To **:** http://iussp2005.princeton.edu

Subject : *Completed paper for Session 605. IUSSP XXV Population Conference.*

Dear Sir/Madam,

Enclosed please find my completed paper on "**The Demographic Dividend for India : Prospects and Policies**" for the Session 605 on 'Window of opportunity **:** The demographic dividend (Organizer : Dr. Xizhe Peng).

Please also note that the revised paper abstract for publication was also sent to you long before the deadline of 31 March 2005.

With ward regards,

Yours faithfully,

Samir Guha Roy

E-mail : samirgroy@yahoo.com

Session 605 : The demographic dividend for India : Prospects and Policies

Completed paper by **:**

Prof. Samir Guha Roy

16/4 Bachaspatipara Road

Kolkata – 700 076, India

E-mail **:** samirgroy@yahoo.com

Intrtoduction

In a country of a billion plus, official policy is obsessed with fertility. Yet, the age structure changes estimated for India are not as dramatic as those estimated for East Asia, but they nonetheless present substantial challenges. Upto the mid – 20th century the population of India did not experience much changes in age structure. The pre-1931 period particularly has often been afflicted by famines and epidemics and as a result of which mortality was at its peak; it was any after this period that India had been subjected to one-sided 'demographic modernization', which was virtually confined to death rates. The effect of declining fertility was felt for the first time only in the 1971-1981 decade. However, the full effects of the decline in fertility have yet to be transmitted through the age structure. But due to the ongoing demographic transition and attainment of replacement level fertility in some of the States (that is, Provinces) of India, changes in age structure is underway, and can significantly promote national economic performance. This is because a relatively large share of the population has reached the prime ages for working and the nation may experience a boost to income growth. The relative size of working age population is one factor in the level of income per head which can be provided by the economy (Durand, 1975). India's per capita income rose 7.1 per cent in real terms in 2003-2004 when calculated at 1993-1994 prices.

Adjusted age distribution

The true sex-age structure of a population at the current date is the result of the past trend of fertility, mortality and migration. However, any irregular fluctuations in the age

distribution cannot always be explained by the past variations in these factors. Indian age returns often suffer from gross errors, and the population censuses have the typical nature of biases and errors, which are embedded in the culture. The smaller values obtained by us for sex ratio –, age ratio – and joint – scores, however, imply an overall improved reporting in the recent censuses of India (Guha Roy, 1993).

To understand the dynamics of the population better, we developed a transitional age structure model (Guha Roy, 1986, 1993) to adjust the census distributions for India. The logic of the model is derived from the relationship existing between successive ages of a closed population growing at an approximately constant rate. The population P_{x+t} aged $x+t$, with a steady growth rate r and survival factors ${}_tp_{x+t}$ from age x to $x+t$, is given by

$$P_{x+t} = P_x \exp(-rt)\,{}_tp_x$$

or, $$P_x = P_0 \exp(-rt)\,{}_xp_0 \quad ,$$

Since the population aged x originates from a birth cohort $\exp(-rx)$ times smaller than the cohort from which P_0 originates.

The survival factor is

$${}_xP_0 = \exp\int_0^x \mu_x dx$$

where μ_x is the force of mortality age x. If variations over time are introduced in the growth and survivorship functions, as occurs in a transitional situation, so that $r(t)$ and $\mu(t)$ become functions of t,

$$P_x = P_0 \exp\left[-\int_0^x (x+\mu_x)dx\right].$$

When the birth rate is constant and growth rates are known as discrete intervals, say from a series of censuses, an approximate formulation of the above relationship may be applied. Assuming that growth rates and mortality rates did not change during the last decennium and kept steady respectively at the average r' and L' life table values, we have approximately.

$${}_5P_5 = {}_5P_0 \exp[-2.5r']\,[{}_5L'_5 / {}_5L'_0].$$

Similarly, if the growth rates and life tables in the previous decennium were written r'' and L'', then

$$ {}_5P_{10} = {}_5P_0 \exp[-10r' + 2.5r]\left[{}_5L'_{10} / {}_5L'_5\right]\left[{}_5L''_5 / {}_5L''_0\right] $$

and so on. The approximate transitional model age distribution was built up in this manner. The transitional model will still differ from reality because major cyclical variations in population movements are left out of account. Such major variations did occur in India. In view of the existence of under enumeration and age mis-statements, it is clear that it would be difficult to measure the effect of these movements. But we feel that it would be more realistic to take account of these changes, and make a token allowance for them, rather than ignore them. Some of the adjusted age distributions are shown in Table 1. The proportionate distributions clearly show the dynamics of changes in the population composition.

Table 1 : Adjusted population distributions per 100 of each sex : India, 1980, 1990 and 2000

Age group	1980		1990		2000	
	Male	Female	Male	Female	Male	Female
0 – 4	14.0	14.1	13.4	13.5	11.3	11.3
5 – 9	12.9	12.8	12.4	12.3	11.3	11.3
10 – 14	11.7	11.5	10.7	10.7	10.8	10.7
0 – 14	**38.6**	**38.4**	**36.5**	**36.5**	**33.4**	**33.3**
15 – 19	10.4	10.3	10.2	9.9	10.1	10.0
20 – 24	9.2	8.9	9.4	9.1	8.9	8.7
25 – 29	7.7	7.5	8.3	8.1	8.4	8.1
30 – 34	6.3	6.4	7.3	7.1	7.7	7.4
35 – 39	5.4	5.6	6.1	5.9	6.8	6.6
40 – 44	4.9	5.0	4.9	5.0	5.9	5.7
45 – 49	4.4	4.4	4.1	4.3	4.9	4.8
50 – 54	3.7	3.7	3.6	3.8	3.8	3.9
55 – 59	3.0	3.1	3.1	3.3	3.1	3.3
15 – 59	**55.0**	**54.9**	**57.0**	**56.5**	**59.6**	**58.5**
60 – 64	2.4	2.5	2.4	2.6	2.5	2.8
65 – 69	1.8	1.9	1.8	1.9	1.9	2.2
70 – 74	1.2	1.2	1.2	1.3	1.3	1.6
75 – 79	0.7	0.7	0.7	0.8	0.8	0.9
80 +	0.3	0.4	0.4	0.5	0.5	0.7
60 +	**6.4**	**6.7**	**6.5**	**7.1**	**7.0**	**8.2**
All ages	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Dynamic of changes in age structure

The age structure of India's population in 2000 is typical of a country on the verge of completing its third stage of demographic transition (fertility declining faster than mortality). There has been a progressive decrease (that is, narrowing of the earlier broad base of age pyramid) in the proportions of children below age 15 from over 38 per cent in 1980 to 33 per cent in 2000. This implies a moderate fertility decline during this period and indicates that 'population momentum', reflecting the influence of the initial age distribution on population dynamics (Singer, 2002), also accounts for some amount of India's current population growth. The phenomenon occurs even after reaching replacement level fertility as the number of women entering reproductive ages is temporarily inflated (Table 3 later).

Another feature of age structure is often the 'youth bulge', defined as a situation in which 20 percent or more of a population is in the age group 15 to 24 years (Huntington, 1996). In the period since 1980, the share of India's youth population in the total population has been slightly less than cut-off proportion of 20 per cent. The projection suggests further decline in the proportion of youth population in the next decades. This is the result of a transition from a high to low fertility about a decade and a half back. Proportionately speaking India did not also seriously experience youth bulge in this period due to international migration, because the volume of migrant young adults was insignificant in relation to total national population. Moreover, the youth bulge tends to be large in a situations of rapid transition (as in China and other East and South-East Asian countries). But India's fertility decline from a very high level to a lower level has been slow. The country thus did not experience significantly the constraining effects of this demographic phenomenon. However, because of large population base for India, the youth bulge in absolute terms cannot be undermined. The youth population (15 – 24) of the country was estimated to be 190 million in 2000, which was not much below the national population of 212 million in Indonesia. A comparison in this respect between India and China is interesting (Table 2).

Table 2 : Population age 15 – 24 and its proportion to total population **:** India and China, 1960 – 2040.

Year	India		China	
	Population (1,000s)	**Proportion (%)**	**Population (1,000s)**	**Proportion (%)**
1960	80,561	18.2	105,652	16.1
1980	133,640	19.4	195,049	19.5
2000	190,107	18.8	198,945	15.6
2020	224,702	17.4	183,701	12.7
2040	206,690	13.7	174,789	11.7

Source : United Nations, 2001. **World Population Prospects : The 2000 revision, New York.**

Table 3 : Population trend in India : 1980 – 2050

A. Population Structure					
Indicator	**1980**	**1990**	**2000**	**2025**	**2050**
Total Population (million)	688.9	850.8	1013.7	1330.4	1528.9
% age 0 – 14	38.5	36.4	33.3	23.0	19.6
% age 15 – 59	55.0	56.7	59.1	64.4	59.2
% age 60 +	6.5	6.9	7.6	12.6	21.2
Dependency ratio (%) **:**					
Total	81.9	76.3	69.3	55.4	68.8
Young (0 – 14)	70.1	64.2	56.4	35.8	33.0
Old (60 +)	11.8	12.1	12.9	19.6	35.8
Reproductive stock **:**					
% women age 15 – 49	48.1	49.4	51.3	52.9	45.1
Sex ratio (per 100 females)	107.4	107.0	106.7	104.5	101.8
Median age (years)	20.6	21.9	23.8	31.9	38.2
B. Demographic Parameters					
Indicator	**1980 – 1985**	**1990 – 1995**	**2000 – 2005**	**2020 – 2025**	**2040 – 2050**
Population (exponential) growth rate (%)	2.17	1.86	1.41	0.90	0.41
Crude birth rate	33.8	28.7	22.6	16.8	13.8
Crude death rate	12.8	9.9	8.4	7.7	9.6
Total fertility rate (TFR)	4.5	3.6	2.7	2.1*	2.1
Infant mortality rate	106	78	65	40	27
Gross reproduction rate	2.2	1.7	1.3	1.0	1.0
Net reproduction rate	1.67	1.44	1.17	0.96	0.98
Life expectancy at birth **:**					
Male	55.1	60.3	63.5	68.8	72.7
Female	54.8	60.5	64.9	72.1	76.6

***** TFR will attain replacement level fertility of 2.1 by 2010 – 2015.

Source : United Nations, 1999.

The widely used age classification divides the population into three group – young dependents at ages 0 to 14, the working age population at ages 15 to 59, and old dependents at ages 60 and above. As mortality and fertility rates decline, the proportions in these three age segments change. Table 3 shows that the proportion of young dependents is projected to drop sharply, from 33 to about 20 per cent between 2000 and 2050, while the proportion of old dependents is projected to rise from about 8 to 21 per cent. The share of working age population in relation to total population will continue to rise and attain its peak in 2025.

A major consequence of changes in the population age structure is the change in the balance between the working age population and the populations in dependent ages. During the period 2025, which corresponds to intermediate stage of demographic transition in India, the productive population expands relative to the dependent populations, opening an 'window of opportunity – the demographic dividend', because money that would otherwise be spent supporting dependents can be saved and invested, providing an impetus to economic development (East-West Center, 2002). However, the size of the labour force is not necessarily independent of the conditions of employment opportunity. Another aspect of note is that the decline in child population not only takes away human capital needed to sustain an aging population, but having fewer children diminishes the quality of life. And with numbers shrinking, schools are being forced to shut down (Timothy Egan, 2005).

Demographic measurements of dependency

As is well known, the extent of burden the working age population bears is indexed by 'dependency ratio', which is of three kinds – 'young', 'old' and 'total'. The ratios to the working age population of the number of children (age 0 – 14) and the numbers of elderly (age 60 +) define respectively the first two indices, and the sum of these two indices defines the last one. It is an approximation of the average number of dependents that a working age person must support. The trends of the young and old dependency ratios over selected years in the period between 1980 and 2050 are shown in Table 3.

The overall dependency ratio is projected to fall from over 69 per cent to 55 per cent between 2000 and 2025, confounding the sharp decline from 56 to 36 per cent in the proportion of young dependents, and a sharp increase from 13 to 20 per cent in the proportion of old dependents. This situation, however, is transitory and the temporary dip in overall dependency around 2025 provides a 'demographic dividend'. This is

potentially in a favourable position as regards economic growth, because the added productivity of the relatively large working age population will contribute to higher growth rates of savings and investment if the right kind of labour market policies are in place.

Going by the Indian census data, the rural-urban differentials in the work participation rates are quite significant, the load borne being more on the former than on the latter population. But the demographic interpretation of dependency, which is based on population age structure, is at variance to economic reality according to which the older populations in the countryside are considerably engaged in some kind of gainful work and therefore less dependent than their urban counterpart. The rural-urban differentials of work participation rates are shown in Table 4.

Table 4 : Rural-urban differentials of work participation rates **:** India, 1991 and 2001.

Sector	**Sex**	**Work Participation Rate (%)**	
		1991	**2001**
Rural	Males	52.6	52.4
	Females	26.8	31.0
	Persons	40.1	42.0
Urban	Males	48.9	50.8
	Females	9.2	11.6
	Persons	30.2	32.2
Total	Males	51.6	51.9
	Females	22.2	25.7
	Persons	37.5	39.3

Source : Census of India, 1991 and 2001.

Based on census approach, the 'work participation rate' is defined as the number of workers (both main and marginal workers) per 100 population, a 'worker' being considered as a person who is engaged in an economically productive work. Though the participation rate of old people (mostly 'young old' rather than 'old old') does neither

throw light on their income adequacy and financial autonomy nor contribute much to total participation rate, the degree of involvement of the aged males in gainful work is no way negligible. After the adoption of Structural Adjustment Policy (SAP) in 1991, the government policies promote early retirement (before 60 or 58 years). Despite claims to the contrary, there is no firm evidence that early retirement increases job opportunities for the young (East-West Center, 2002). In the next few decades, India is projected to experience not only a sharp decline in the proportion to young dependents but also to bear less economic proportion of young dependents but also to bear less economic burden for older population because of their activity status. The country may thus derive maximum 'demographic bonus' around 2025 in terms of savings and investment. The mention of a few more features for India is in order. A large number of working age population work in unorganised sector in the country. They do not enjoy the benefit of pension, provident fund, gratuity etc. as the people in the organised sector of the economy. As a result they have no savings for the future. Since every rural poor, particularly, young or old, has to work for subsistence, the work participation rate in the villages has been higher than that in town or cities. It is no wonder that the participation in the labour force by the elderly women is low, since essential household work (unpaid) such as cooking, taking care of grandchildren, looking after livestock, etc. claim priority over outside work for wages and salaries. However, there has been greater participation (may be part time) of women in the labour force in recent times (Table 4 for broad indication).

Growth of the potential labour force

Since an economy depends on its labour force, so it depends largely on the growth of those people who generally are in the age bracket 15-59. Though children and old people are most often supported by the working age population, the children in agricultural societies (agriculture contributes nearly one-fourth of the GDP **:** Reserve Bank of India, 1999) provide a lot of help to their parents. It should be noted that about half of the world's child labour is in India. The strong prevalence of child labour makes the burden of dependency much lighter than is assumed. As mentioned above, the older people in the dominant rural areas of the country continue to work upto an advanced age or so long as they are physically fit for work. The increased participation of women in the labour force also benefited the economy. The economy may thus enjoy gains from the combined effect of a relatively large share of the population that reach the prime ages for working and the reduced spending on dependents. Stemming from the phenomenon of

'demographic dividend' (D'Adamo, 2004) coupled with such reduced spending, savings may enjoy a boost to income group in the country.

In the context of studies of economic growth of a large number of countries across the world, Williamson (2001) concludes that 'where the growth rate of the economically active sector of the population exceeds the total population growth rate, GDP per capita growth rates are greater than when the population growth rate exceeds the growth rate of the economically active sector of the population. Further while generally growth of the working age population has had a powerful positive effect on GDP per capita growth, the growth of the total population has had a powerful negative impact.' The labour force in India grew or would grow more rapidly than the total population by an average of 34 per cent (Table 5) during 1980 – 2010. This will likely to increase per capita income. Though much behind Japan, China, Singapore and South Korea, India has currently a per capita income of $ 2,537 in purchasing power parity terms. The demographic dividend for these countries accounted for about 25 to 40 per cent of the income growth.

Table 5 : Population and labour force growth **:** Average annual growth rates in India, 1980 – 2010.

Period	Annual Growth Rate (%)		
	Population	**Potential labour force**	**Diference**
1980 – 1990	2.1	2.4	03
1990 – 2000	1.8	2.2	0.4
2000 – 2005	1.4	2.1	0.7
2005 – 2010	1.2	1.8	0.6

The emergence of substantial gap between population growth and potential labour force growth has favoured an environment for greater investment in human resources.

Expansion of the reproductive – age women

In India the demographic transition has been slow but steady. The population is projected to reach replacement level fertility of 2.1 children per woman during 2010 – 2015, but it is feared that population will grow (United Nations' medium – variant projection) even then by 22 per cent between 2020 and 2050. An adverse effect, which is linked to this unwanted growth, is the increase in the reproductive stock (Table 3). The proportion of

women of age 15 – 49 will increase from 48 per cent in 1980 to about 53 per cent in 2025. As the working age population tends to reach its peak around 2025 in India, coinciding with the intermediate stage of demographic transition, the relative size of reproductive – age women population also tends to become large and creates policy concerns. These large number of women (marriage is almost universal in India) will lead to large number of births, even when fertility rate (at 2.1 children per woman) is low. The benefit of demographic dividend provided by the favourable changes in age structure may not thus be fully realised. This aspect is often overlooked. The country will have to face the inevitable challenge of consequent 'population momentum' and utilize the window of opportunity during the demographic transition to rapidly achieve population stabilization and human development.

National policy goals

Successive Five Year Plans have provided the policy framework for building up nation-wide infrastructure and manpower. Government policies take not of the fact that there will be a massive increase in the population of 15 – 59 age group. The economic development as envisaged in the Five Year Plans is targeted to meet the employment challenge mainly through a sustained industrialization. The planners recognise that population stabilization is essential pre-requisite for sustainable development and to face the challenge and utilize this window of opportunity. India became the first country in the world to adopt the National Family Planning Programme in 1952. The policy focus from the beginning has been on lowering of fertility level. The policy statement, however, says that 'to wait for education and economic development to bring about a drop in fertility is not a practical solution.' The planners and policy makers thus put emphasis both on development activities and family planning programmes that are thought to be 'mutually reinforcing complements'.

The National Population Policy (NPP) 2000 put special emphasis on health and education of women and children to achieve population stabilization by 2045. The policy document opens with the statement that 'the overriding objective of economic and social development is to improve the quality of lives that people lead, to enhance their well-being, and to provide them with opportunity and choices to become productive assets in society' (Ministry of Health and Family Welfare, 2000). The other main demographic goal of the NPP is achieving the population replacement level total fertility rate (TRF) of 2.1 (or net reproduction rate of unity) by 2010 – 2015. As per the NPP document the

stable population is to be consistent with the requirements of sustainable economic growth, social development and environmental protection. In this context, the size, age structure, spatial distribution and rate of growth of the population are very important because these will decide the quantum and pattern of production, distribution and consumption of goods and services in the country.

Meeting development challenges

The current trends of changes in age structure in India provides an window of opportunity to boost standard of living. According to Mason (2003) and Bloom and Williamson (1998), the countries can reap the demographic bonus if it has proper infrastructure. As early as in 1950, the necessary planning machinery was created by the Government of India through the setting up the Planning Commission. The Commission was given comprehensive powers for deciding the overall development frame, formulation of economic policies and of programmes for different sectors of the economy. Since the adoption of the First Five Year Plan, 1951 – 1956, there have been a series of such plans. India is now in the midst of its Tenth Five Year Plan. The Planning Commission performs the basic task of working out a plan, but the final decisions in regard to the plans are taken by the National Development Council chaired by the Prime Minister (United Nations, 1982).

Initially, the Plan gave priority to the development of agriculture, and later had sought to provide a more positive thrust on speedy industralization, giving a GNP orientation of planning (Table 6).

Table 6 : Gross national product (GNP) per capita in constant 1995 U.S. dollars **:** India and China, 1960 – 1999.

Country	1960	1970	1980	1990	1999
India	160	211	229	321	448
China	96	109	167	351	755

Source : World Bank, 2001. **World Development Indicators. Washington, D.C.**

India is set to attract record foreign direct investment (FDI), at least thrice the annual flows in post-reform years (that is, after 1990s). Its total foreign investment flows in 2004 – 2005 will end up at about $ 50 billion. This is pretty close to China's $ 60 billion

inflows. Despite these indicators, it is pointless to insist that India is playing catch-up with China.

A notable achievement of the Indian economy in recent years has been the remarkable improvement in trade and balance of payments. Despite the substantial progress made in increasing agricultural and industrial productions and its achievement in information technology and in improving balance of payments situation, the unemployment issue is yet to be resolved satisfactorily. The Indian Planning Commission has however given special emphasis in its recent operational aim (vide Seventh to Tenth Five Year Plans) on employment generation for its expanding labour force mainly through industrialization, both manufacturing and small scale. Besides, the country managed to absorb substantial number of agricultural workers by expanding, though slowly, land under cultivation.

The Industrial Policy 1991 introduced a substantial programme of structural reforms for liberalization and globalization to accelerate the process of making Indian industry internationally competitive. It gives high priority to key sectors like education, health and poverty eradication; these are also crucial for accelerating the demographic transition.

There has also been a silent transformation in India's foreign transactions. The receipts categorised as 'invisibles' comprise earnings out of services exports, remittances from Indian workers, income from financial assets and earnings from foreign tourists (The Times of India, March 30, 2005). The 'invisibles' have become important for a number of factors. One of them has been structural shifts in the economy, in which services have begun driving growth. In 1991 'invisible' receipts were only 2.4 per cent of GDP. This steadily increased to 8.8 per cent by 2003 – 2004. Broad trends indicate that inward remittances from Indians located overseas have surged in response to the economic reforms since 1993. In 2003 – 2004 India was the World's leading recipient of remittances, accounting for about 20 per cent of global flows. According to the World Travel and Tourism Council, India also became the second fastest growing tourism economy in the world.

It has been 20 years since organised employment contract emerged in India. About 20 per cent of Indians are employed in organised jobs, which includes manufacturing. Another 10 to 15 per cent work in the unorganised sector **:** the entire range from retail trade to small business and domestic help. About 60 to 70 per cent of working people are supposed to be farming. It is now widely recognised in the official circle that informal sector in seen as a major absorber of increases in the work force in India. Thus the creation of employment opportunities for the expanding number of workers is multi-faceted.

Concluding remarks

India has taken large strides since 1991 with the introduction of Structural Adjustment Policy (SAP). The real boom will however begin around 2025 when India will reach the magic figure – 65 per cent of population in the working age group. The logic is simple. The more people a country has in the workforce, the greater the savings. The policymakers often encourage workers to save towards retirement. One option is to ensure that the financial institutions provide easy investment opportunities. The government – policy is to keep the rate of inflation under control so that money saved now will retain its value in the future. In India, the government jobs particularly have the compulsory provision that require workers to contribute to Provident Fund, which is a personal savings account. This Fund also earns interest given by the employer. This means that a lot more capital become available for investment, triggering the 'virtuous cycle' of more jobs, greater disposable income, enhanced savings and even fresh investment. Right now, China is enjoying the benefits of a demographic boom, and notching up a phenomenal saving rate of around 40 per cent of GDP (The Times of India, 2004). India is also steadily moving towards the desirable demographic 'bump'. The implication is that India could be the world's foremost economy within the lifetimes of most Indians alive today.

Acknowledgement

I am thankful to Dr. Xizhe Peng, Organizer, Session 605 of IUSSP XXV Population Conference and Director, Institute of Population Research, Fundan University, Shanghai for his excellent guideline for the session.

References

Bloom, David E. and Williamson, J.G., 1998. Demographic transitions and economic miracles in emerging Asia. **World Bank Economic Review**, 12 (3) **:** 419 – 56.

D'Adamo, P., 2004. Understanding the demographic dividend (http//www. developmentage way.org).

Durand, John D., 1975. The labour force is ecnomic development and demographic transition. In Leon Tabah, ed. **Population Growth and Economic Development in the Third World** – Volume I. International Union for the Scientific Study of Population, Liege (Belgium) **:** Ordina Editions.

East-West Center, 2002. **The Future of Population in Asia**. Honolulu.

Egan, Timothy, 2005. Empty cradles in vibrant cities. **The Times of India**, Kolkata, March 25.'

Guha Roy, S., 1986. **Estimation of demographic parameters for India**. Indian Statistical Institute **:** Research Monograph, Calcutta.

Guha Roy, S., 1993. Demography of China and India **:** A comparative study. In **Proceedings of the XXII IUSSP International Population Conference**, Montreal, Vol 4.

Huntington, Samuel P., 1996. **The Clash of Civilizations and the Remaking of World Order**. London **:** Touchtone Books.

Mason, A., 2003. Population change and economic development **:** What have we learnt from the East Asia experience ? **Applied Population and Policy** 1, 1 **:** 3 – 14.

Ministry of Health and Family Welfare, 2000. **National Population Policy 2000**. New Delhi **:** Department of Family Welfare.

Reserve Bank of India (RBI), 1999. **Handbook of Statistics on Indian Economy**, Mumbai **:** Charan Singh for RBI.

Singer, Max, 2002. Uncertainties in the composition of world population in the twenty – first century, **Population and Development Review**, 28 (3) **:** 539 – 548.

The Times of India, Kolkata, August 17, 2004.

The Times of India, Kolkata, March 30, 2005.

United Nations, 1982. **Population of India :** Country Monograph Series No. 10.

United Nations, 1999. **World Population Prospects** (the 1998 revision). New York **:** Population Division.

United Nations, 2001. **World Population Prospects :** The 2000 revision. New York **:** Population Division. Department of Economic and Social Affairs.

Williamson, J.G., 2001. Demographic change, economic growth, and inequality. In Birdsall, N. et al. **Population Matters**. Oxford University Press.

World Bank, 2001. **World Development Indicators**. Washington, D.C. **:** World Bank.