Demographic scenario, 2025

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India's population stood at about 350 million at the time of country's Independence in 1947. By dodging the Malthusian checks, it grew at an unprecedented rate to reach the one billion mark at the dawn of the new millennium. The Census of 2001 has put the population figure provisionally at 1,027 million, even though it registered a significant reduction in the growth rate of population. During the latter half of the twentieth century, India's population had grown by nearly 650 million. How much more will it grow in the first quarter of the twenty-first century? What will be the geographical distribution of this growth? What changes are expected in the age and sex structure of the population? Any serious attempt to paint a portrait of India around the year 2025 would have to confront these questions, and make a proper assessment of country's demographic prospectus.

With the advent of 'the component method' of projection, the art of making population forecasts has acquired the rigour of a science. The rationale of the component method rests on the undisputable fact that the growth of population is determined by fertility, mortality and migration rates. As each of these forces have distinct age and sex profiles, it becomes possible to mathematically carry forward the base-year population by age to any future date, by making assumptions about the three components of growth. The time-honoured theory of demographic transition provides the necessary framework to make assumptions about future course of fertility and mortality rates with a fair degree of precision. Although making assumptions about migration could prove difficult, in a many a case, this is an inconsequential part of population change.

The accuracy of demographic projections can be gauged by examining how close they have come in predicting the India's population at 2001. It is to be noted that demographers generally make 'high', 'medium' and 'low' projections; but the high and low variants are often presented for pedagogical purposes only, and are not to be treated as serious forecasts. Table 1 lists ten important forecasts of India's population at 2001 that were made before 1980 using the component method. The table shows in each case, the forecasts corresponding to the medium variant, or the median of the projected population figures.

Except for the first one that was made as far back as 1954, all other nine population projections have come within ten percent of the census estimate for 2001. Only three have erred on a higher side, but two of them were so because they carried a correction for under enumeration of population in the base-year census. Among the ten forecasts, the one made by J.P. Ambannavar in 1975 had an error of only two percent, but allowing for some under enumeration in the census count, the two projections of the United Nations made in 1973 and 1978 can also be regarded as falling within the bull's eye.

Several lessons can be learnt from this comparison. First, it appears not too hazards to make population projections using the component method, provided the time horizon for the projection is within 25-30 years. Second, projected population totals generally have a downward bias, perhaps because assumptions regarding levels and trends in fertility tend to be too optimistic. Third, forecasting errors tend to reduce with time because of better information on the nature and tempo of demographic transition.

Table 1. Comparison of provisional population estimate for India
from the Census of 2001 with some selected projections
made before 1980 using the component method

Author/ Organization	Year of projection	Population projected for 2001 (millions)	Percentage deviation from 1027 million
Dasgupta and Majumdar	1954	667	-35.1
United Nations	1963	922	-10.2
World Bank	1972	1109	8.0
Frejka	1972	955	-7.0
United Nations	1973	1078	5.0
Operations Research Group	1974	973	-5.3
Raghavachari	1974	935	-9.0
Ambannavar	1975	1003	-2.3
Cassen and Dyson	1976	934	-9.1
United Nations	1978	1056	2.8

Source: Natarajan (1982).

Note: In some cases, the estimate for the year 2000 has been brought forward by a year using the growth rate internal to the projection. If more than one estimate was made, that based on the medium variant, or the median of the estimates, has been taken as the most likely forecast.   Some projections have adjusted the base-year population for under enumeration, and some estimates are for July 1. These discrepancies have been ignored while computing the percentage deviation from the census estimate for March 1, 2001.

Recent Demographic Trends

Any serious attempt to assess future prospectus must begin with a review of past trends. Such a review would be critically important in formulating assumptions about future trends of each component of growth. With this in mind, Table 2 shows some basic demographic indicators for India since 1951. It is to be noted that fertility and mortality indicators that are shown in the table not the ones routinely found in statistical publications of Government of India. The official estimates, especially those for the period before the appearance of the Sample Registration System (i.e., before 1971), are grossly deficient and do not accurately depict the trends in vital rates. Although the estimates based on the SRS are more accurate, they too need to be corrected for under enumeration of vital events in the system. Even the more carefully derived estimates shown in Table 2 can show only an approximate range for the levels fertility and mortality that prevailed before the 1970s. The major source for the uncertainty is the lack of reliable information on the levels of infant and child mortality prevailed during this period. However, it is fairly certain that their levels were higher than those shown in the official life tables of the period (for details, see Bhat 1998).

As per the estimates shown in Table 2, the crude death rate in India has declined from about 30 per 1,000 in 1941-51 to 15 in 1971-81 and 10 in 1991-2001. In the meanwhile, the expectation of life at birth has increased from about 33 years in 1941-51 to about 50 years in 1971-81 and 60 years in 1991-2001. Thus during the last 20 years, the expectation of life at birth has increased roughly by half a year per annum. There also is an indication that the life expectancy has increased somewhat faster among females than males.

The estimates presented in Table 2 show that the fertility levels in India may have increased before it began to fall. The crude birth rate may have increased from about 43 per 1,000 in 1941-51 to 47 in 1951-61, and then slowly began to fall to reach 29 during 1991-2001. The total fertility rate (TFR) may have increased from a level lower than 6 births per woman to around 6.5 births between 1941-51 and 1951-61. Subsequently, it has shown a steady fall to reach 3.7 during 1991-2001. The early rise in fertility is attributable to declines in the incidence of widowhood and diseases such as malaria that held levels of natural fertility in check. The annual fall in TFR appears to be declining. Between 1961-71 and

1971-81 TFR fell by 0.14 births per year, while during the last 20 years the TFR has fallen only by half of this rate.

Table 2. Some Selected Demographic Indicators for India, 1951 to 2001

Census year	Enumerated population in millions	Rates/measures for the ten-year period before the census					
		Percent change in population	Crude birth rate	Crude death rate	Total fertility rate	Expectation of life at birth	
						Male	Female
1951	361.1	13.3	40-44	28-32	5.3-6.0	32-34	32-34
1961	439.2	21.6	46-48	26-28	6.3-6.6	37-39	37-39
1971	548.2	24.8	43-44	21-22	6.4-6.6	43-45	42-44
1981	683.3	24.6	37	15	5.1	50	49
1991	846.4	23.9	35	13	4.3	54	53
2001*	1027.0	21.3	29	10	3.7	59	60

Source: India, Registrar General (1997), Bhat (1998, 2000).
* Population estimates for 2001 and demographic indicators for 1991-2001 are provisional.

While making population projections, it is necessary to be as precise as possible about the current levels of fertility and mortality. Their underestimation could result in significant under assessment of future possibilities for growth and an overly optimistic date for population stabilization. Some indirectly made estimates suggest that about 10 percent of deaths and 5-7 percent of births are omitted in the SRS (Bhat 2000). Therefore, levels of fertility and mortality shown in Table 2 for the period 1991-2001 are somewhat higher than what is implied by the SRS estimates available up to the year 1999. They are however broadly consistent with the provisional results of the Census of 2001.

While assessing future prospects, it is also necessary to take into account the large regional differences in demographic parameters (see Bhat 1999). Several states in south India have already reached, or about to attain, the replacement level of fertility (a TFR level of about 2.2-2.1) that, if maintained, would ensure a zero growth rate of population in the long run. On the other hand, TFR is over 4 births per woman in many states in north India, and it would take several decades for them to reach the replacement-level fertility. There are also similar differentials in levels of mortality, especially in infant and child mortality.

It is beyond the scope of this paper to discuss the population prospectus on a state-by-state basis. But because they make telling contrasts, two broad regions- north and south - will be considered for detailed treatment. The 'north' in our discussions comprises of Uttar Pradesh, Bihar, Orissa, Madhya Pradesh, Rajasthan, and newly formed states of Uttaranchal, Jharkhand and Chhatisgarh. The 'south' comprises of Kerala, Tamil Nadu, Andhra Pradesh and Karnataka. During 1991-2001, the average population growth rate was 2.22 percent per annum in the north while it was only 1.24 percent in the south.

Projection Assumptions

The base-year of our population projection in 2000 A.D. Based on the provisional results of the 2001 Census, India's population on March 1, 2000 is estimated to be 1,010 million. The age-sex distribution of the population on this date is estimated by projecting forward a smoothed age-sex distribution of population from the 1991 Census. This projection used slightly adjusted rates of fertility and mortality from the SRS so that the projection would give a growth rate of 1.9 percent per annum during 1991-2001. This projection suggests that in the year 2000, TFR was 3.4 and expectation of life at birth was 60 for males and 62 for females.

Table 3. Mortality and Fertility assumptions for India under two scenarios, 2000-2025

| Year | Expectation of life at birth | | | | Total fertility rate | |
| | Males | | Females | | | |
	Optimistic	Realistic	Optimistic	Realistic	Optimistic	Realistic
2000	60.0	60.0	62.0	62.0	3.40	3.40
2005	64.0	61.0	66.5	63.7	2.75	3.10
2010	68.0	62.0	71.0	65.3	2.10	2.80
2015	69.3	63.0	72.7	67.0	2.10	2.50
2020	70.7	65.0	74.3	69.0	2.10	2.30
2025	72.0	67.0	76.0	71.0	2.10	2.20

At the national level, two alternate scenarios of achieving population stabilization have been considered (see Table 3). In the first scenario, it is assumed that India would able to achieve the demographic goals of the National Population Policy 2000 (Government of India, 2000). The NPP has set a target of achieving TFR of 2.1 and infant mortality rate of 30 per 1,000 by the year 2010. The mortality target implies an expectation of life at birth of 68 for males and 71 for females (under the 'West' model life table system that has been assumed to apply at the national level). After 2010, the TFR has been assumed remain constant at 2.1. But the life expectancy has been assumed raise further, thought at a reduced pace, to reach 72 for males and 76 for females by 2025.

Considering the pace at which fertility and mortality rates have fallen in the past, the NPP goals appear to be highly optimistic. As noted above, TFR has fallen only by 0.07 births per year during the last 20 years. As more and more states of India complete the transition to low fertility, the average pace of decline is likely to slacken further. In the case of mortality, diseases such as malaria and tuberculosis are becoming intractable and the threat of HIV/AIDS is looming large on the horizon. The pace of decline in infant and child mortality, hitherto largely driven by immunization, also seems to be slowing down.

Therefore, under the more realistic scenario, TFR has been assumed to fall from 3.4 in 2000 to 2.8 in 2010, and reach very close to the replacement level only by 2025. The life expectancy at birth has been assumed to rise by only 4 years (3 years among males and 5 years among females) during the next 15 years. By 2025, it has been assumed to reach 67 for males and 71 for females, i.e., 5 year shorter for both the sexes than under the optimistic projection.

Under both the scenarios, net migration to India has been assumed to be negligible. In the past, while some regions of India were indeed affected by emigration of labourers, there were compensating inflows of illegal immigrants and refugees in other parts. In future, both internal and external demographic and economic conditions may make India a net exporter of labourers and technicians. However, immigration is unlikely to be of such proportions as to make a significant dent on India's population size.

For north and south India, only one scenario that seemed realistic has been considered (see Table 4). The provisional results of the 2001 Census suggest that in the year 2000 the northern and southern regions had a population of 450 and 220 million, respectively. As with all-India, the age-sex distribution of the population was carried forward from 1991 using slightly adjusted estimates of fertility and mortality levels from the SRS. In the case of south India, TFR has been assumed to fall progressively from 2.3 in 2000 to 1.9 in 2010 and then to remain constant at 1.8 until 2025. In north India, TFR has been assumed to decline from 4.4 in 2000 to 3.6 in 2010 and further to 2.7 by 2025. Between 2000 and 2025, the expectation of life at birth in south India has been assumed to rise from 64 to 70 for males and from 67 to 74 for females. During the same period in north India, the expectation of life at birth has been assumed to rise from 59 to 66 for males and 58 to 67 for females. As south India appears to be hit more by the AIDS epidemic, a slower rate of increase in life expectancy has been assumed there.

Table 4. Mortality and Fertility assumptions for north and south India, 2000-2025

| Year | Expectation of life at birth | | | | Total fertility rate | |
| | Males | | Females | | | |
	North	South	North	South	North	South
2000	59.0	64.0	58.0	67.0	4.40	2.30
2005	60.4	65.0	59.8	68.2	4.00	2.10
2010	61.8	66.0	61.6	69.3	3.60	1.90
2015	63.2	67.0	63.4	70.5	3.30	1.80
2020	64.6	68.5	65.2	72.3	3.00	1.80
2025	66.0	70.0	67.0	74.0	2.70	1.80

Note: Bihar, Jharkhand, Orissa, Chhatisgarh, Madhya Pradesh, Rajasthan, Uttar Pradesh and Uttaranchal are included in the North, while Andhra Pradesh, Karnataka, Tamil Nadu and Kerala are included in the South.

It is also appropriate here to mention briefly couple of other assumptions made while projecting the population to the year 2025. For converting the assumptions on life expectancies to age-specific mortality rates, a model life table system is required. As India's mortality patterns by age appear to be getting closer to Coale and Demeny's West model system (see Bhat 1998), this model system has been assumed to be applicable to all-India during the entire projection period. The same system has also been used in the projections for south India. However, for north India the South model life table system has been preferred, as the region has relatively higher levels of under-5 mortality for its level of life expectancy at birth. With respect to age pattern of fertility, it has been assumed that child bearing would be increasing concentrated at ages under 30, especially in the age group 20-24.

Another assumption of some consequence is about the sex ratio at birth. A sex ratio at birth of 105 males per 100 females is normally assumed. But the deteriorating juvenile sex ratios suggest that the sex ratio at birth may have gone up by couple of percentage points owing to sex-selective abortions in some parts of India. Accordingly, a sex ratio at birth of 107 has been used in the case all-India, while it is assumed to be 108 in the north and 106 in the south. It is possible that the sex ratio at birth would rise further, but it may partially be compensated by improvements in sex-differentials in mortality in childhood ages. Therefore no further change in this ratio has been assumed during the projection period.

Projection Results for All-India

Population projections were carried out using the DEMPROJ computer programme of the Futures Group International. Tables 5 and 6 show the key results of population projections for India under the optimistic and realistic scenarios. Interestingly, both the variants imply that India's population would be about 1.4 billion in the year 2025 (1380 million under the optimistic scenario and 1403 million under the realistic scenario). Indeed, though based on very different assumptions on mortality and fertility, several recent projections made for India have arrived at roughly the same population estimate for 2025:

Author/organisation	Population in 2025 (millions)
World Bank 1994	1,370
United Nations 1998	1,330
Visaria and Bhat, 1999	1,393
Population Foundation, 1999	1,400
Dyson and Hanchate, 2000	1,381

The main reason for this remarkable agreement on the likely size of India's population in the year 2025 is that differences in the assumptions regarding mortality and fertility levels tend to cancel themselves out in their effects on the growth rate of population. The optimists assume both fertility and mortality levels to fall sharply while pessimists assume both to decline slowly. However, when projected population totals for different age segments are compared, differences would start to show up. For example, in our optimistic and pessimistic scenarios, the projected population in the school-going age of 6-14 for the year 2025 is, respectively, 197 and 222 million - a difference of over 12 percent as compared to less than 2 percent in the total population.

As per our projection results, the sex ratio of population (females per 1000 males) would marginally increase from 932 in 2000 to 952-954 in 2025. Thus a reversal of the historical trend of falling sex ratio is expected in the twenty-first century. The projected improvement in the sex ratio is directly attributable to the assumption that by 2025, the expectation of life at birth for females would be higher than for males by 4 years. While this seems a fair assumption to make, it is not altogether clear what would happen to the sex ratio at birth. There is some fragmentary evidence to suggest that son preference is actually falling in India, but its manifestation in the sex ratios is on the rise because of the increased access to the technology of sex-selective abortion. One could expect the effect of the diffusion of this technology to be a temporary phenomenon.

Table 5. Key results of population projection for India under the optimistic scenario, 2000-2025

Demographic Indicators	2000	2005	2010	2015	2020	2025
Total population (millions)	1010	1089	1159	1229	1305	1380
Population density (per sq. km)	307	331	353	374	397	420
Females per 1000 males	932	935	938	941	945	950
Growth rate for preceding 5-years (%):						
Total population	1.82	1.52	1.25	1.17	1.19	1.12
Population age 15-64 years	2.05	2.23	2.19	1.97	1.50	1.01
Percent 0-14 years	35.7	33.3	29.9	26.7	25.0	24.5
Percent 15-64 years	59.8	62.0	65.0	67.7	68.7	68.3
Percent 65+ years	4.5	4.8	5.1	5.6	6.3	7.2
Median age	23	24	25	27	29	30
Dependency ratio (percent):						
Child (0-14)	60	54	46	40	36	36
Elderly (65+)	8	8	8	8	9	10
Total	67	61	54	48	46	46
Population 6-14 years (millions)	210	220	218	201	190	197
Crude birth rate (per 1000)	26.5	22.1	17.9	18.5	18.4	17.2
Crude death rate (per 1000)	9.9	8.1	6.7	6.7	6.6	6.6
Crude growth rate (per 1000)	16.6	14.0	11.2	11.8	11.8	10.6
Net reproduction rate	1.42	1.21	0.96	0.97	0.98	0.99

Table 6. Key results of population projection for India under the realistic scenario, 2000-2025

Demographic Indicators	2000	2005	2010	2015	2020	2025

Total population (millions)	1010	1093	1175	1256	1331	1403
Population density (per sq. km)	307	332	357	382	405	427
Females per 1000 males	932	935	940	945	950	954
Growth rate for preceding 5-years (%):						
Total population	1.82	1.58	1.45	1.33	1.17	1.05
Population age 15-64 years	2.05	2.17	2.07	1.82	1.51	1.32
Percent 0-14 years	35.7	33.7	31.5	29.6	28.0	26.5
Percent 15-64 years	59.8	61.6	63.6	65.2	66.3	67.2
Percent 65+ years	4.5	4.7	4.9	5.2	5.7	6.4
Median age	23	23	24	26	27	29
Dependency ratio (percent):						
Child (0-14)	60	55	50	45	42	39
Elderly (65+)	8	8	8	8	9	9
Total	67	62	57	53	51	49
Population 6-14 years (millions)	210	219	220	220	224	224
Crude birth rate (per 1000)	26.5	24.5	23.0	21.1	19.4	18.1
Crude death rate (per 1000)	9.8	9.4	9.1	8.8	8.3	8.0
Crude growth rate (per 1000)	16.7	15.1	13.9	12.3	11.1	10.1
Net reproduction rate	1.42	1.32	1.22	1.11	1.04	1.01

We can be more certain of the changes in the age structure of the population. Under the realistic scenario, between 2000 and 2025, the percentage of population under 15 years of age is expected to fall from 36 to 27 percent. Actually, the population under 15 years is expected to increase only marginally from 360 to 371 million in 25 years (see Figure 1). On the other hand, the adult population in the age group 15-64 is expected rise from 604 million in 2000 to 942 million in 2025. i.e., from 60 percent to 67 percent of the total population. The elderly population is also expected to rise sharply from 45 to 89 million, and their share in the total population would rise from 4.5 to 6.4 percent. As a consequence of these age structural changes, the age-dependency ratio (ratio of non-working age population to working age population) is expected to fall from 67 percent in 2000 to 46 percent in 2025.

The age-structural changes are best studied through population pyramids. These are horizontal bar charts showing the male and female population at different age groups, in opposing direction. Figure 2 shows the shape of India's population pyramid in 2000. As on this date, older cohorts were invariably smaller than younger cohorts, the diagram truly has the shape of a pyramid. Figures 3 and 4 show the population pyramid in 2025 as per the two alternate scenarios. The population pyramid in 2025 is expected to assume a tower-like shape. The base of the pyramid would narrow down while the middle would be broadened. The pyramid under the optimistic scenario would show the 'scars' of the spectacular fall in fertility assumed to take place during 2000-10. The implications of these dramatic changes in the age structure of the population to the economy and society will be discussed after considering the regional differences.

Regional Scenario

The existence two different demographic regimes in north and south India dictates that regional differences be examined at some length. The main results of the regional projections are presented in Tables 7 and 8. According to our projections, the population of the northern region would rise from 450 million in 2000 to nearly 700 million in 2025, and it share of India's population would go up from 45 percent to 50 percent. On the other hand, in the southern region the population would increase only marginally from 220 million in 2000 to 265 million in 2025. In the meanwhile, its share of India's population would decline from 22 percent to 19 percent.

The average population density per square kilometre in the year 2000 was 319 in the north and

346 in the south. While the former is expected to increase to 496 by 2025, the latter is expected to increase only to 417 by this date. Also to be noted is that by the year 2025, population of north India would still be growing at a rate of 1.4 percent per annum while the growth rate in south India would have fallen to 0.5 percent. The advantages the south would derive from its early demographic transition are thus obvious. But the regional demographic imbalances may induce large population movements from the north to the south. It remains to be seen whether this would lead to a serious regional conflict.

By the year 2025 the population of south India would have begun to 'grey'. The median age of the population would have gone up from 26 years in 2000 to 34 years in 2025, and 9 percent of the population would be of age 65 years and over. On the other hand, the north India would have a relatively young population with a median age of 26 and only 4 percent of the population aged 65 and over. The population pyramids shown in Figures 5 and 6 bring out the expected differences very clearly.

Table 7. Key results of population projection for north India, 2000-2025

Demographic Indicators	2000	2005	2010	2015	2020	2025
Total population (millions)	450	498	547	597	649	699
Population density (per sq. km)	319	353	388	424	461	496
Share of All-India population (%)	45	46	47	48	49	50
Females per 1000 males	924	920	918	917	918	919
Growth rate for preceding 5-years (%):						
Total population	2.17	2.02	1.88	1.78	1.66	1.47
Population age 15-64 years	2.23	2.45	2.39	2.24	2.04	1.82
Percent 0-14 years	38.1	36.6	34.9	33.3	31.8	30.2
Percent 15-64 years	57.6	58.9	60.4	61.8	63.0	64.1
Percent 65+ years	4.3	4.5	4.7	4.9	5.2	5.7
Median age	21	22	23	24	25	26
Dependency ratio (percent):						
Child (0-14)	66	62	58	54	50	47
Elderly (65+)	8	8	8	8	8	9
Total	74	70	66	62	59	56
Population 6-14 years (millions)	97	105	111	115	120	125
Crude birth rate (per 1000)	32.4	29.9	27.8	26.4	24.4	21.9
Crude death rate (per 1000)	11.3	10.5	9.7	9.2	8.6	8.1
Crude growth rate (per 1000)	21.1	19.4	18.1	17.2	15.8	13.8
Net reproduction rate	1.68	1.57	1.45	1.35	1.26	1.15

Table 8. Key results of population projection for south India, 2000-2025

Demographic Indicators	2000	2005	2010	2015	2020	2025
Total population (millions)	220	232	242	251	258	265
Population density (per sq. km)	346	365	381	394	406	417
Share of All-India population (%)	22	21	21	20	19	19
Females per 1000 males	988	987	987	988	989	991
Growth rate for preceding 5-years (%):						
Total population	1.26	1.05	0.86	0.70	0.61	0.53
Population age 15-64 years	1.79	1.67	1.39	1.15	0.83	0.55
Percent 0-14 years	30.0	27.5	25.3	23.2	21.7	20.5
Percent 15-64 years	64.4	66.4	68.2	69.8	70.5	70.6
Percent 65+ years	5.6	6.0	6.5	7.0	7.8	8.9
Median age	26	27	29	31	32	34
Dependency ratio (percent):						
Child (0-14)	47	41	37	33	31	29
Elderly (65+)	9	9	9	10	11	13
Total	55	51	47	43	42	42
Population 6-14 years (millions)	40	39	38	36	34	33
Crude birth rate (per 1000)	20.7	18.3	16.4	15.1	14.5	13.7
Crude death rate (per 1000)	8.6	8.6	8.6	8.7	8.7	8.8
Crude growth rate (per 1000)	12.1	9.7	7.8	6.4	5.8	4.9
Net reproduction rate	1.03	0.95	0.87	0.83	0.84	0.85

Demographic Bonus: When and Where?

Two Harvard economists have recently revived an earlier thesis of Coale and Hoover (1958) that demographic transition could contribute significantly to economic growth (Bloom and Williamson 1998). Discussing in the context of East Asia's economic miracle, they have noted that working-age population there grew at a much faster rate than the dependent population during 1965-90, which provided an opportunity for raising the saving rate and expanding the productive capacity of workers. Population projection can help to pinpoint when such a demographic bonus period would occur during the transition.

Figure 7 shows the plot of the difference between the projected growth rate of working-age population and that of the total population under the two scenarios. From the graphs, it is clear that during 2000-20 growth rate of working age population would exceed the growth rate of total population. The demographic bonus would be larger in the case of optimistic scenario, but it would be of shorter duration than that of the more realistic scenario where the pace of demographic change is slower. Figure 8 shows the similar plot for north and south India. As the figure shows, south India had already entered the demographic bonus phase by the 1990s. Perhaps the economic buoyancy being currently seen in south India is a reflection of its favourable demographic conditions. But it is expected to slip out of this phase in 15-years time. On the other hand, north will enter this phase in the next 10 years, and remain in this phase until 2025.

Thus during the next 10-20 years demographic conditions would be favourable to economic growth in India. However, as Bloom and Williamson note, their effect is by no means inevitable. To realise the effect, it necessarily to support it with appropriate economic, social and political institutions and policies. Otherwise it would only lead to higher levels of unemployment.

Urbanisation

Urban growth is likely to be one of the major concerns of the twenty-first century. Despite rapidly increasing population pressure on arable land and planning for industrialization, only 26 percent of India's population was living in urban areas in 1991. The results of the 2001 Census on the rate of urbanization are yet to be known. The census data for the period 1961-91 suggest that the difference in the growth rates of urban and rural population has remained constant at about 1.5 percent. If the same difference were to continue, 36 percent of India's population would be living in urban area by 2025. However, if the growth difference rises to 2.0 percent in the coming years, 40 percent of the population would be urban by 2025.

The past trends indicate a continued process of concentration of urban population in cities with a population of 100,000 or more (65 percent by 1991). Such a trend is likely to continue, and the pressure on urban amenities can be expected to accentuate. Owing to its demographic advantage, and rapid strides made in levels of literacy and education, south India is poised for faster rate of urbanization than north India. If this relieves pressure on arable land in south India, it may give boost migration of labourers from north India to farmlands of the south.

Conclusion

The population of India is expected to be around 1.4 billion in 2025. Interestingly, the population size is expected to reach this mark whether India attains the goals of the National Population Policy for 2010 or not. By 2025, India's population would almost be equal to that of China's. But India's population would still be growing at a rate of one percent per annum, even though the level of fertility required for long run population stabilization would have been achieved by then.

As much as 63 percent of India's population growth in the first quarter of twenty-first century would be in the northern states of Uttar Pradesh, Bihar, Madhya Pradesh, Rajasthan, Orissa, Jharkhand, Chhatisgarh and Uttaranchal. Consequently, their share of India's population is expected to rise from 45 to 50 percent. The population in this region would still be growing at about 1.4 percent per annum.

On the other hand, south India would have completed the demographic transition, and the growth rate of native population would be extremely moderate, at about 0.5 percent per annum. The population there would have also begun to 'age', as nearly 10 percent of the population would be aged 65 years or more. The demographic imbalances may have begun to induce significant immigration flows from the north.

By 2025, India would have begun to come out of the 'demographic bonus' phase where the growth rate of working-age population exceeds that of total population. India is expected to go through this phase during 2000-20. This period is expected to provide a window of opportunities to raise the productivity of labour. If appropriate policies were pursued to realize the demographic gift, India would be sitting pretty in the year 2025. Otherwise, higher levels of unemployment and its associated social evils would be on the cards.

By 2025, about 40 percent of India's population is expected to be urban. This would certainly accentuate the already existing pressure on urban amenities. But, if India finds a way of harnessing the demographic gift, urban centres would be full of buoyancy rather than despair.

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Figure 7:

`Demographic bonus'reflected in the difference between the growth rate of working-age population (15-64) and growth rate of total population under two scenarios, India 1995-2025
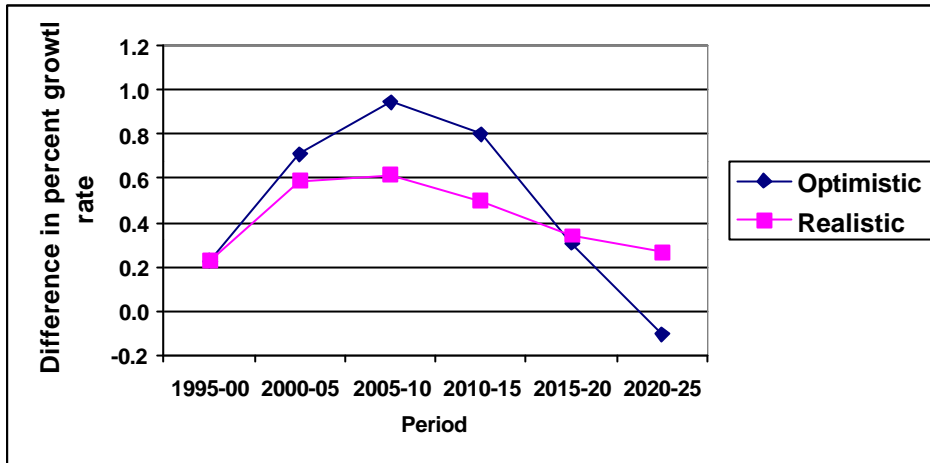

Figure 6. Projected propulation pyramid of south India, year 2025
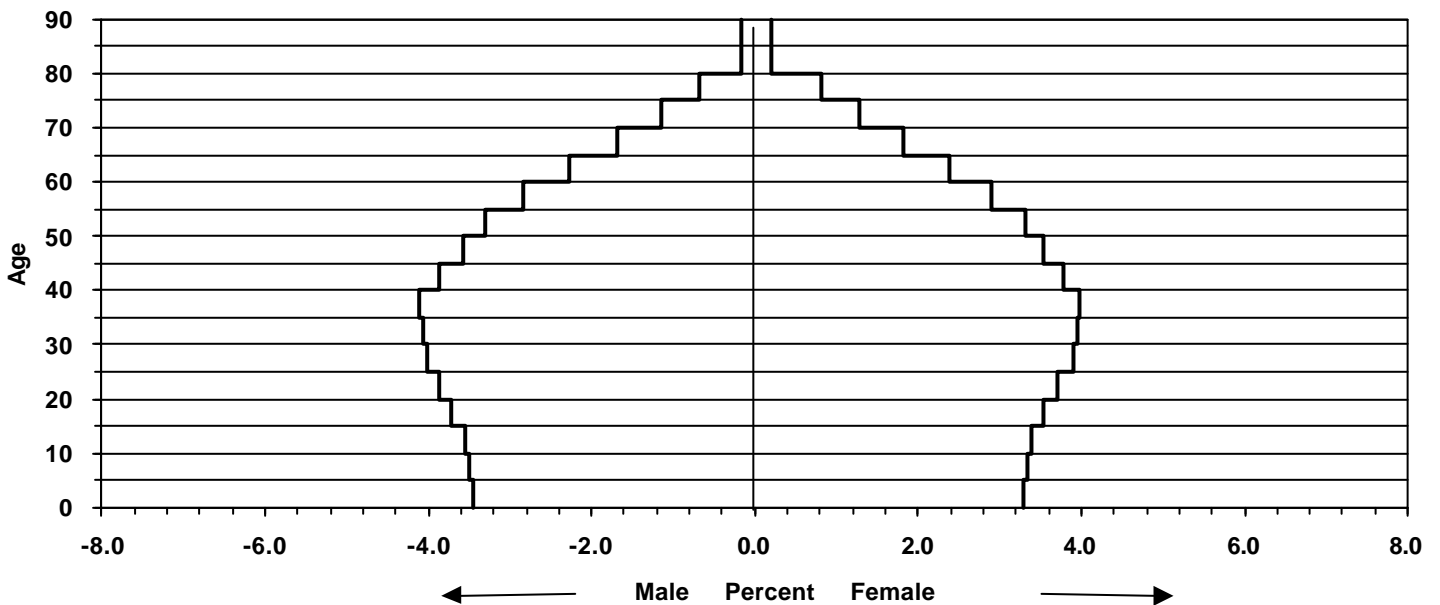### SOUTH INDIA : 2025
(percent of total population)

Figure : 3
Projected Population Pyramid of India Under Optimistic Scenario (year 2025)
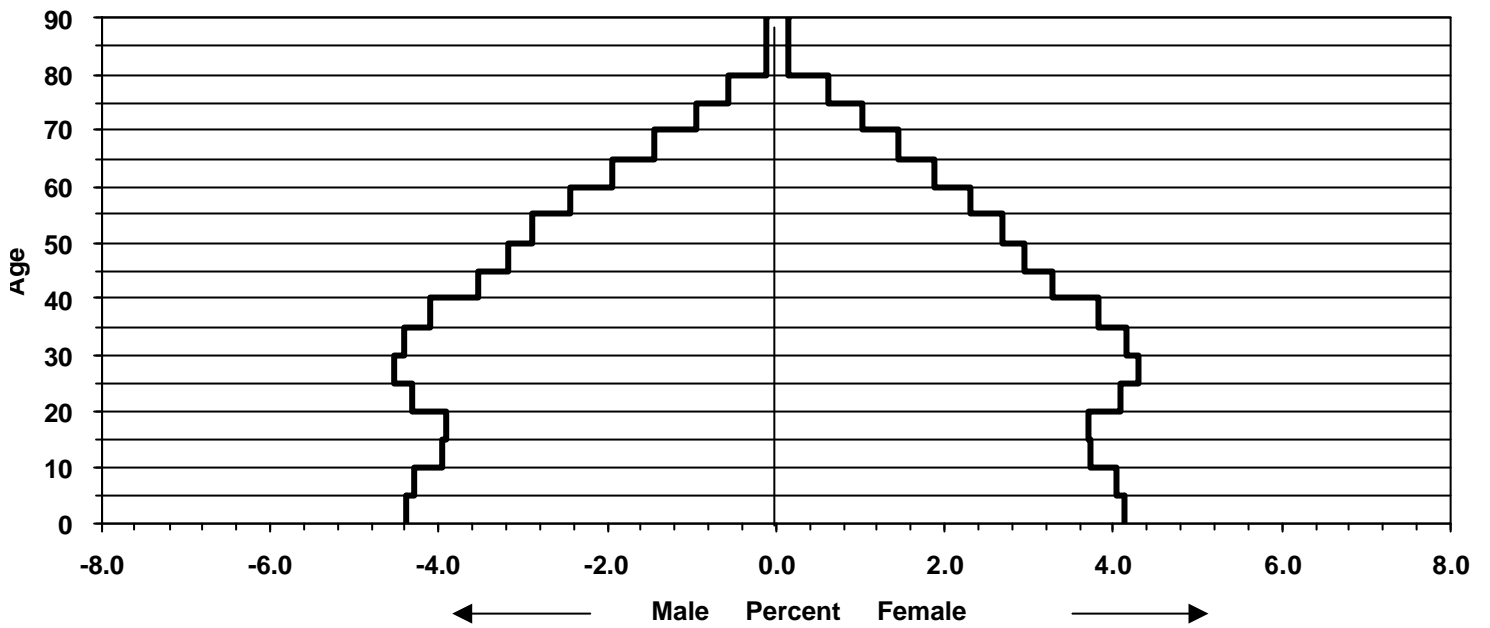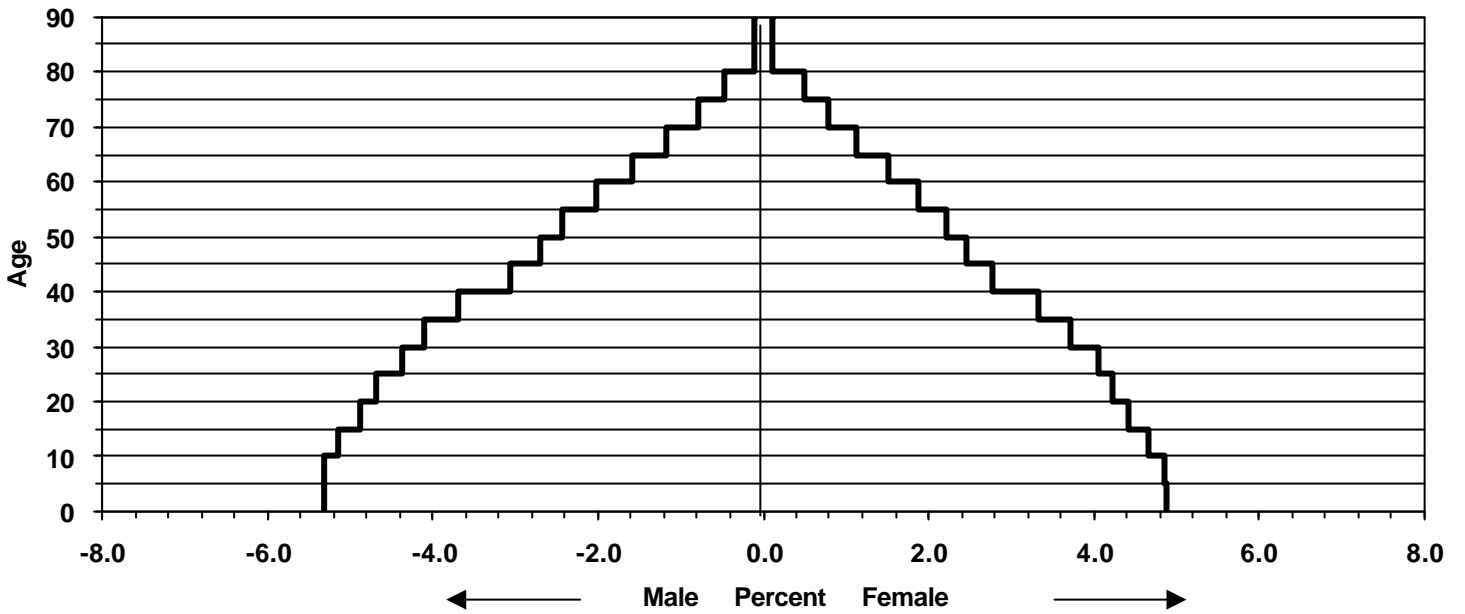**INDIA : 2025, Optimistic**
(percent of total population)

Figure 4.
Projected population pyramid of India under realistic scenario, year 2025
INDIA : 2025, Realistic
(percent of total population)

13
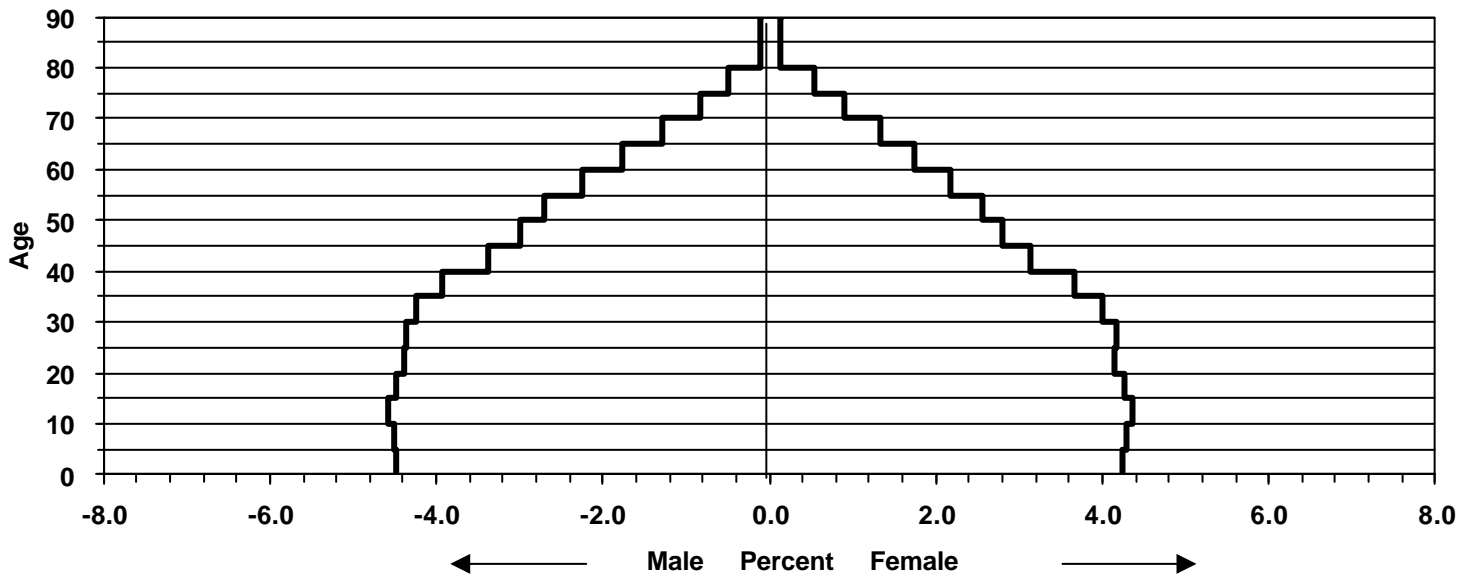
Figure 5.
Projected population pyramid of north India, year 2025
NORTH INDIA : 2025
(percent of total population)

Male   Percent   Female

Figure : 8

**`Demographic bonus'reflected in the difference between the growth
rate of working-age population (15-64) and growth
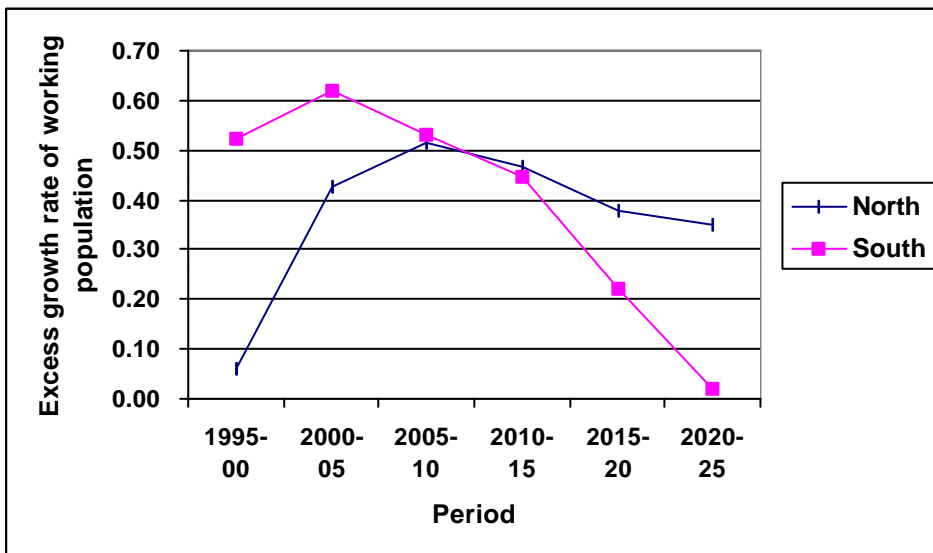rate of total population, North and South India ,1995-2025**

Figure : 2
Population Pyramid of India for Year 2000
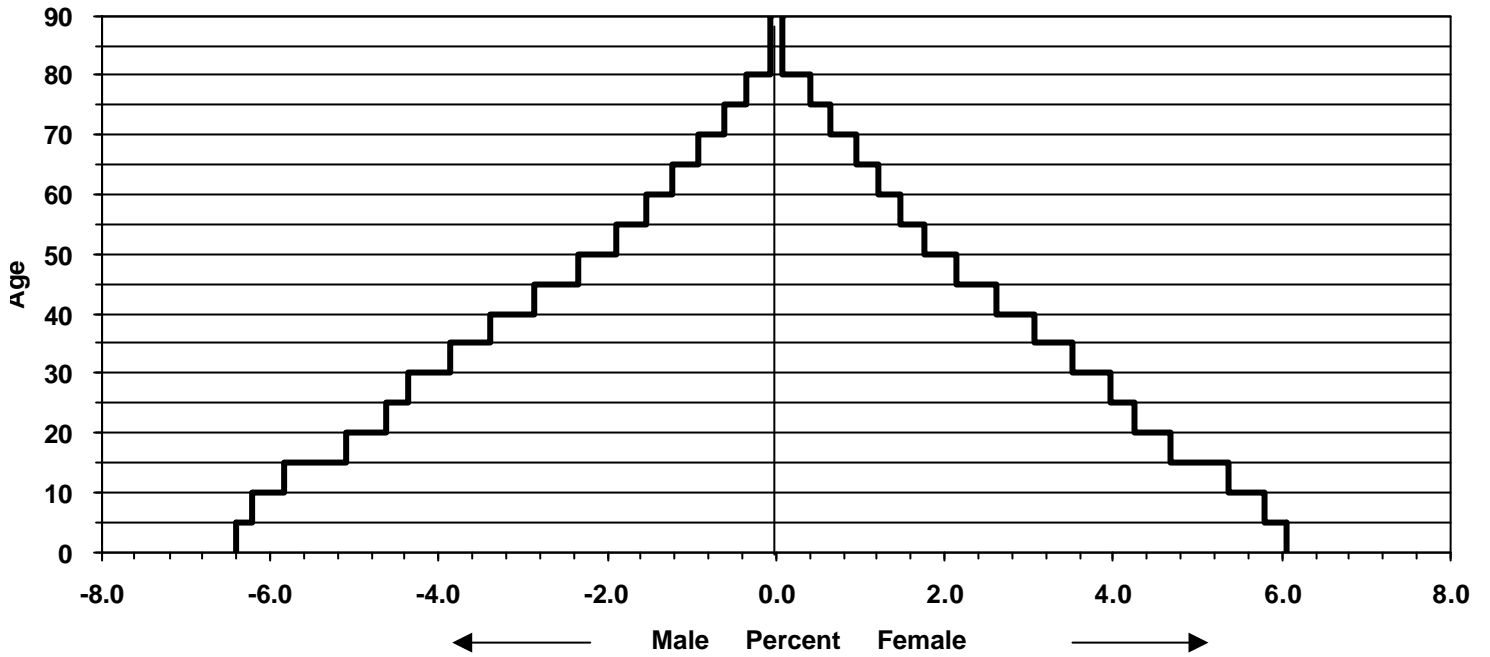**(percent of total population)**

Figure : 1

Projected Population of India for Broad Age Groups
Under   The Realistic Scenario, 2000-25