-	0.12
8.	Professional	0.38	0.15	0.20	0.60	0.04	0.29
B.	Student	36.70	25.34	30.40	37.25	26.38	31.27
C.	Illiterate	20.57	42.63	32.81	22.54	44.07	34.39
D.	Children (below school going age)	14.92	9.28	11.80	14.60	11.19	12.73
	Total	**100.00 (1583)**	**100.00 (1974)**	**100.00 (3557)**	**100.00 (1907)**	**100.00 (2333)**	**100.00 (4240)**

Figures in parentheses are total number of the Dead.
***Source** : Household Survey, TISS, Bombay, 1993.*

Table 8
Occupational Status of the Dead

Sl. No.	Occupation	Latur			Osmanabad		
		Male	Female	Total	Male	Female	Total
A.	Worker	34.30	25.38	29.35	34.74	21.23	27.31
1.	Cultivation	17.25	12.61	14.67	16.08	8.03	11.65
2.	Agricultural Labour	7.90	9.17	8.60	10.28	11.00	10.68
3.	Non-agricultural Worker	4.04	2.63	2.26	4.48	1.12	1.74
4.	Factory worker	0.25	1.10	0.17	0.21	0.09	0.14
5.	Transport worker	1.19	0.15	0.62	0.53	0.17	0.33
6.	Trade and Business	2.21	0.25	1.12	2.21	0.31	1.16
7.	Govt. Servant	1.33	0.51	0.15	0.80	0.52	0.64
8.	Professional	0.13	-	0.06	0.16	-	0.07
B.	Non-worker	65.70	74.62	70.65	65.26	78.77	72.69
	Total	**100.00 (1583)**	**100.00 (1974)**	**100.00 (3557)**	**100.00 (1907)**	**100.00 (2333)**	**100.00 (4240)**

Figures in parentheses are total number of the Dead

***Source** : Household Survey, TISS, Bombay, 1993.*

occupation of only about 40 per cent and another 40 per cent were dependent on agricultural labour. In the category of non-agricultural workers a substantial proportion were the artisans and semi-skilled labourers based on agricultural activities. Involvement of a majority of the dead in agriculture indicates that their occupational share in other sectors was very minimal. For example manufacturing sector (household and non-household industries) had employed less than one per cent of the total workers.

Injured Persons

Various kinds of injuries were identified as the second visual impact of the Marathwada earthquake on human lives. These affected 4803 persons of the area. Also a substantial number of people received mental and psychological disorders. The detailed information and data about injured were collected by visiting the public and private hospitals in Latur, Osmanabad, Umerga and Solapure etc. Some injured received the medical aids from the local PHCs (Public Health Centres) and the AMS (Army Medical Service). Since the data about them were not collected through the questionnaires the age and sex-wise details are not available for the analysis.

Table 9 presents the details of the injuries received by the people in Latur and Osmanabad. About 57 per cent injured of Latur and about 51 per cent in Osmanabad had ordinary injuries and were treated either by providing medical first aid or by admitting to the hospitals. After short recovery within 2 to 3 days, they were relieved from the hospitals or from the medical camps set up in the nearby villages. It was observed that the victims of the less affected villages received minor injuries. Whereas the majority of serious injuries was noticed in those villages which also had the higher number of deaths. Fracture of upper and lower limbs, pelvis and ribs etc. were the common injuries among the 17 per cent injured in Latur and about 20 per cent in Osamanabd. The next 25 per cent injured of Latur and about 30 per cent of Osmanabad had serious as well as multiple fractures, paralysis and the loss of some organs. Persons with serious fractures required a long term treatment in the

hospitals for their complete recovery. The paralysis especially of limbs and the loss of eyes and ears have resulted in making them dysfunctional permanently.

Besides injuries, a large number of people received the multiple health problems mainly because of the shocks they received from the deaths and serious injuries of their near and dear ones. Table 10 shows that more than 13 thousand persons had post-earthquake health problems in both the districts. Out of it around 45 per cent in Latur and 42 per cent in Osmanabad had ordinary pain. Diarrhoea and fever, arisen out of the restlessness and psychological stress, also were the common problems among the major section of affected population. The mental disturbance, breathing trouble and heart problem were observed most commonly among the women and the aged. The cases of excessive bleeding and premature deliveries were also reported among pregnant women.

Widow, Widower and Orphan

Widows : As a third major impact of the earthquake, there has been a sudden rise in the number of widows, widower and orphans in the area. These secondary victims have familial affiliation with the victims who died due to the quake. Table 11 presents the distribution of widows by their age and the number of children who died in earthquake and some of them who remained alive after the quake. A total of 444 widows were recorded in Latur (213) and Osmanabad (231). Out of which 89 per cent and 84 per cent respectively were those widows whose children are alive. About 5 per cent and 9 per

Table 9

Nature of Injuries Received by Injured Persons

Sl. No.	Nature of Injuries		Percentage Distribution of Injured Persons	
			Latur	Osmanabad
1.	Minor Injuries -	Head	17.32	19.60
		Spinal	8.82	8.95
		Eyes	3.86	2.56
		Ears	0.88	1.00
		Others	26.48	18.96
2.	Simple Fracture -	Upper Limb	6.97	7.92
		Lower Limb	9.92	11.51
		Both Limb	0.29	-
3.	Serious Fracture -	Upper Limb	16.85	15.84
		Lower Limb	2.77	3.88
4.	Multiple Fracture -	Entire Body	-	1.61
5.	Paralysis -	Partial	4.07	4.62
		Complete	1.09	1.07
6.	Loss of Function -	Vision	0.25	2.06
		Hearing	0.38	0.41
	Total		**100.00 (2379)**	**100.00 (2424)**

Figures in parentheses are total number of injured persons.

***Source :** Household Survey. TISS, Bombay, 1993.*

Table 10
Nature of Health Problems Among Affected Persons

Sl. No.	Health Problem	Percentage Distribution of Affected Persons	
		Latur	Osmanabad
1.	Pain	45.08	42.20
2.	Diarrhoea	20.64	30.53
3.	Fever	20.00	20.34
4.	Trouble in Breathing	9.31	2.27
5.	Mental Disturbance	2.37	1.94
6.	Heart Problem	1.28	1.38
7.	Excessive Bleeding	1.17	1.05
8.	Premature Delivery	0.18	0.28
	Total	**100.00**	**100.00**
		(7210)	**(5810)**

Figures in parentheses are total number of persons facing health problem

***Source** : Household Survey, TISS, Bombay, 1993.*

cent respectively are those who have lost all their children, and about 6 per cent and 7 per cent are those without child (mostly newly married).

So far as the distribution of widows according to their age group is concerned a little less than one-third in Latur and about 41 per cent in Osmanabad are relatively younger and are in reproductive age (upto 34 years). The majority of widows of this age group (Latur and Osmanabad together) are either childless (7.18 per cent) or have lost their all children (9.78 per cent); besides there are widows whose children also survived (about 55 per cent). The incidence of earthquake brought the vulnerable impact on 6.58 per cent women in Latur and 10.38 per cent in Osmanabad who became destitute in their reproductive age by losing either their husband or husband and all children both. While among the remaining 69 per cent widows of Latur and 59 per cent of Osmanabad of the same age group the proportion of destitutes is quite less. About 65 per cent widows of Latur and about 53 per cent of Osmanabad survive with their children.

Widowers : The number of widowers was recorded more than double that of the widows. Table 12 presents the percentage distribution of widowers by their age and the number of children dead and alive. There were 440 widowers in Latur and 492 in Osmanabad in the age group of less than 30 to 60 and above. The percentage distribution shows that about 45 per cent widowers in Latur and about 40 per cent in Osmanabad were in the age group of less than 30 to 39 and the remaining 55 per cent and 60 per cent respectively were recorded in the age group of 40 to 60 and above. As compared to the proportion of female destitutes the number of male destitues is quite high in both the districts. (29.32 per cent in Latur and 30.89 per in Osmanabad).

Orphans : The total number of orphans recorded in both the affected districts was 1482. Actually the death of wife or husband has made all their dependent children orphan. However, the total number of orphans includes those children also whose both of the parents are dead and now they are complete orphan (Table 13). The complete orphans constitute about one-fourth and about 30 per cent of the total number of orphans in Latur and Osmanabad respectively. Among these orphans the number of female orphans is quite less as compared to the male orphans in other two categories. The higher number of male orphans especially between 10 and 18 years resulted from

Table 11

Distribution of Widows by Age and Number of Children Dead and Alive

Sl. No.	Age Group (Yrs.)	Percentage Distribution of Widows							
		Childless		All Children Dead		Children between 10 to 15 years Alive		Total	
		Latur	Osmanabad	Latur	Osmanabad	Latur	Osmanabad	Latur	Osmanabad
1.	Less than 25	2.82	3.46	-	1.30	8.92	9.96	11.74	14.72
2.	25-34	0.47	0.43	3.29	5.19	15.02	20.78	18.78	26.41
3.	35-44	0.47	0.43	0.94	1.73	24.88	19.91	26.29	22.08
4.	45-54	0.94	1.30	0.47	-	17.37	14.29	18.78	15.58
5.	55+	0.94	1.73	0.47	0.87	23.00	18.61	24.41	21.21
	Total	**5.64 (12)**	**7.36 (17)**	**5.17 (11)**	**9.10 (21)**	**89.19 (190)**	**83.55 (193)**	**100.00 (213)**	**100.00 (231)**

Figures in parentheses are total number of widows.

Source : *Household Survey, TISS, Bombay, 1993.*

Table 12

Distribution of Widowers by Age and Number of Children Dead and Alive

Sl. No.	Age Group (Yrs.)	Percentage Distribution of Widows							
		Childless		All Children Dead		Children between 10 to 15 years Alive		Total	
		Latur	Osmanabad	Latur	Osmanabad	Latur	Osmanabad	Latur	Osmanabad
1.	Less than 30	6.14	5.28	6.14	6.30	3.64	4.88	15.91	16.46
2.	30-39	1.14	1.02	7.73	9.15	20.23	13.21	29.10	23.17
3.	40-49	0.23	0.20	3.63	4.88	13.41	16.67	17.27	21.75
4.	50-59	0.23	0.20	2.27	2.24	15.23	16.06	17.72	18.50
5.	60+	0.68	0.41	1.14	1.22	18.18	18.29	20.00	20.12
	Total	**8.41 (37)**	**7.11 (35)**	**20.91 (92)**	**23.78 (117)**	**70.68 (311)**	**69.12 (340)**	**100.00 (440)**	**100.00 (492)**

Figures in parentheses are total number of widowers.

Source : *Household Survey, TISS, Bombay, 1993.*

the fact that most of the male students in these ages were away from the quake hit area. It was observed that the schools beyond 7th standard are not available in every village. The male student in middle and secondary level schooling used to stay in the hostels of boarding schools or live with their relatives, away from their parental villages. On the night of incidence of earthquake hundreds of male children were not present in their parental houses.

Conclusion

The foregoing analysis shows that the Marathwada earthquake had caused 7797 deaths and injured 4803 persons in Latur and Osmanabad. Consequently, 444 females became widows, 932 husbands witnessed the deaths of their wives and 1482 children lost their parents. Accordingly, the large scale change in the demographic structure will have a far reaching impact on the demographic equilibrium in the region. The average size of the household, which was 5.2 in Latur and 4.8 in Osmanabad before earthquake, declined to 4.9 and 4.2 respectively after earthquake. The sudden rise in the number of the deceased adversely affected the sex ratio, reproductive behaviour and the labour force participation. The sharp increase in the number of destitutes, orphans and physically and mentally handicapped will change the normal pattern of social security and dependency and will lead to inter-and intra-family tensions. These factors together will adversely affect the socio-economic and demographic health of the area.

There seems to be a positive association between the high social status, high income and the occurrence of high number of deaths. The pucca houses the symbol of social status among the Marathas, Muslims and other higher caste households - recorded relatively more deaths. On the contrary, in the same village the scheduled population registered generally less number of deaths in comparison to their proportion in the affected household. The spatial pattern of death incidence shows that the higher number of incidence was concentrated among less than five per cent of the total affected households. More than 90 per cent households experienced losses other than human deaths. Similarly, there is a specific geographic pattern in the distribution of affected villages (Appendix 1). Only 9 (including Killariwadi) out of 38 clustered villages in Latur and 15 out of 31 clustered villages in Osmanabad were seriously affected (more than 50 deaths in each village) and registered about 88 and 94 per cent of total deaths respectively. Towards the peripheries of these villages the intensity as well as the type of losses declines fast. The inter-district comparison shows that the disparity in the socio-economic conditions of affected households is little sharp in Osmanabad which reported rather more number of deaths, injuries and the secondary losses.

Table 13
Distribution of Orphans by their Age and Sex

Sl. No.	Age Group (Yrs.)	Orphan	Percentage Distribution of Orphans							
			Mother Dead		Father Dead		Both Dead		Total	
			Latur	Osmanabad	Latur	Osmanabad	Latur	Osmanabad	Latur	Osmanabad
1.	Upto 9	Male	20.20	20.47	16.75	15.35	4.43	5.81	41.38	41.63
		Female	23.93	23.44	19.33	20.32	2.15	5.00	45.40	48.75
2.	10-18	Male	24.63	24.88	21.92	23.49	12.07	10.00	58.62	58.38
		Female	25.15	20.63	22.40	21.25	7.06	9.38	54.60	51.25
	Total	**Male**	**44.83**	**45.35**	**38.67**	**38.84**	**16.50**	**15.82**	**100.00**	**100.00**
			(182)	**(195)**	**(157)**	**(167)**	**(67)**	**(68)**	**(406)**	**(430)**
		Female	**49.08**	**44.06**	**41.72**	**41.56**	**9.20**	**14.37**	**100.00**	**100.00**
			(160)	**(141)**	**(136)**	**(133)**	**(30)**	**(46)**	**(326)**	**(320)**

Figures in Parentheses are total number of Orphans.

***Source** : Household Survey, TISS, Bombay, 1993.*

Annexure-I

Number of Deaths in Quake Affected Villages

	District Latur	No. of Deaths		District Osmanabad	No. of Deaths
1.	Killari*	1220	1.	Sastur	979
2.	Mangrul	627	2.	Pet Sangvi	778
3.	Talani	408	3.	Tawashigad	447
4.	Limbala Dau	348	4.	Holi	369
5.	Nandurga	174	5.	Rajegaon	296
6.	Gubal	168	6.	Chicholi Kate	199
7.	Ganjankheda	117	7.	Chincholi Rebe	151
8.	Haregaon	85	8.	Murshadpur	150
9.	Yelwat	44	9.	Ekondi Lohara	141
10.	Hasalgaon	39	10.	Salegaon	96
11.	Banegaon	35	11	Udatpur	92
12.	Sarwadi	27	12.	Kondjigad	90
13.	Lamjana	26	13.	Kawatha	88
14.	Jawalga Pomadevi	23.	14.	Jewali	54
15.	Ujani	22.	15.	Samudral	50
16.	Nandi Hatarga	22	16.	Makni	49
17.	Sirsal	16	17.	Narangwadi	30
18.	Tungi (B)	16	18.	Kaldeo Nimbala	29
19.	Sarni	15	19.	Toramba	29
20.	Twashitad	15	20.	Nai Chakur	20
21.	Mugad Ekoji	13	21.	Hipparga Sayyad	17
22.	Malkonji	12	22.	Lohara (K)	15
23.	Dapegaon	11	23.	Kanegaon	15
24.	Gadharewadi**	9	24.	Kaddhora	11
25.	Chicholi-Kajle	9	25.	Matola (K)	9
26.	Sankral	8	26.	Vanthal	8
27.	Hipparga	8	27.	Ekurga	7
28.	Belund	7	28.	Babalsur	6
29.	Lohta	6	29.	Kasti (B)	6
30.	Ashiv	6	30.	Harali	5
31.	Wanwada	6	31.	Bori	4
32.	Wangji	6			
33.	Malubra	4			
34.	Chicholi-Son	2			
35.	Kawli	1			
36.	Tungi (K)	1			
	Total	**3557**		**Total**	**4240**

* including Killariwadi

** including Chicholi-Tapase

Source : *Household Survey, TISS, Bombay, 1993.*

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BOOK REVIEW

AIJAZUDDIN AHMAD, DANIEL NOIN AND H.N. SHARMA (Eds.)

DEMOGRAPHIC TRANSITION : THE THIRD WORLD SCENARIO

Rawat Publications, Jaipur

REVIEWED BY SWARNJIT MEHTA

The term 'Demographic Transition' refers to a general model which describes the evolution of levels of fertility and mortality over time. The model was originally proposed on the basis of experiences of developed countries as they passed through industrialization and urbanization. The model which is oversimplified even in the context of developed world has to be cautiously applied to the Third World countries. Most of these countries collectively and individually have received only scant attention so far and have been awaiting focussed studies of their demographic transition. The present volume seeks to fill this gap.

The book spans over 24 chapters arranged into six parts each devoted to a central theme. Part-I titled Historical Antecdents includes three essays. Daniel Noin explores the patterns of demographic history of the developing countries in general and the diversity of these patterns in particular. He highlights the heterogeneity of experience of developing countries in terms of population growth. He identifies four main phases in their demographic history and probes into the cultural and economic factors influencing population growth in these countries. The readers stand duly cautioned against treating all the developing countries as one category because the demographic changes in these countries have followed strickingly diverse and varied courses. Malakar in his essay appears quiet optimistic, unlike the widespread warning signals, and further emphasises the different demographic behaviour of various regions of Asia. He takes due note of the slowing down of growth rates in East Asia during 1990-2025. Maudood Elahi, while dealing with the evolution of population in Bangladesh, adopts a spatio-temporal approach and covers a much longer period starting from the Buddhist times. From early Buddhist settlements Elahi refers to the decline of Buddist culture as a consequence of Hindu revival (or who knows it was Hindu aggression ?). The process of in-migration of Muslims as also conversions initiated a period of population expansion which continued through the British period in which the contemporary pattern of population growth evolved. Elahi discovers a demographic divide around mid-century. He, however, does not use

the Demographic Transition model though he had adequate data base for its elucidation.

In the section on 'Regional Perspectives' there is an overexposure of India - both at macro and micro scales. Minati Ghosh has covered all the nine decades (1901 to 1991) for describing the growth dynamics of India's population. H.N. Sharma and Bimal K. Kar's paper concentrates on the northeast India covering Assam, Arunachal Pradesh, Nagaland, Manipur and Mizoram. District level differentials in population growth in north India form the theme of a paper by Kamla Gupta. The four north Indin states: Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh (also popularly acronymed as BIMARU - the sick) present a depressing scenario associated mainly with the slow pace of social and economic development. It is a penetrating study and rightly expresses anxiety at the continuing outmigration from some of the north Indian states.

The inter-ethnic differentials in population growth constitute the theme of Part-III. While Aijazuddin Ahmed raises some very important issues and questions relating to ethnicity and population growth in his introduction to the volume, these unfortunately have remained unaddressed in this section. All the three papers here are quite limited in their range and perspective.

Shrawan Kumar Acharya examines the process of marginalization of the indigenous Lepchas in Darjeeling and Sikkim. He compares the growth of Lepcha population with that of Nepalese without giving any details on the fertility and mortality as determinants of population growth. Instead, migration has been used as the dominant explanatory variable. The paper on the scheduled caste (SC) population of India and its recent demographic dynamism by R.P.S. Gosal only repeats the well-known, though not always valid, explanations of higher rates of growth among the schduled caste population. An assumption which seems to run throughout the explanations (or descriptions) and which Gosal has stated in a note at the end is that the scheduled caste population has an inherant preference for large families so that they can have more earning hands. Now, such arguments apply equally to all the poor in our country whether they are scheduled caste and not. So, it is poverty an not caste which is the cause much less the result of high population growth. The third essay in this section deals with the distribution and growth of the Bhil population in India.It systematically descibes the aspects of size, sex ratio, age structure, concentration etc. That the Bhils have recorded negative growth in all areas of their concentration and some of them have even been pushed into areas like Dadra and Nagar Haveli is a fact which neither evokes any sympathy for the tribes nor any plea for schemes for their upliftment. Yes, the authors concede that Bhils have moved out of their traditional areas because of lack of opportunities. What happened to the crores invested in the Tribal Area Development Schemes there ? One is forced to pose this crucial question.

Section IV titled 'Consequences of Population Growth' includes as many as seven papers. The consequences highlighted are : demographic changes and environment in developing countries by Alina Potrykowska; urban population and urbanization in Bangladesh by Sabiha. Sultana; periurban development in Dhaka Metropolitan area by Manzur-ul-Hasan; urbanization in Nepal by Mangal Manandhar; urban infusion in South Africa by H.S. Geyer; old ae groups in India by Daksha C. Barai; and micro level study of ageing in Trichur districtof Kerala by P.S. Nair and S. Santhosh. Evidently most of the studies on consequences, just as those on causes of population growth, suffer from conceptual flaws and biased visions. With the exception of ageing and consequent increase in the size and proportion of the elderly population which is directly linked to population growth, it

is difficult to visualise how problems of environment and urbanization are direct fallout of population growth itself. Since we continue to organise our studies in very narrow, linear cause-effect frameworks, such studies fail to provide any new insights - the present book is no exception. Likewise, Part V where the theme of population - development nexus has been handled by three scholars in their own ways hardly enriches the readers' understanding. Sudesh Nangia uses the focus on our Five Year Plans and our achievements thereof to communicate and clarify the nexus between population and development. As if holding a brief for all our development plans she almost eulogises the concerns expressed in the related official documents. She has rightly highlighted the need for fuller appreciation of the importance of education, health, drinking water, poverty alleviation. It is a common feeling in India that development here has suffered becauseof increasing population and decreasing resources. Are there no flaws in our development policies and priorities ? Are we not addicted to simple sloganeering without any genuine commitment to development and social justice however defined ? Are not inequities in the distribution of resources : land, energy, forests etc. also responsible for slowing down the pace of development process ? These and many more relevant questions have simply been bypassed by Nangia and others who have presented cliched arguments on population, environment and currently the hot favourite item on the international agenda i.e. sustainable development. An exhaustive statistical and cartographic exercise which is quite refreshing in this section is on the status of women in India by Naresh Kumar. Methodologically and conceptually this is perhaps the most outstanding contribution in this volume presenting the linkages between regional variations in the status of women and variations in the levels of development.

While methodological and policy issues are extremely important for examining any social phenomenon, these find a place inthe concluding section of the present book. Emphasising the importance of qualitative indicators in comparison to purely quantitative ones for the study of multiregional demographic change in developing countries Abraham Akkerman et. al. point out various methods and practical shortcomings of the latter. In their view demographic assessment for the developing countries with generally insufficient data may be based on "fuzzy indicators" such as population households, mean age and average household size. The authors have metieulously worked out the details of the methodology and its application for small geographical areas. Equally interesting and extremey useful for researchers in population studies is the methodology proposed by Zhang Shullin which he calls "analysis by synthesis". He stresses the importance of continuous feedback in the research process in terms of raising of new questions. The last paper in this methodological section is by S.L. Kayastha. One wonders how this paper on population growth and impact on environment and development in India has been appended in this section. Logically it should have gone to Part IV or V. Basded largely on World Development Report (1992) and Human Development Report (1993) the paper broadly and loudly repeats arguments which by now are too familiar. Kayastha, however, forcefully and rightly emphasises the need for looking at population, development and environment in a "dynamic complementarity" rather than in isolation from each other.

As one reads through the volume and reaches the closing chapter by Mahendra K. Premi one gets the feeling that as chapers follow one another the theme of Demographic Transition gets increasingly obscure. Premi traces the contours of demographic profile of India as it developed over the last ninety years and not once we are informed how India's

population in its various regions passed through different stages of the demographic cycle. Major states of India are classified on the basis of birth and death rates in rural and urban areas and it is left to the readers to visualise for themselves the stagesof demographic transition. However, Premi's exercise is valuable for its detailed tables. He has chronologically traced the evolution of family planning programmes launched from time to time. The net outcome of these programmes is known to all and requires no elaboration.

Volumes like the present one which are based on symposia contributions are bound to contain a mix of outstanding, average and mediocre collections. Tremendous credit goes to the editors who have painstakingly put the disparate essays together and given them a readable form. The introducton to the volume by Aijazuddin Ahmed is superb both in style and substance.

The books is priced rather high and this may make it inaccessible to individuals.

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MAP SERIES : 3
INFANT MORTALITY IN INDIA

GOPAL KRISHAN
Chandigarh, India

Defined as the number of children dying within the first year of their birth, per 1000 live births, infant mortality rate is adjudged as a summary reverse indicator of social development and physical quality of life. It represents the survival chances of any new born beyond the initial most critical phase. It reflects the nutrition level of the mother and child, infrastructure base of health care, environmental conditions of habitat, and above all, the status of women.

Economic, socio-cultural, biological and pathological factors explain the differentials in infant mortality by region, residence and sex. On the economic plane, infant mortality finds a strong association with poverty. It is the income level which determines the conditions of nutrition , housing and health care of the new born. On socio-cultural front, infant mortality would be high if there is a gender bias against the girl child, mother and child are subjected to unhygenic setting at the time of confinement and delivery, and if the status of mothercraft is weak. On biological parameters, infant mortality rate tends to be high in situations of excessive fertility and mortality in general, mothers giving birth at too young or advanced age, and short spacing between births. On pathological basis, infant mortality would be high if the new born is subject to any disease and the necessary medical aid is not available in time.

An infant mortality rate of 54 was recorded at the global level in 1996 (World Bank, 1998, p.203). It ranged from 4 in Sweden to 190 in Sierra Leone. The rate is the lowest in the Scandinavian countries, low in Europe, Anglo-America, Japan and erstwhile socialist countries; relatively low in China, Latin America and the Mediterranean region; relatively high in South Asia ; and the highest in Sub-Saharan Africa.

Figs.1, 2 and 3 depict the spatial patterns of infant mortality rate in India. These are based on districtwise estimates as worked out by Rajan and Mohanchandran (1998, pp. 1121 - 1140). Mortpack - Lite , computers package developed by the United Nations, was applied to the 1991 census data. The base information pertained to the number of children born, that of those surviving, and that of women in 15-49 age group.

India's infant mortality rate at 74 was roughly 1.5 times of the world average in 1991 (Table 1). It exceeded 100 in about one-sixth of all districts in the country and, by comparison, was below 50 in one-fifth. It ranged between 50 and 75 in nearly two-fifths and between 75 and 100 in about one-fourth of the districts. One death out of every five was that of an infant. The rate is certainly declining over time. Regional variations are , however, getting widened with the rate dropping faster in lower infant mortality states (Tables 1 and 2).

A broad contrast between the high infant mortality rate in north India and a relatively low in its southern counterpart is easily discernible (Fig 1). Within north India, the core constituted by Uttar Pradesh , Madhya Pradesh, Orissa and parts of Bihar and Rajasthan, is marked by exceptionally high rates while the peripheral areas show somewhat lower figures. In south India, the distinction between the coastal regions, with lower rates, and the inland peninsula, with higher ones, is conspicuous. Orissa has the dubious distinction of being at the top in infant mortality rate while Goa is distinguished by its place at the bottom (Table 1). All this finds a broad association with the contours of socio-economic development map of India.

In a strong patriarchal society like that of India, it is no surprise that the female infant morality rate is higher than the male in two-thirds of all districts (Fig.2). Again a north-south divide cannot be missed. By and large, female infant mortality rate is higher than the male in north India while the opposite is true in the case of south India. Under normal conditions, wherein female infant is institutionally stronger, the female infant mortality rate is expected to be lower than the made. The status of women is assessed as relatively higher in south India.

Urban-rural difference in infant mortality rate is more pervasive. The rate is higher in rural areas than in the urban in nine districts out of every ten. This represents, among other things, the wide difference in the health infrastructure of the two.

It follows that regional variations in infant mortality rate are associated with the level of socio-economic development, its male-female differential with the relative status of women, and its urban-rural gap with the state of health infrastructure.

References

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Table 1

India : Infant Mortality Rate by States and Unior Territories, 1991

S. No.	India/States/ Union territories	INFANT MORTALITY RATE Total	Rural	Urban
*	**INDIA**	**74**	**79**	**48**
STATES				
1.	Orissa	108	112	76
2.	Madhya Pradesh	107	114	74
3.	Uttar Pradesh	89	94	58
4.	Assam	85	87	57
5.	Arunachal Pradesh	83	90	48
6.	Rajasthan	81	88	53
7.	Tripura	78	81	60
8.	Meghalaya	76	81	50
9.	Himachal Pradesh	75	77	49
10.	Jammu & Kashmir	N.A.	N.A.	N.A.
11.	Bihar	70	73	48
12.	Gujarat	69	79	49
13.	West Bengal	67	72	50
14.	Karnataka	60	65	45
15.	Maharashtra	58	66	39
16.	Mizoram	58	83	25
17.	Sikkim	57	57	49
18.	Haryana	55	58	39
19.	Nagaland	55	56	51
20.	Punjab	54	61	37
21.	Tamil Nadu	53	58	42
22.	Andhra Pradesh	49	54	31
23.	Kerala	37	38	30
24.	Manipur	36	35	38
25.	Goa	34	39	32
UNION TERRITORIES				
1.	Lakshadweep	80	78	81
2.	Dadra & Nagar Haveli	63	66	44
3.	Daman & Diu	60	50	56
4.	Andaman & Nicobar Islands	49	54	37
5.	Delhi	49	60	47
6.	Pondicherry	47	52	45
7.	Chandigarh	46	54	40
	Regional disparity index (co-efficient of variation) of major states with a population of at least 5 million each in 1991	0.29	0.28	0.27

Source : Rajan S. Irudaya and P. Mohanachandran (1998) : "Infant and Child Mortality Estimates". *Economic and Political Weekly*. May 9. pp. 1120-1140.

N.A. : Data not available

Note : States/union territories are arranged in descending order of their infant mortality rate.

Table 2

India : Infant Mortality Rate by States and Unior Territories, 1997

S. No.	India/States/ Union territories	INFANT MORTALITY RATE Total	Rural	Urban
*	**INDIA**	**71**	**77**	**45**
STATES				
1.	Orissa	96	100	65
2.	Madhya Pradesh	94	99	57
3.	Uttar Pradesh	85	89	66
4.	Rajasthan	85	89	61
5.	Assam	76	79	37
6.	Bihar	71	73	53
7.	Jammu & Kashmir	N.A.	N.A.	N.A.
8.	Haryana	68	70	59
9.	Himachal Pradesh	63	64	38
10.	Andhra Pradesh	63	70	37
11.	Gujarat	62	69	46
12.	West Bengal	55	58	43
13.	Meghalaya	54	56	52
14.	Karnataka	53	58	24
15.	Tamil Nadu	53	58	40
16.	Tripura	51	53	39
17.	Nagaland	51	51	31
18.	Punjab	51	54	38
19.	Arunachal Pradesh	47	49	17
20.	Maharashtra	47	56	17
21.	Sikkim	30	21	28
22.	Manipur	30	21	28
23.	Mizoram	N.A.	N.A.	16
24.	Goa	19	23	14
25.	Kerala	12	11	15
UNION TERRITORIES				
1.	Dadra & Nagar Haveli	63	67	7
2.	Chandigarh	40	46	40
3.	Daman & Diu	38	41	35
4.	Lakshadweep	36	22	49
5.	Delhi	35	34	35
6.	Andaman & Nicobar Islands	33	39	16
7.	Pondicherry	22	30	16
	Regional disparity index (co-efficient of variation) of major states with a population of at least 5 million each in 1991	0.32	0.31	0.37

Source : Registrar General India : *Sample Registration System Bulletin.* October 1998, New Delhi.

N.A. : Data not available

Note : States/union territories are arranged in descending order of their infant mortality rate.

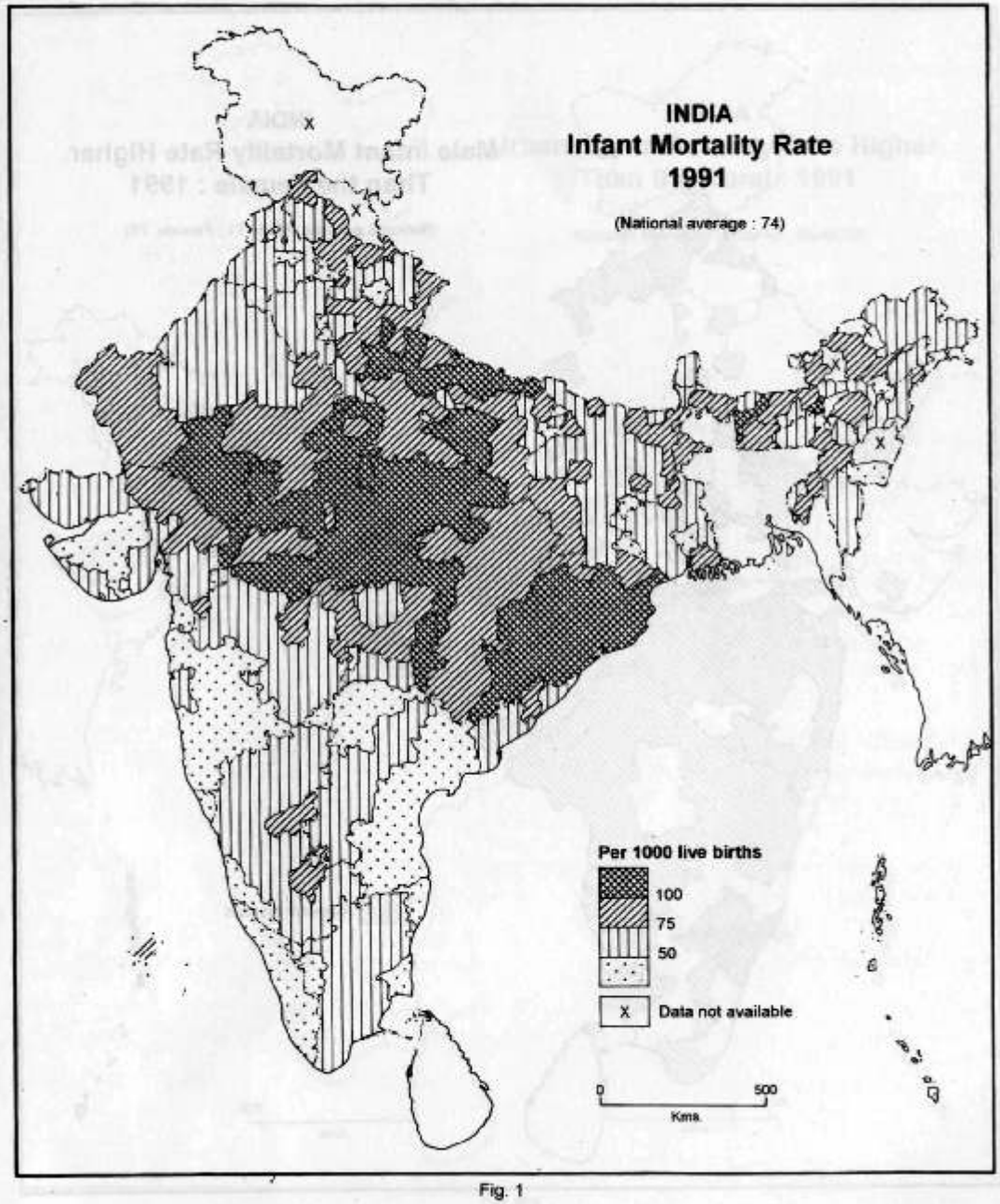
INDIA
Infant Mortality Rate
1991
(National average : 74)
Per 1000 live births
100
75
50
X
Data not available
0
500
Kms.

Fig. 1

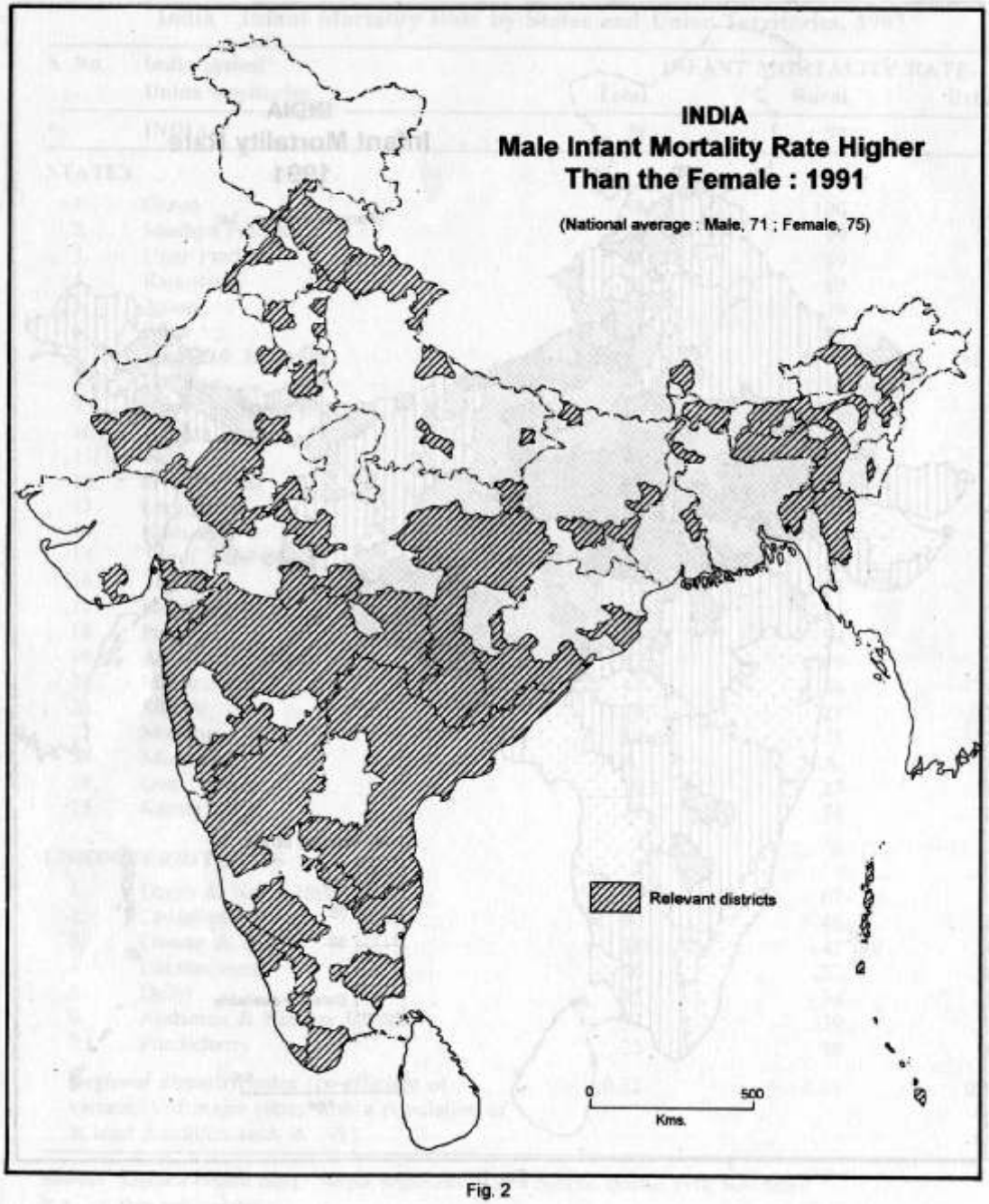
INDIA
Male Infant Mortality Rate Higher
Than the Female : 1991
(National average : Male, 71 ; Female, 75)
Relevant districts
0
500
Kms.

Fig. 2

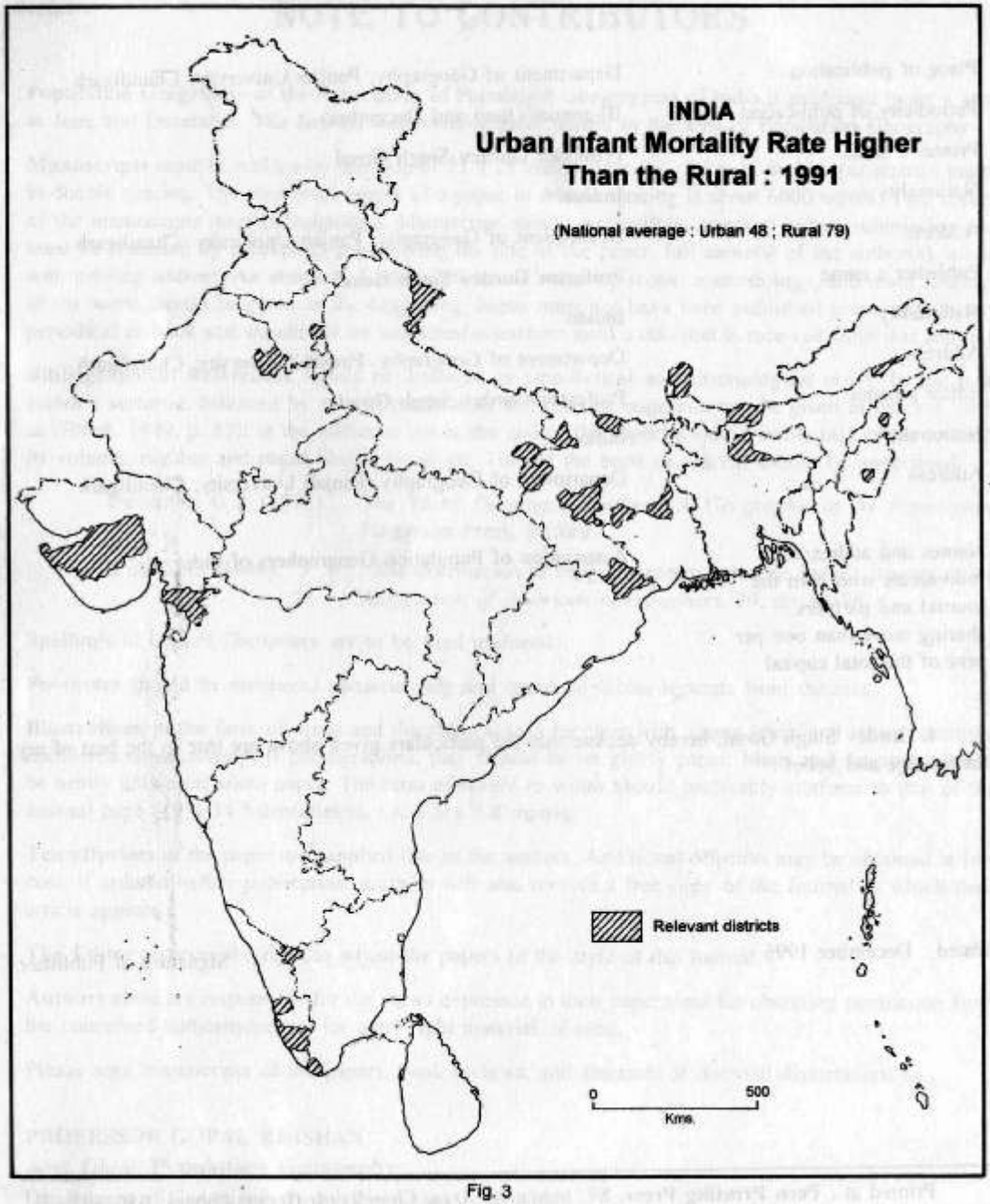
INDIA
Urban Infant Mortality Rate Higher Than the Rural : 1991
(National average : Urban 48 ; Rural 79)
Relevant districts
0
500
Kms.

Fig. 3