AGE STRUCTURAL TRANSITIONS, DEMOGRAPHIC DIVIDEND AND MILLENNIUM DEVELOPMENT GOALS IN SOUTH ASIA: OPPORTUNITIES AND CHALLENGES

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1. Introduction

Age structural transition-- a shift from young to old age structure-- occurs as societies move from a position of high mortality and fertility to a situation of low mortality and fertility. During the process of age structural transition, there will be a period of 'window of opportunity' during which child dependency ratio declines due to decline in fertility as well as increase in the working age population as children born during the high fertility regime move into working ages. If this window of opportunity is duly utilized, there is a greater potential for demographic dividend through increased savings and investment for economic growth (Lee et al. 1997; Bloom and Williamson, 1998; Pool, 2006, 2007; Mason, 2003). The first demographic dividend accrues through increase in labour force during the 'window of opportunity' if they are productively employed. The second demographic dividend is through improved health, longevity and smaller family size, which make savings easier and more attractive (Pool, 2007, Mason, 2005). If the accumulated wealth and savings are directed towards productive investments, it will contribute to higher economic growth during the period of ageing of the population. To reap benefits from the demographic window of opportunity, it is important to make appropriate investment in education and health.

The success of East Asian "miracle economies" has shifted the debate on the linkages between population and development to include age structural changes in development in contemporary world (Lee et al. 2000, 2001; Deaton and Paxson, 2000).

The new approach to growth models combines elements of human capital approach and life cycle saving theory. The evidence from estimated growth models has shown that age structure has significant transitional impact on the growth of the economy. However, the mechanisms through which demographic transition influenced economic growth varied among the East Asian and Southeast Asian countries (Mason, 2003). A study in the Indian state of Kerala showed that the mechanisms through which age structural changes impacted on development differed from those observed in East and Southeast Asian experience (Navaneetham, 2004). Specifically, in the case of East and Southeast Asian countries, growth in the industrial and service sectors provided employment opportunities for the rapidly growing working age population and the increased entry of women into the labour force. But in Kerala, where employment opportunities in the industrial and service sectors were limited, the rapidly growing working age population, particularly males were absorbed in the labour markets of the Gulf countries. Unlike the experience of East Asian and Southeast Asian countries, the labour force participation rate for females has been unchanged and unemployment rate very high (Navaneetham, 2004). This shows that the relationship between the age structural transition and socio-economic development is dependent on the institutional context including public policies.

More than a billion people suffer from abject poverty in developing countries and half of them live in South Asia. South Asia constitutes 40 percent of the world' absolute poor while its share of world's population is only 22 percent. There are wide inter and intra state/province variation in socioeconomic development in South Asia. The GDP per capita (PPP US$) income was highest in Maldives ($4,798) and Sri Lanaka ($4,390) and lowest in Nepal ($1,490) and Bangladesh ($1,870) in 2004. Poverty reduction has not kept pace with the impressive rate of economic growth in South Asia-- a growth rate around 5 percent in all countries except Nepal (2.5 percent), Though South Asia has made some progress in reducing the poverty, however, the progress is rather slow. South Asia is facing major challenges in achieving the Millennium Development Goals with respect to infant and child mortality, child and maternal nutrition, maternal mortality and reproductive health, educational attainment and access to basic services. One third of the global under five deaths are occurring in South Asia. Though some countries such as Sri

Lanka and Maldives have made progress in improving the literacy level, other countries are still lagging behind. For instance, in India, although primary school enrolment is over 85 percent (1999-2000), around 53 percent of children drop out of school before completing 8th grade (Deolalikar, 2007). Due to the impending changes in the age structure of the population in South Asia, the supply of persons is likely to exceed the demand under the current labour market conditions which will pose greater challenges in generating employment opportunities.

There are large disparities within the countries in South Asia. For instance, while some states (eg Kerala, Tamil Nadu) in India are relatively advanced in demographic, social and economic development including infrastructure facilities other states are lagging behind by at least a generation (eg Bihar). In Kerala, the basic indicators of demographic transition, social wellbeing and health are at levels comparable to developed western countries; on the other hand in states like Bihar the levels are comparable to poor countries in Africa. As the timing and pace of fertility and mortality transitions vary between states in India, the age structural transition would also vary among them. The regional differences in demographic trajectory pose serious competing challenges across the states in India. This will require context specific policy initiatives and service delivery that are also critical for achieving the millennium development goals.

Given this context, this paper examines the process of age structural transitions in South Asia and its potential for development, thereby achieving the Millennium Development Goals. As Maldives and Bhutan constitutes only .02 percent of the South Asia population, this paper makes an attempt to study age structural transitions, demographic dividend and the progress of Millennium Development Goals in the countries of Bangladesh, India, Nepal, Pakistan and Sri Lanka..

2. Demographic Transition and Population Growth in South Asia

The estimated population of South Asia was 1,485 million in 2005 which was 22.8 per cent of the World Population. According to the UN population projection, the population of South Asia is expected to reach 2,245 million by the year 2050 (United

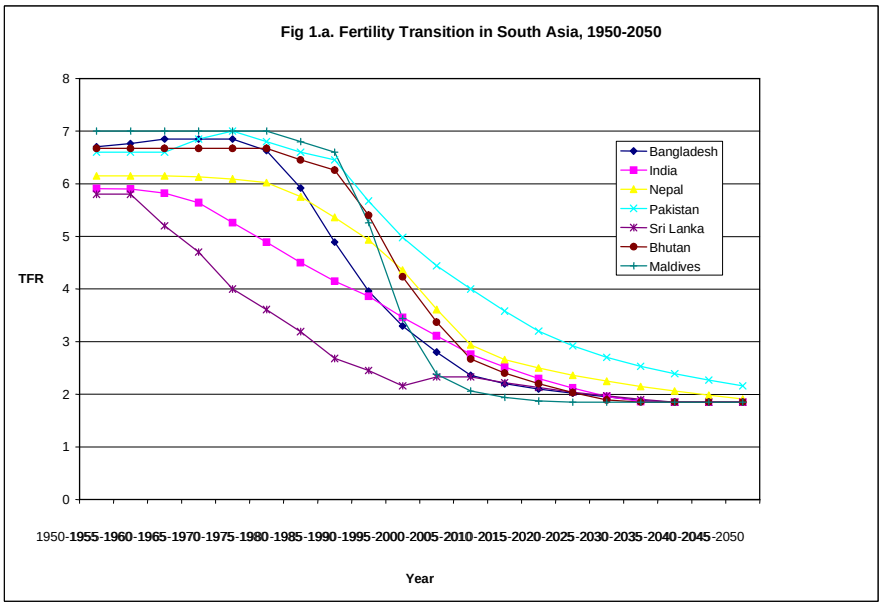
Nations, 2009). India constitutes around 76 per cent of South Asia population followed by Pakistan with 11 percent. Bangladesh accounts for about 9 per cent of the South Asia population. The share of Nepal was about 2 per cent whereas Sri Lanka's share was just over 1 per cent. The countries Bhutan and Maldives constitute only .02 percent of South Asia's population. The population of South Asian countries is expected to grow at over 1.5 per cent per year during 2000-2010, except Sri Lanka. The expected growth rate in Sri Lanka is below 1 percent per year during 2000-2010 and it is projected to reach zero growth rate during 2030-40. The countries such as Pakistan, Nepal and Bhutan are growing at the rate of more than 2 percent. Further, India and Bangladesh will be approaching zero growth rates by the year 2040-50.

As India is the largest country comprising over 70 percent of South Asia's population, it is important to understand inter-regional population growth within India. The population of India is expected to increase by 371 million during 2001-26 and nearly 50 per cent of the increase would occur in the northern states of Bihar, Chattisgarh, Jharkhand, Madhya Pradesh, Rajasthan, Uttar Pradesh and Uttaranchal. The largest Indian state of Uttar Pradesh alone would account for around 20 per cent of the increase. In contrast, the southern states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu would account for only about 13 per cent of India's population growth during 2001-26 (Registrar General of India, 2006).

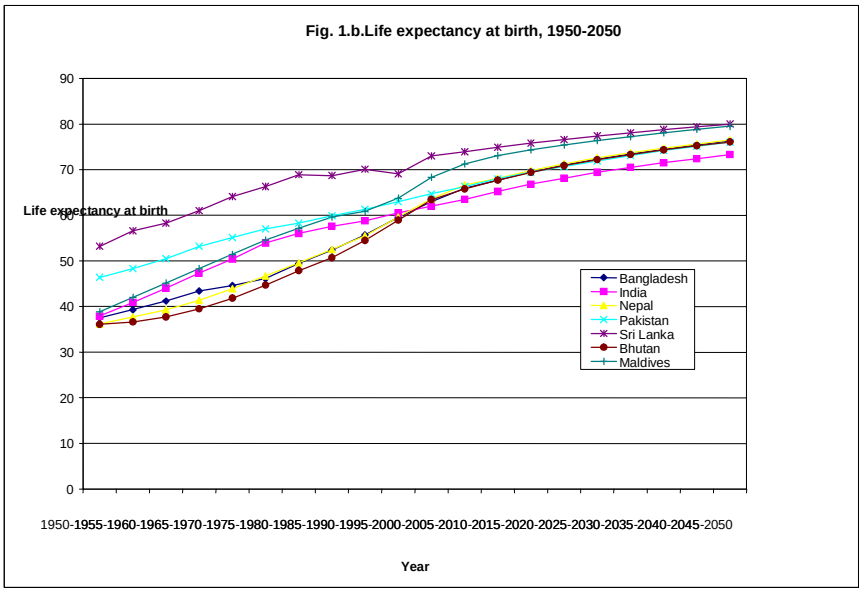
In the past several decades, fertility declined in all the countries in South Asia. However, the timing and pace of decline varied between the countries. The total fertility rate in South Asian countries was over 6 births per woman during the 1950s. Fertility decline was rapid in Sri Lanka from 1960s and reached the replacement level in 1995-2000. Though fertility began to decline in India in the 1960s, the decline was gradual since then and it reached 3 children per woman in 2000-2005. According to the recent National Family Health Survey (2005-06), the TFR in India was 2.7 children per woman. It is interesting to note that fertility rate in Bangladesh was above 6 children per women till late 1980s and it declined rapidly thereafter. The TFR declined to 2.8 children per woman in 2000-05, a decline of more than 50 percent in a

span of 20 years. The TFR remained high; around 6 children per women, in the countries of Pakistan, Bhutan, Maldives and Nepal until the 1980s and started declining since then. The decline was rapid only in Maldives-- a decline of more than 60 percent in 15 years.

Within India, the TFR was below the replacement level in Andhra Pradesh, Goa, Kerala and Tamil Nadu but it was more than 3 children per woman in the northern states of Bihar, Uttar Pradesh, Rajasthan and Madhya Pradesh. The speed of decline in fertility was rather slow in northern states. It is projected that these north Indian states are at least a generation away from reaching replacement fertility.

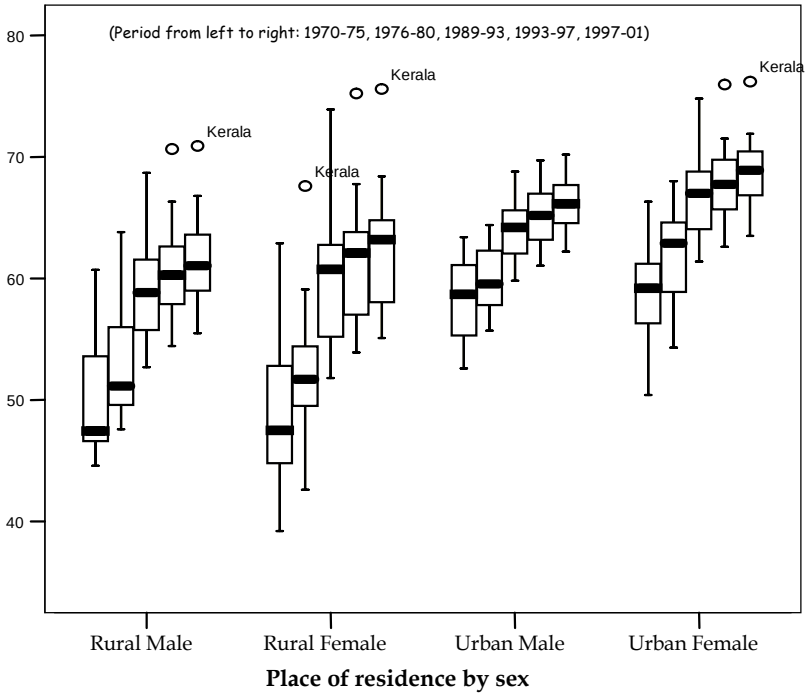


Mortality has declined significantly in all the countries in South Asia. The life expectancy at birth was low in the 1950s, ranged between 36 years in Bhutan/Nepal and 53.2 in Sri Lanka. In 2000-05, the life expectancy at birth was over 60 years . However, the estimated life expectancy at birth in Sri Lanka was 73 years in 2000-05—far greater than in any other country in South Asia. Though infant mortality declined in all the countries, it is still quite high except in Sri Lanka and the Maldives. The infant mortality rate was 70 per 1000 live births in Pakistan and around 60 in India during 2000-05. All other South Asian countries have an IMR of around 50 per 1000 live births. The infant mortality rate was 17 and 34 per 1000 live births in Sri Lanka and in the Maldives respectively during the same period.



With respect to regional differentials in India, though the rural-urban differential in life expectancy at birth has narrowed over the years, there still exist significant differences between rural and urban areas. The box plots in figure 2 shows the trends in life expectancy across the states in India. Although average life expectancy has improved in rural and urban areas as well as for male and females, the pace of improvement slowed down during the 1990s. Also disparity in life expectancy at birth between the states has narrowed over the years. Kerala is an outlier state: its life expectancy at birth is far greater than that for all other states in India.

Figure 2. Box plots showing variation in life expectancy at birth across states in India



3. Age Structural Transitions in South Asia

Age structural transition (AST) is an integral part of demographic transition wherein the levels and pace of mortality and fertility declines determine its trajectories (for detailed discussion, please see Pool et al., 2006). It was noted earlier that both the timing and the pace of fertility and mortality transitions among the South Asian countries differ widely. This implies that the age structural transitions would vary among these countries and more so in their implications.

The age structure of the population has been classified according to the life cycle stages and their impact on the general economy. The broad life cycle stages are young (age group 0-14), youth (15-24), young working age (25-49), mature working age (50-64) and elderly (65+). As the young population (0-14) is dependent on the adults for their consumption, they incur health and education expenditures in the economy. The youth population (15-24) also consumes health and education; however, their pattern of

consumption behaviour is different from children (0-14) due to differences in their needs and services. The prime working age population (25-49) saves little. The population in the middle age group 50-59 is likely to earn higher income because of their work experience and will have higher saving rate than the population aged 25-49. Most of the old people aged 60+ would depend on others for their consumption needs such as health care and social support.

The age structural changes of South Asian countries from 1950 to 2050 are presented in Figure 3. Consequent upon fertility decline that began in the late 1960s in India, the proportionate share of population under 15 years of age began to decline from 40 percent in 1970s to 33 per cent in 2005. The trend will continue in the future and the share of child population in India would reach around 18 percent in 2050.

Due to the rapid reduction of fertility in Sri Lanka since 1960s, the share of child population declined from 41 per cent in 1965 to 25 per cent in 2005. According to UN projection, the child population in Sri Lanka expected to reach around 17 per cent in 2050. As the fertility started declining in Bangladesh from 1980s, the share of child population declined from 45 percent in 1985 to 34 percent in 2005 and expected to decline further and would reach around 18 percent in 2005. The proportion of child population started declining only from the 1990s in Nepal and Pakistan. It was projected that the proportion of child population would decline in all the countries in South Asia in the future. This would provide the greatest opportunity to improve coverage of basic education and good quality child care services in South Asia.

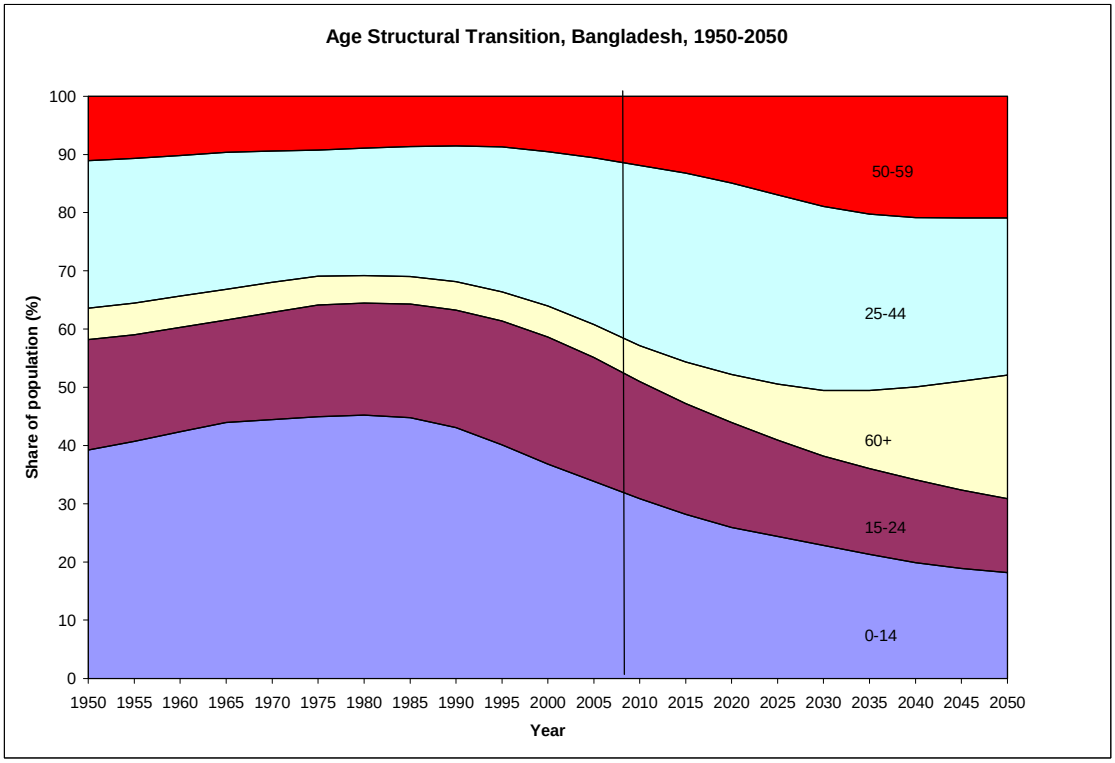
Bangladesh and India are experiencing the youth bulge (around 20 percent of the share) from 1980s and this will continue till 2020. The problem of youth bulge in Nepal and Pakistan will continue till 2030 whereas in Sri Lanka, the share of youth population is expected to decline from now on. Although the proportionate share of the youth population is expected to decline in the future in most countries, the absolute size will be increasing before it stabilizes. This youth bulge will pose several challenges in meeting their needs and services for the next 15 to 20 years in these countries.

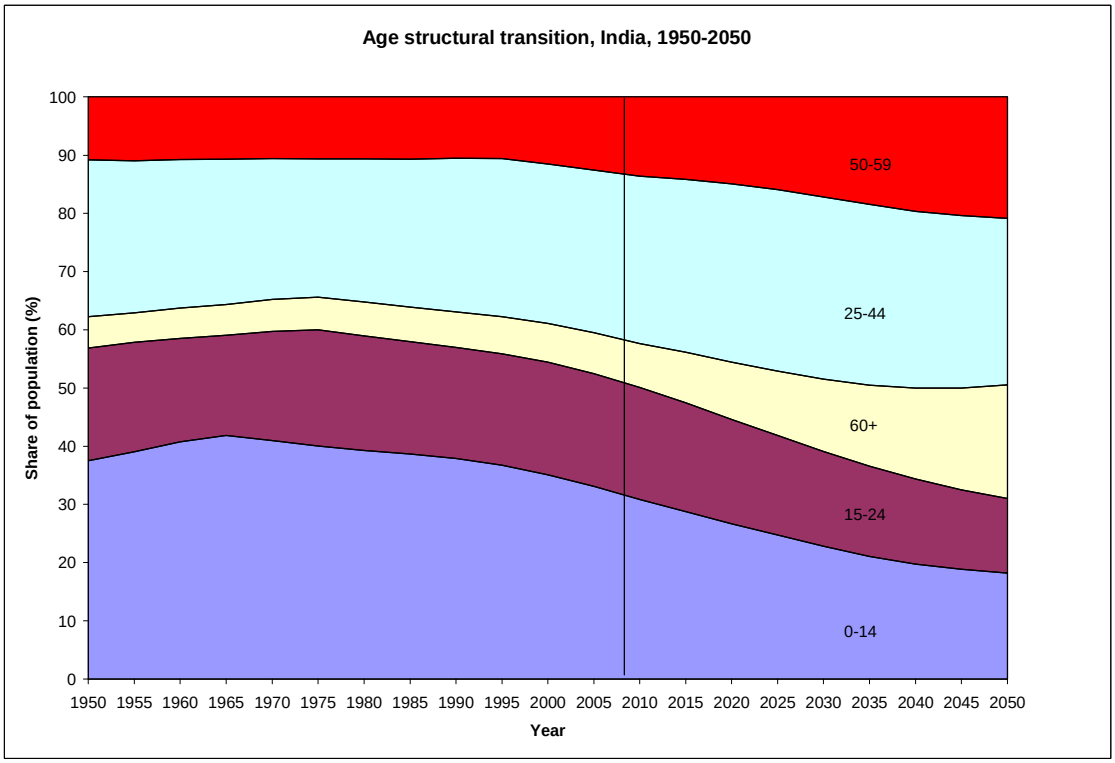
The relative share of the effective working age population (25-59) has declined during the 1950s and 1960s in all the countries except in Sri Lanka. However, it has been increasing since the 1980s in India and Bangladesh; and since the beginning of the century in Nepal and Pakistan. The trend is expected to continue in all the countries until 2050. It will be a challenge to generate enough employment opportunities in these countries to meet the projected growth in labour force. Productive employment of the large labour force is critical for the economic and social development. The governments need to come up with appropriate policies to productively absorb them into the labour market. It is also interesting to note that absolute and relative size of the population in the age group 50-59 would be expected to increase in the future in all the countries. This is the great opportunity for the second demographic dividend during which the saving ratio would increase which in turn may boost the capacity for investment in development programmes.

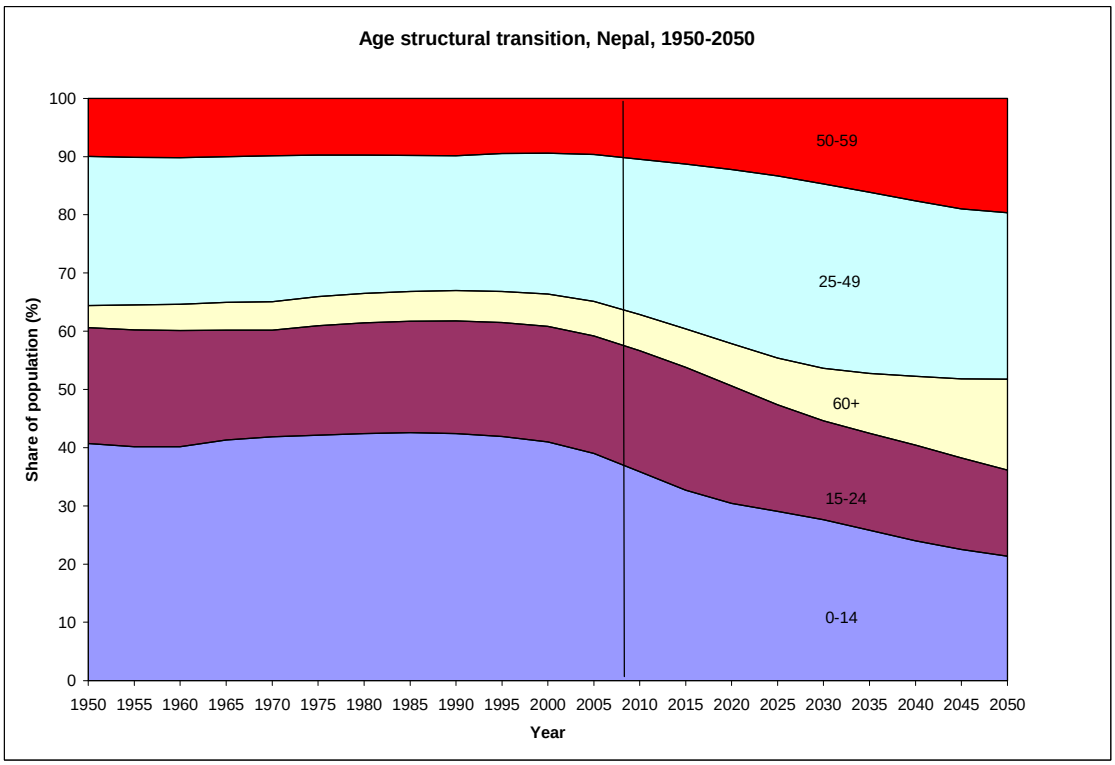
The size and share of the old age population (60+) will continue to increase at a slower pace during the age structural transition in most countries except in Sri Lanka. The increase would be greater after 2030 in India and Bangladesh. However, in Sri Lanka, the share of old age population would increase from 10 percent in 2005 to 20 percent in 2025 and to 28 percent in 2050. Further, the absolute size of the old age population would increase due to increase in life expectancy. Meeting the health care and social security needs of the elderly would be a major challenge in Sri Lanka and other countries as they move towards population ageing. However, if the policy environment is conducive for savings and for accumulating the assets to tap the dividend during the period of window of opportunity, the challenges during the ageing of the population can be relatively easily met.

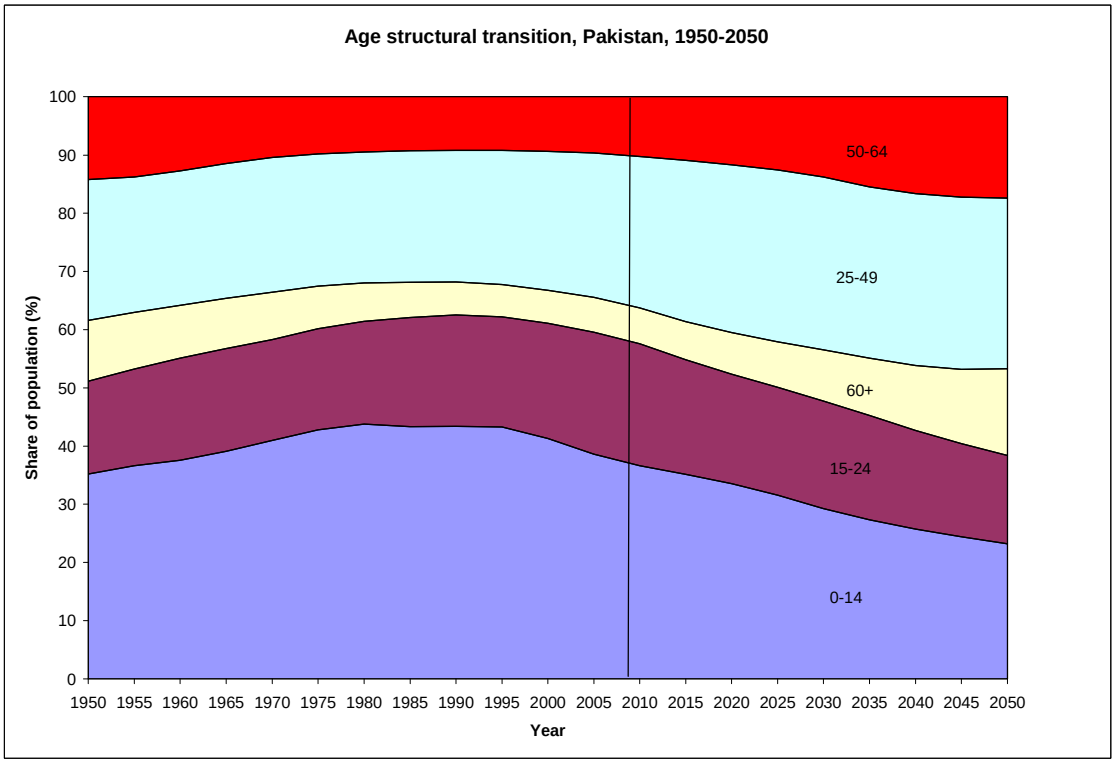
A significant difference among the South Asian countries at the midlle of the 21st century would be in the level of ageing. For instance, while Sri Lank, India and Bangladesh would have about 17-18 per cent of its population aged under 15 years (child dependency), the population aged over 60 years would be 28 per cent in Sri Lanka which would be far greater than the corresponding figures for India and Bangladesh. This arise from the different demographic trajectories that the three countries have been going through.

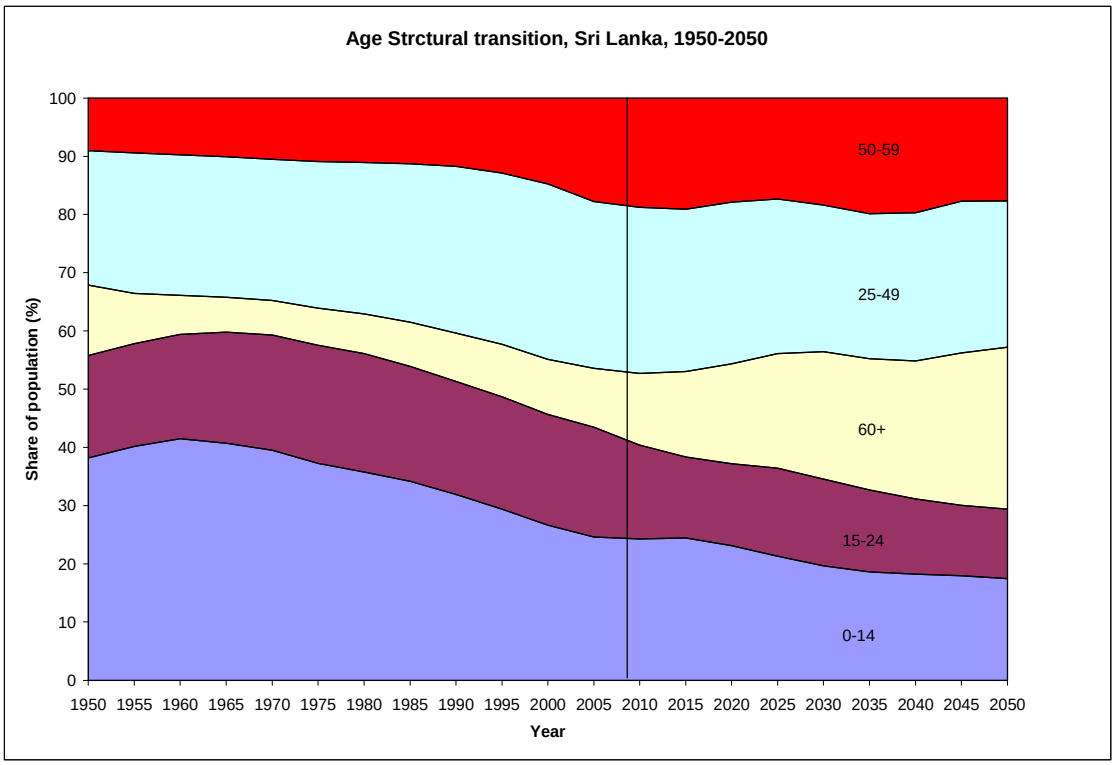
Figure 3. Age Structural Transitions in the Countries of South Asia






Age structural transition, Nepal, 1950-2050
Share of population (%)
Year
50-59
25-49
60+
15-24
0-14
100
90
80
70
60
50
40
30
20
10
0
1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030 2035 2040 2045 2050


Age structural transition, Pakistan, 1950-2050
Share of population (%)
Year
50-64
25-49
60+
15-24
0-14
100
90
80
70
60
50
40
30
20
10
0
1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030 2035 2040 2045 2050



4. Age Structural Transitions: Regional Differences in India

The trajectories of age structural transition are determined by the levels and pace of fertility and mortality transition. As noted earlier, the timing and speed of fertility and mortality transitions in the Indian States are different, and thus the age structural transitions would vary among these States and more so with its implications. Figure compares the age structural transitions between some selected northern and southern States.

With the assumed decline in fertility, the share of the child population (0-14) would decline in all the States in India. The northern states comprise the highest share of child population compared to the southern states. The share of child population was over 40 percent in Bihar, Rajasthan and Uttar Pradesh in 2001 and it is expected to decline respectively to 25 percent, 26 percent and 29 percent in 2026. The share of child

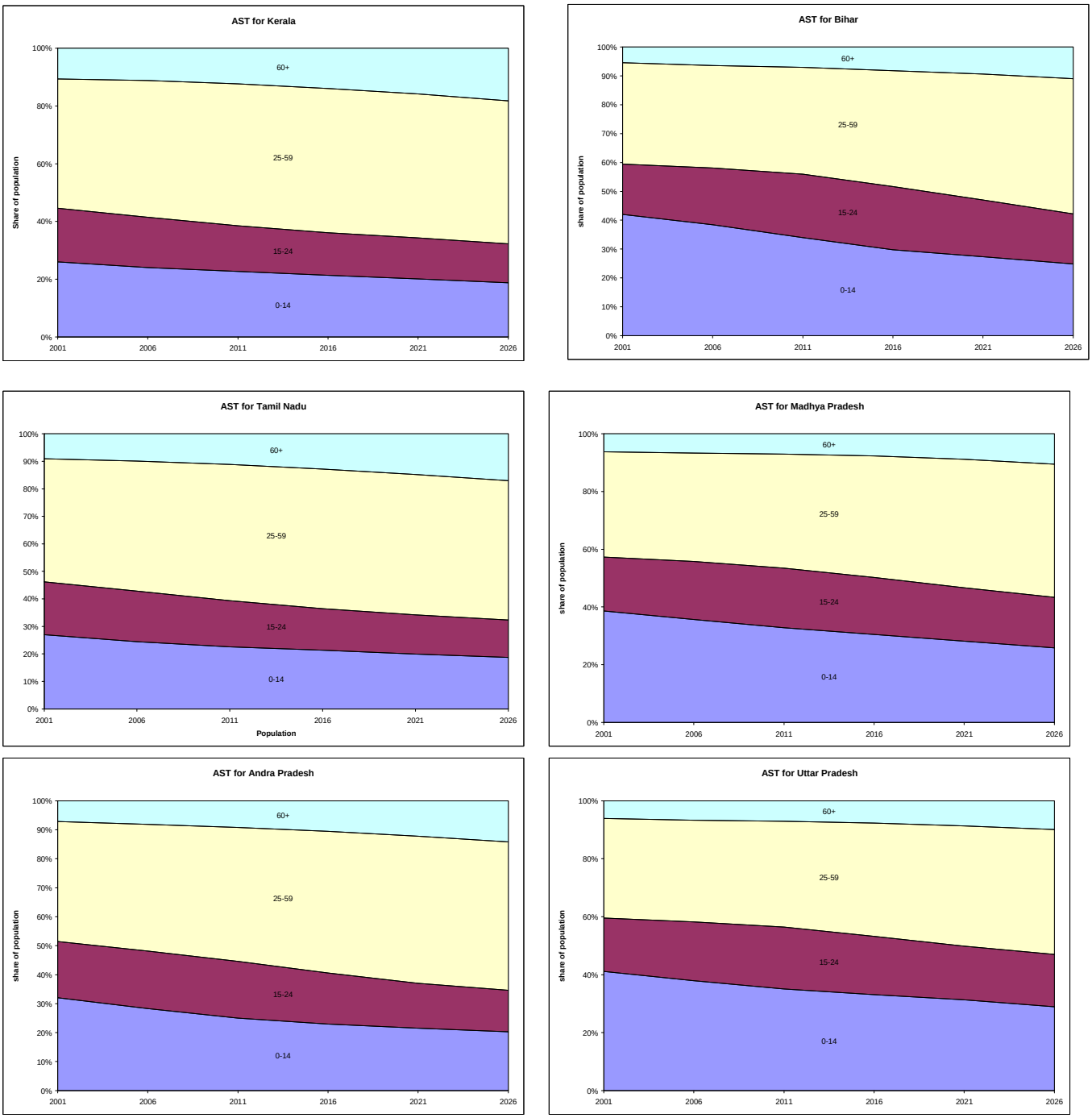
population is already around 25 percent in Kerala and Tamil Nadu. As a result, the window of opportunity has already opened up in these states. The share of child population in India is expected to reach 23 percent in 2026 and would vary between the lowest 19 percent in Kerala and the highest 29 percent in Uttar Pradesh. Consequently the child dependency ratio is expected to record a decline. The child dependency ratio was over 50 per cent in 2001 in all the states except Kerala and Tamil Nadu. The child dependency ratio is expected to concurrently decline due to the projected fall in fertility and increase in working-age population (in both absolute and relative terms). This is the greatest opportunity for India, particularly for the socio-economically poor states to improve their quality of human capital with respect to education and health so that this will have greater impact on labor productivity and economy when they enter the labor force.

Due to past high fertility, most states experience a period of youth bulge where the share of the population in the age group 15-24 would be high and rising. The share of youth population among the Indian states ranges between 17.4 in Bihar and 20.5 percent in Jammu and Kashmir in 2001. The share of youth population in the southern states was nearly 20 percent due to past achievement in reducing child mortality. The share of youth population would remain high in most Indian states and in some states it would increase in the next 20 years. However, in the demographically advanced southern states, the size of the youth population is expected to stabilize after 2011 as the proportion of this age group population is expected to decline. This youth bulge will have several implications in terms of their needs and services for the next 20-30 years in India. The share of the working age population (25-64) has been increasing in all the states. During the next 20 years, the northern states would benefit from the increase in the working age population, both in absolute and relative terms. The demographically advanced states would experience slow increase in the share of working age population. If the large supply of labor force is productively employed, it will have greater impact on the economy. However, it is a challenge for India and the states to provide enough employment opportunities. If the policies of the governments are designed towards productively

absorbing them into the labour force, this would increase the saving ratio as well as tax revenues which will boost the capacity for investment.

The size and share of the old age population will continue to increase at a slower pace during the age structural transition, particularly among the northern states, due to decline in fertility and increase in life expectancy. Kerala, Tamil Nadu, Punjab and Karnataka are projected to age fast and this will have implication for the provision of health care and social security. India should adopt comprehensive and sustainable health and social security policies and involve the participation of the local and state governments, private sector and families. If the policy environment is conducive for savings and for accumulating the assets during the period of window of opportunity, the challenges of the ageing of the population can be dealt with.

Figure 4. Age structural transitions for the selected Southern and Northern states



Source: Registrar General of India, 2006

6. Demographic Dividend for Countries in South Asia

The period of 'window of opportunity' can be utilized in three ways to give demographic dividends:

(i) by making the available labor force productively employed, which would raise total GDP. It can be shown algebraically[1] that, output per capita would grow if the growth rate of workers exceeded the growth rate of total population even if the output per worker did not change (Bloom and Williamson 1997; Bhat 2001);

(ii) by directing accumulated wealth and savings into productive investments. The window of opportunity may give higher incentives to save. Improved health, longevity and smaller family size make savings easier and more attractive. Households tend to save less when there are more children since substantial part of the family income is spent on raising them. When fertility declines, demand on household resources for raising children reduces, allowing them to save more of their income; and

(iii) by making appropriate investments in the formation of high quality human capital. Fertility decline has immediate and direct impact on the school going population and gives an opportunity to invest more on their education and health contributing to better quality of human capital in the future. Women with fewer children are more able and often more willing to participate in remunerative work, and are more likely to invest additional income in the health and education of their children.

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[1] The accounting identity that links income per capita (Y/N) to labour productivity (income per worker) and the labour force is as follows:

$$\frac{Y}{N} = \frac{Y}{L} \times \frac{L}{N}$$

Where Y is the income, N is the total population and L is the total number of workers. By differentiating the above equation, the expression can be converted to growth rates as

$g_y = g_z + (g_l - g_n)$ where g_y is the growth rate of per capita income, g_z is the growth rate of income per worker, g_l is the growth rate of labour force and g_n is the growth rate of total population.

This opportunity would be available for one time only and its length would be determined by the speed of demographic transition. If appropriate interventions were not made during this period, it would have negative implications for the economy and society. In East Asian countries the demographic dividend alone could explain as much as one third of the per capita GDP growth rate during their period of rapid economic growth.

From the identity equation in footnote 1, the extent of first demographic dividend can be derived from the difference between the growth rates of working age population (25-59) and the total population. Since production exceeds consumption in the age group between 25 and 59 years in most countries, we have used this age group for estimating the first demographic dividend. If the difference is positive, the growth rate of per capita income would go up even when the growth rate of labour productivity does not change. Countries would acquire demographic dividend during this period if the large supply of labour force absorbed into the productive sectors. Figure gives the estimated first demographic dividend in the South Asian countries.

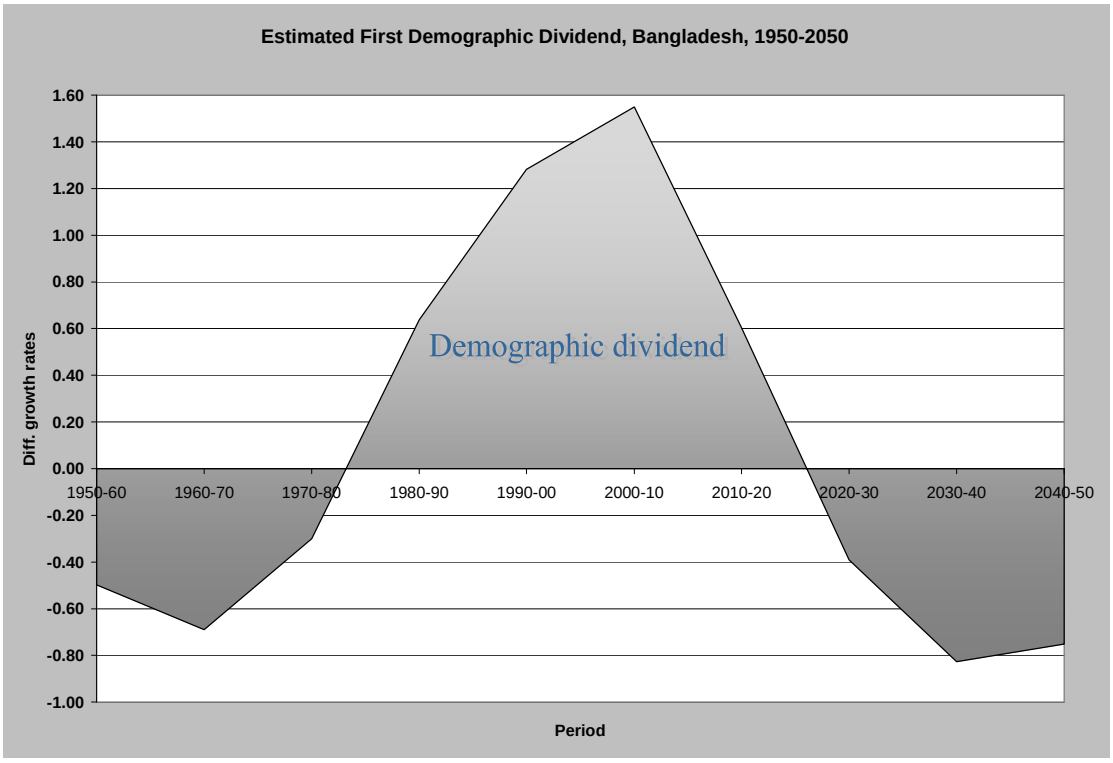
The countries in South Asia would acquire a demographic dividend for a period of an average of 50 years. Among the countries, on an average, Bangladesh would acquire a highest dividend which is estimated at around 1 percent during the period of window of opportunity (1980-2020) followed by Nepal (0.8) and Pakistan (0.56) and then Sri Lanka (0.5). This is due to more rapid reduction in fertility in Bangladesh than in other South Asian countries. India would acquire the lowest dividend (0.4 percent) among the countries South Asian countries studied but his accrues over an extended period of time compared to others. Bangladesh started acquiring demographic dividend from 1980 and the opportunity would be available till 2020, a total period of 40 years. The highest dividend (1.55%) is expected during the period 2000-2010. Of the per capita GDP growth rate, 1.55 percent of the growth rate is likely to be due to labour supply alone during the period 2000-2010 in Bangladesh. The opportunity for demographic dividend opened up in as early as the 1970s in India and it is expected to last until 2030.

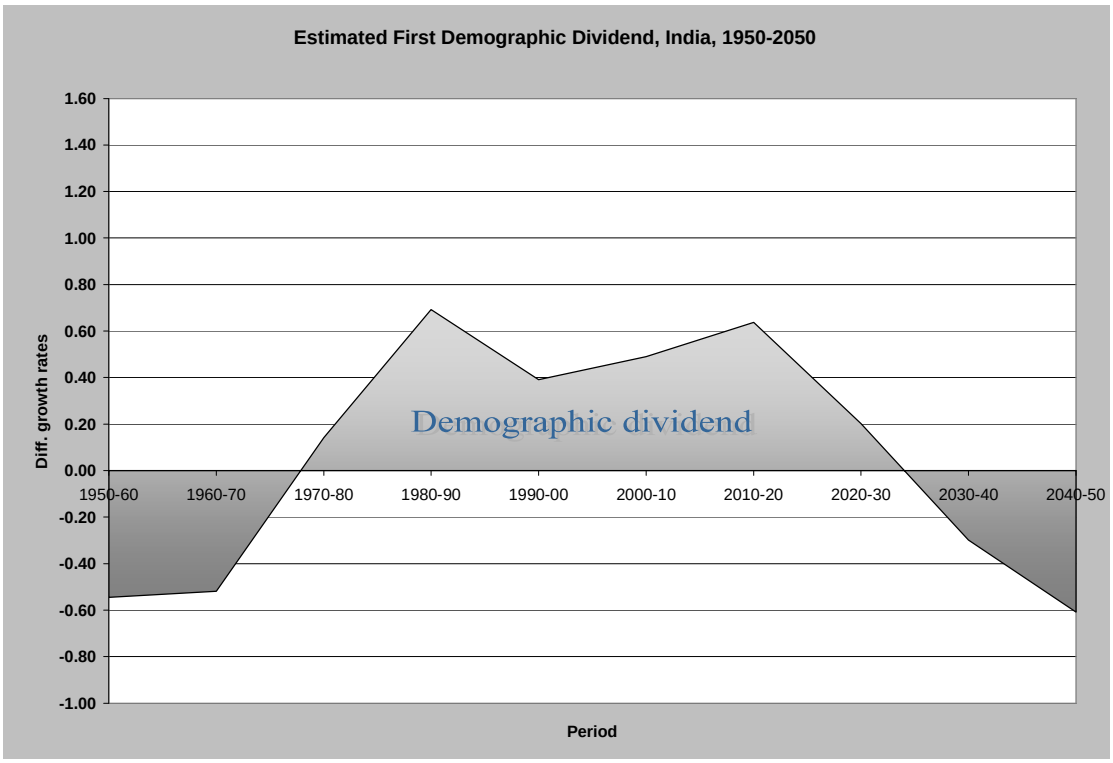
India thus has another 20 years for deriving the benefits from the labour supply. Though opportunities are available for longer period in India, the magnitude of the estimated dividend is lower than in Bangladesh.

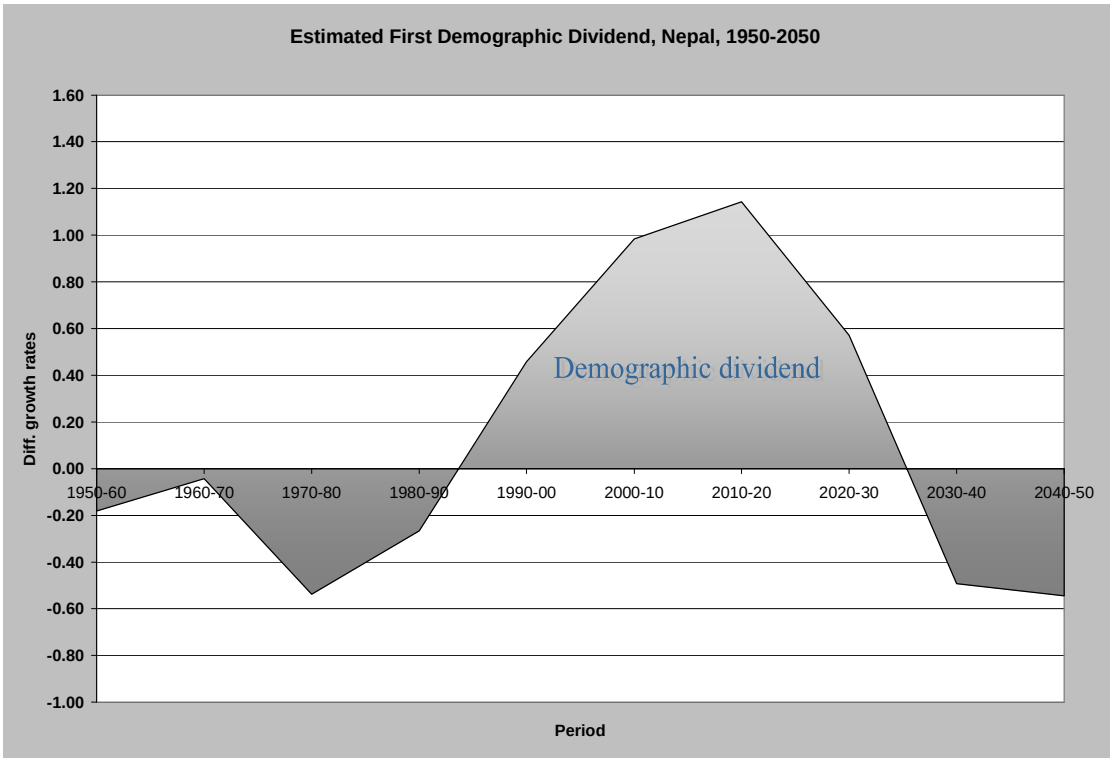
For both Nepal and Pakistan, the demographic dividend became available in 1980 and is expected to last until 2030-- a period of 50 years. It was estimated that anything over one percent growth in per capita GDP during 2010-2020 would be due to the growth of labour force alone in these countries, provided employment opportunities are created for the large labour force. The window of opportunity for demographic dividend has already been closed in Sri Lanka. The window of opportunity was available from 1950 to 2000. The estimated first demographic dividend was 0.45 per cent during 1950-60 and declined to 0.06 percent during the 1960s, and thereafter it increased to around 1 percent during 1980-90.

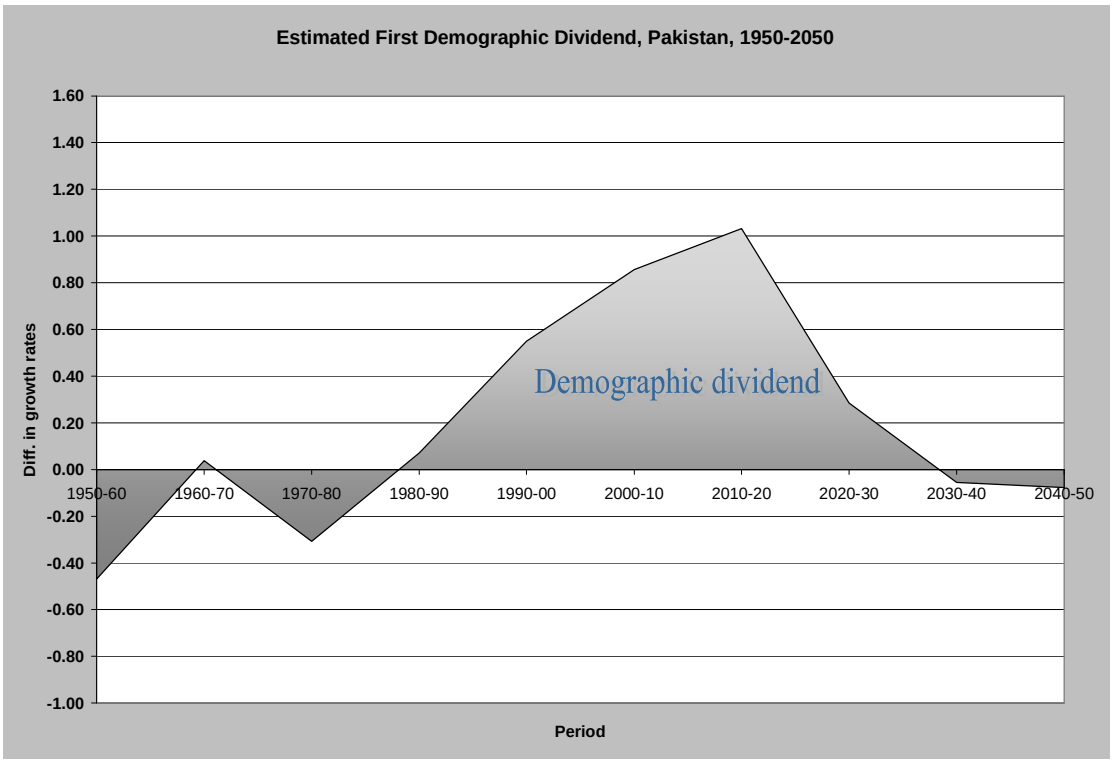
The labour force participation among women is currently low in most South Asian countries. However, increase in the labour force participation of women is expected in the future due to the shortening of the duration of childbearing years. If adequate employment opportunities are created to absorb them into the labour market, these countries will have another dividend from more women entering the labour force. The economic benefit derived from the increase in the female labour force participation is expected to be greater than the economic benefits that would accrue from the increase in the overall labour supply.

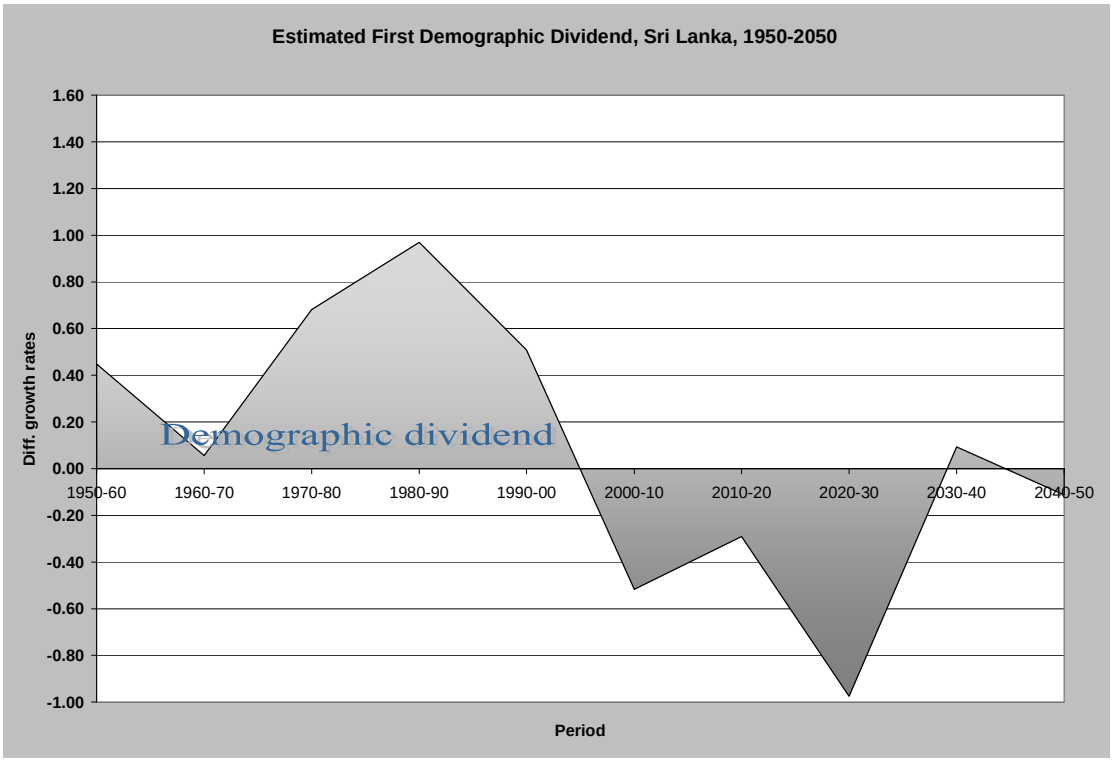
Figure 5. Estimated First Demographic Dividend in the Countries of South Asia






Estimated First Demographic Dividend, Nepal, 1950-2050
Diff. growth rates
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
-1.00
1950-60
1960-70
1970-80
1980-90
1990-00
2000-10
2010-20
2020-30
2030-40
2040-50
Demographic dividend
Period


Estimated First Demographic Dividend, Pakistan, 1950-2050
Diff. in growth rates
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
-1.00
1950-60
1960-70
1970-80
1980-90
1990-00
2000-10
2010-20
2020-30
2030-40
2040-50
Demographic dividend
Period



7. Demographic Dividend in India: Regional Variations

As the extent and the process of age structural transition were different among the states in India, the timing and quantum of dividend also varied among the states in India. It was estimated that the first demographic dividend would be positive till 2011 among the demographically advanced states such as Kerala, Tamil Nadu and Punjab (Bhat, 2001). It is interesting to observe that the BIMARU states where the process of demographic transition began later than in other states would start deriving greater dividend from 2001 and likely to continue to do so till 2031. As there are regional differences in age structural transition, internal migration could be of critical importance in the future as young workers move from under-developed to developed regions. The regional differences in age structural transition may also play an important role in terms of convergence in economic growth among the states in India, provided efforts are made to invest in human capital development in BIMARU states as large share of labour supply in the future would come from them.

Table 1. Difference in the growth rate of population aged 15-64 and the growth rate of total population, 1991-2031

State	Decade			
	1991-01	2001-11	2011-21	2021-31
South				
Kerala	0.50	0.15	-0.20	-0.49
Tamil Nadu	0.77	0.32	-0.14	-0.21
Andhra Pradesh	1.02	0.91	0.11	-0.03
Karnataka	0.67	0.84	0.05	-0.22
West				
Maharashtra	0.69	1.01	0.08	-0.13
Gujarat	0.54	0.80	0.06	-0.26
East				
Orissa	0.40	0.76	0.14	-0.21
West Bengal	0.71	0.88	-0.05	-0.16
Assam	0.70	0.76	0.41	-0.22
North				
Himachal Pradesh	0.58	0.78	0.05	-0.13
Punjab	0.63	0.87	-0.13	-0.21
Haryana	0.47	1.06	0.42	-0.22
Rajasthan	0.38	0.71	0.68	0.14
Madhya Pradesh	0.31	0.79	0.62	0.01
Uttar Pradesh	0.09	0.58	0.58	0.56
Bihar	0.19	0.64	0.64	0.22
All- India	0.35	0.56	0.43	0.07

Source: Bhat 2001

8. Trends in Support Ratio

The trends in support ratio for selected South Asian countries from 1950 to 2050 are depicted in Figure. For comparison, we have also depicted the support ratio for Japan. The support ratio is defined as the ratio of the number of working age population (25-59 age groups) to the number of dependent age population. The support ratio (SR) has been computed as follows:

$$SR = \frac{W_{25-59}}{(0.9 * D_{0-24} + D_{60+})},$$

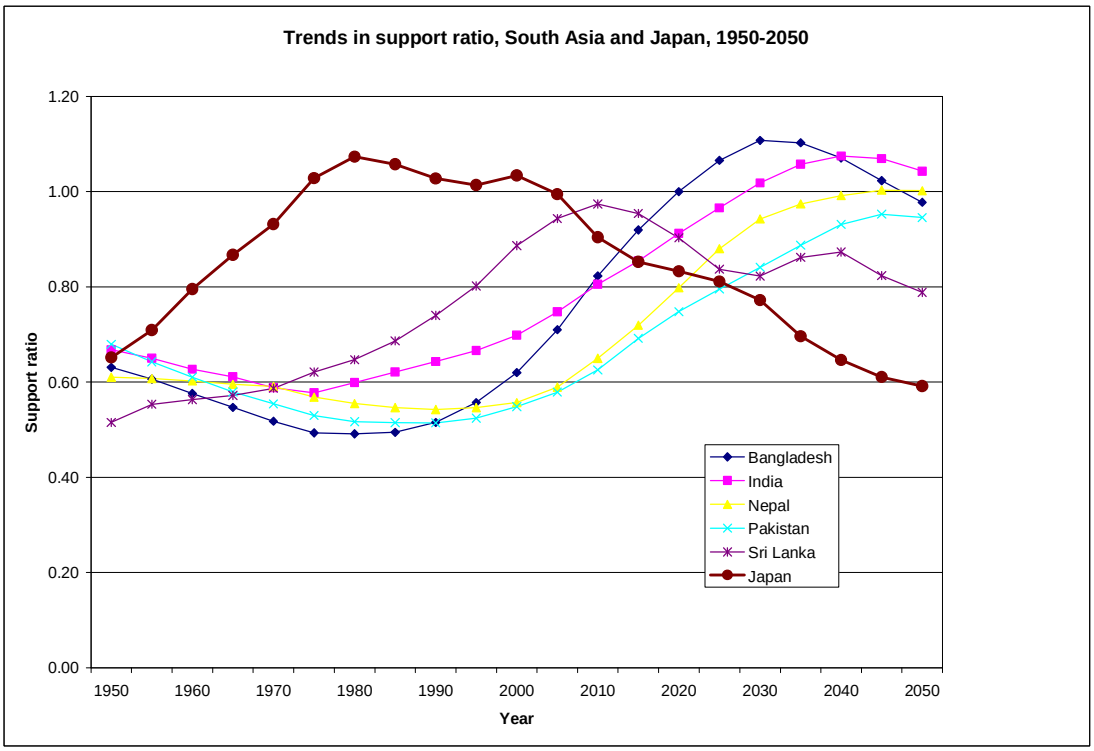
Where W_{25-59} is the population (working age) in the age group 25-59 and D_{0-24} and D_{60+} are population (dependent) respectively in the age group 0-24 and 60+. Generally, the production will exceed the consumption between the ages 25 and 59. The ideal measure would be to use the economic support ratio which is defined as the ratio of economically active population (producers) to the economically inactive population (consumers).

However, it was shown that the demographic support ratio is approximate to the economic support ratio and this can be used for studying the timing of the demographic dividend (Miller, 2008).

It is observed from the figure that the timing and pace of increase in support ratio varies across the South Asian countries. The support ratio in Sri Lanka has been increasing since 1950 and the rate of increase was greater during the period 1980-2010. It is projected that support ratio in Sri Lanka would continue to decline from 2010 with a marginal increase during the period 2030-2040. On the other, support ratio was declining in India during 1950- 1970 and then it started increasing. This increasing trend is expected to continue untill 2040. The increase would be rapid in the next 20 years up to 2030 and would exceed 1 per cent during 2030-2050. Similarly in Bangaldesh, the ratio declined from 1950 to 1980 and then it increased which is expected to last until 2040. The production of goods and services would exceed total consumption in Bangladesh during 2030-40. In the caseof Nepal and Bangladesh, the support ratio started increasing only from the beginning of this century due to delayed fertility transition in these countries.

It is noted that support ratio would increase in the South Asian countries in the next 20-30 years except Sri Lanka as observed in Japan during the East Asian Miracle. These countries would reap greater benefit from the increase in the support ratio provided they adopt the right policies that would enable investment in education, health and employment which would boost economic growth.

Figure 6. Trends in Support Ratio in South Asia and Japan, 1950-2050



9. Second Demographic Dividend

It was noted that life expectancy is increasing in all the South Asian countries and this is expected to stimulate the accumulation of wealth during the working years. If this wealth is productively invested, the South Asian countries will have a second demographic dividend during the ageing of their populations due to behavioral changes. The second dividend is expected to occur at the end of the window of opportunity around 2030/2040, when support ratio is expected to decline, for all countries except Sri Lanka. In the case of Sri Lanka, the second demographic dividend would occur from 2010. Policies aimed at providing incentives to save and accumulate wealth during this phase are important components to optimally utilize this opportunity. The second dividend is expected to be larger than the dividend derived from pure accounting basis-increased labour force supply. It was estimated that the total demographic dividend in terms of contribution to per capita GDP growth in the South Asian countries during the 1970-2000

was 0.80 percent a year. Of which, the first dividend through labour force supply was 0.10 percent a year and the second dividend was 0.69 per cent a year (Mason, 2005).

10. Age Structural Transitions and Millennium Development Goals

Age structural transition has clear and definite implications for socioeconomic development. If the right policies are pursued during the window of opportunity, the age structural transitions could help achieve the millennium development goals. Pool et al. (2006), for instance, provide a detailed discussion of how age structural transition could help achieve millennium development goals in the developing world. Here we briefly discuss how the AST could act as a facilitating factor in achieving the millennium development goals in South Asia.

Goal #1 (Eradicate extreme poverty and hunger): During the age structural transitions, dependency ratio declines. There will be more workers than consumers which will boost economic growth and savings. This is likely to happen if investment is made in education, employment and health. Historical evidence shows that higher economic growth will lead to reduction in poverty. The decline in child dependency ratio also provides an opportunity for improving the nutrition and health of children. As fertility declines, even poor parents could give nutritious food as well as quality health care to their children. In India, the incidence of poverty has declined from 55 percent in 1973-74 to 26 percent in 1999-2000. The reduction in poverty was sharp during the 1990s. India has already set itself the goal of reducing the level of poverty to 18.7 percent by the year 2015-- a target required to achieve the MDGs.

The incidence of poverty varies among Indian states. The percentage of population below the poverty line is over 40 percent in Bihar and Orissa but it is below 10 percent in Haryana, Punjab and Himachal Pradesh. Although Bihar, Madya Pradesh, Uttar Pradesh and Orissa constitute only 39 percent of the India's population, they account for 55 percent of the poor (Govt. of India, 2005). It appears that further reduction in poverty in India would depend on how the BIMARU states and Orissa will reap the benefit from their impending age structural transitions.

In Bangladesh, the percentage of population below the poverty line has declined from 59 percent in 1990 to 40 percent in 2005. If the same linear trend continues, Bangladesh will reach the incidence of poverty by 31.4 percent--below the MDG target value of 29.5 percent. Similarly, the decline in poverty was slow in Nepal as well. The incidence of poverty declined from 42 percent in 1990 to 30.9 percent in 2004. If the same trend continues, the incidence of poverty would decline to 24.5 percent in 2015 which is far higher than the target value of 21. In the case of Sri Lanka, the incidence of poverty declined from 29 percent in 1990-92 to 22.7 percent in 2002. As the rate of decline is slow, Sri Lanka would find it difficult to achieve the MDG target. The slow progress in Pakistan would also make it harder to achive the MDG target by the year 2015.

Malnutrition is widespread in India. According to the NFHS-2 carried out in 1998-99, around 43 percent of the children under 3 years were found to be underweight in India. The NFHS-3 (2005-06) survey indicates that this has declined only marginally to 40 percent. There is a wide variation in the level of malnutrition among the states in India. Around 60 percent of the children under 3 years of age were found to be underweight in Madya Pradesh, whereas it was only 23 percent in Kerala. The proportion of underweight children is significantly higher in the BIMARU states and in Orissa than in the southern states.

The analysis of National Family Health Surveys 2 and 3 suggests that levels of malnutrition, especially iron-deficiency anaemia, remain quite high among women in India (Jose and Navaneetham, 2008). There has been no significant improvement in women's nutrition during the past seven years-- a period of higher growth and moderate reduction in poverty. Instead, there was a further increase in malnutrition, especially anaemia. Almost all social groups experienced increase in the proportion of women malnourished. The higher and increasing level of malnutrition among women has serious implications for achieving MDGs.

The prevalence of under weight children under five years in Bangladesh declined from 67 percent in 1990 to 48 percent in 2004. If the same trend continues, Bangladesh would be unable to the millennium development goal. Similarly, Nepal is also off track for achieving this MDG . But in the case of both Pakistan and Sri Lanka, the progress towards

achiving the MDG in this indicator is encouraging (Bajpai et al, 2004). The demographic window of opportunity should particularly help Pakistan in improving child nutrition.

Goal # 2 (Achieve universal primary education): During the age structural transitions, dependency ratios decline partly due to declines in fertility. This enables parents to send their fewer numbers of children to school, including girl children. Age structural transitions have the potential to help achieve universal education, particularly among girl children. In countries where universal education has already been achieved, for example in Sri Lanka (99%), the window of opportunity allows for improving the quality of education. The lowest net enrolment in primary education was found in Pakistan (68%) followed by Nepal (79%). This was 94 per cent and 89 percent in Bangladesh and India respectively.

Goal # 3 (Promote gender equality and empowerment of women): Fertility decline could promote gender equality by increasing school attendance among girl children. Due to fertility decline, the length of women's reproductive years would shorten; this will then allow women enter the labour market during the period of window of opportunity and in turn empower them for decision making in the household and participate in public office and community organisation. The increased level of schooling and paid work will advance women's empowerment at home and in the society. The windows of opportunity would give opportunity to empower women, particularly in the countries of Pakistan (0.69), Napal (0.75), India (0.80) and Bangladesh (0.90) where the ratio of literate women to men of 15-24 year old is low. This makes it imperative that adequate and timely investment is committed to education and employment creation while the demographic divided is available.

Goal # 4 (Reduce child mortality): Fertility decline contributes towards improvement in the health of children. With the reduction in the family size, the total health care cost for the children in general declines, keeping cost per child constant. This gives scope for the poor to access better heath care for their fewer numbers of children. As noted earlier, the age structural transitions could aid reduction in child malnutrition through poverty reduction and access to and utilisation of health services. The infant and under five mortality has declined in India over the years. The under five mortality has declined from 125 per thousand births

in 1988-92 to 98 per 1000 in 1998-2000. According to the NFHS-3, the under five mortality is around 74 per 1000 live births in India. Similarly the infant mortality declined from 114 per 1000 live births in 1980 to 60 in 2003. The government of India has set the target of 41 and 27 under five and infant mortality respectively to be achieved by 2015 (Govt. of India, 2005). There is also wide variation in infant and child mortality among the states in India. The infant and under five mortality rates are significantly high in most states in India except Kerala and Goa.

In the case of other South Asian countries, only Nepal is on track to achieve the millennium development goal with respect to infant and under five mortality. The infant and under five mortality in Nepal was 100 and 145 per 1000 live births in 1990 and it declined to 56 and 74 in 2005. If the same trend continues, Nepal would achieve the MDG in this indicator. In Bangladesh, the infant and under five mortality rates was 94 and 108 per 1000 live births in 1990 and it declined to 54 and 73 by the year 2005. If the same trend continues, Bangladesh would reach the level of 38 and 57 by the year 2015 respectively the IMR and under five mortality- below the target value of 31 and 36 per 1000 live births. Sri Lanka made significant reduction in infant and child mortality and it reached to the level of 18.5 and 23 in 1990 and rate of the decline is seems to be slow. It was estimated that the IMR and under five mortality in 2005 was 12 and 14 per 1000 live births respectively. As Sri Lanka reached already reached lower level, more effort is needed to meet the MDG target in the country. The infant and under five mortality in Pakistan was 96 and 128 in 1990 and declined to 79 and 99 in 2005- a slow progress in achieving the MDGs. Among all initiatives, investment in health services and infrastructure would provide the best opportunity to achieve substantial improvement in child health.

Goal # 5 (Improve maternal health): The age structural transitions would enhance the capacity of the country or provinces (states) to increase health services of women and reduce maternal mortality. The maternal mortality ratio is considerably high in South Asian countries except Sri Lanka. Recent estimates in 2000 put the figure as 407 maternal deaths per 100,000 live births in India, and it was 320 in Bangladesh, and 60 in Sri Lanka. As the

female population in the reproductive age is projected to increase in the future, South Asian countries will face the challenges to meet the child and reproductive heath care services.

Goal # 6 (Combat HIV/AIDS, malaria and other diseases): The windows of opportunity during the age structural transition would give opportunity to divert the resources from child health services to malaria control and other diseases. However, the age structural transitions would produce new challenges emerging from youth bulge and migration. Youths are vulnerable to HIV/AIDS infections. The recent data indicates that about only half of the population in the ages 15-49 has the correct knowledge about the HIV/AIDS (Govt. of India, 2005). As mentioned earlier, due to regional differences in demographic transitions in India, the age structural transitions would produce large scale migration of young adults from rural to urban areas and from less developed to more developed regions. Migration is another risk factor for HIV/AIDS infections. The prevalence of malaria was also significantly high in Bhutan and India. Also prevalence of tuberculosis is significantly high the south Asian countries except for Sri Lanka (80 per 100,000 population). The prevalence rate was 406 (per 100,000 population) in Bangladesh, 299 in India, 297 in Pakistan and in Nepal 244 in 2005.

Goal # 7 (Ensure environmental sustainability): Age structural transition is also likely to have implications for environmental sustainability. As income grows during age structural transitions, there is greater potential to improve the quality and coverage of water supply and sanitation. As the urban population would grow faster due to rural migration , it would be a major challenge for all South Asian countries to provide good quality water supply and sanitation facilities in urban areas. The present trends indicate that all the South Asian countries would be able to improve the coverage of water and sanitation facilities by 50 percent from its 1990 level.

Goal # 8 (Develop a global partnership for development): As discussed earlier, there is a period of window of opportunity during the age structural transitions and if the opportunity is utilised. India can experience substantial socio-economic improvement. This requires the right policies and institutional changes to generate employment, particularly among the

youth, encourage savings and to invest in human capital. To exploit the opportunity and to meet the challenges of MDGs, relevant and effective strategies should be formulated to develop global partnership, and also in cooperation with the private sector to improve and make available the benefits of new technologies especially information and communication.

11. Policy Implications and Conclusions

Age structural transitions are underway in South Asian countries but the timing and pace vary across them and also within the provinces. Sri Lanka and southern states in India are about to move out of the window of opportunity whereas other South Asian countries and the north Indian states are just entering the window and are likely to reap the benefits over the next 20-30 years. This age structural transition creates different opportunities and challenges across age groups. The relative share of childhood population will decline in the future. This provides an opportunity to improve human capital through public policy measures aimed at improving nutrition, education and healthcare. As significant proportion of population are only primary school educated in many countries and in northern states in India, age structural transition provides the opportunity to improve the coverage of school education. In Sri Lanka and southern Indian states which are in an advanced AST phase, it provides the opportunity to improve the quality of school education and for investing in higher education. As the cost of higher education would increase in the future, this gives an opportunity to reallocate the resources from primary school education to secondary and tertiary education. The expenditure on higher education and health needs to be increased and it is essential for human capital accumulation. Though female education is improving, they are substantially disadvantaged in Nepal, Pakistan, Bangladesh and most states in India. They suffer disproportionately from lack of access to education, poor health, malnutrition and lack of autonomy in decision making. The current cohorts of child population are the future labour force. It is thus important to invest in and improve the quality of human capital of the present generation so as to meet the economic, social and health challenges of population ageing.

With the exception of Sri Lanka , all the remaining countries and several Indian states in the north are experiencing a period of youth bulge in their population as the size and share of this age group has been increasing over the years, although this will ease among the southern states in India. This youth bulge would continue for the next 20 years which will put more pressure on the demand for higher education and employment opportunities. There are already signs that the informal labour market is growing as a result of demographic transition and growth of younger adults. As India is unable to generate adequate employment in organized sector, bulk of its first time labour market entrants are expected to settle into low paid informal sector. This would lead to poor quality of life, inadequate intra-family transfer of resources, particularly to the old, low productivity and lack of social security . Moreover, the youth bulge will also exert increasing demand on housing and health care. Governments should make appropriate policy changes to successfully meet this challenge. Failure to do so may not only have negative consequences (higher unemployment rate, crime rate and increased political instability) but also make it difficult to achieve the millennium development goals.

The relatively rapid growth of the labour force would benefit South Asian countries, if employment opportunities increased with sufficient speed to match the growth in labour supply and growth in labor productivity is maintained. The current composition of labour force is dominated by those with secondary school qualifications who experience the highest unemployment rate among the educated. Productively employing this segment of the labour force with high quality will be a challenge for South Asia. Their employability could be improved by providing them with skill training in their curriculum to take advantage of the changing needs of the labour market in the context of globalization and knowledge economy.

The regional variation in age structural transitions within India has the potential for large scale internal migration and thus rapid urbanization. For instance, there are already large movements of labourers from northern states to southern states like Kerala for construction works. On the other hand educated skilled workers from Kerala fill the

labour markets in gulf countries and other Indian states as employment opportunity for the skilled and highly educated is limited within Kerala.

The size of the female labour force would also increase during the period of window of opportunity. It is expected that the labour force participation among females would go up due to the likely improvement in their level of education and reduction in their reproductive years. If appropriate policies and programmes are directed towards creating employment for women in both service and manufacturing sectors, South Asian countries will have added demographic bonus from the increase in the female labour force participation rate. As the saving rate is expected to increase, this will induce greater investment in human capital and in infrastructure facilities.

The size and share of the elderly population would increase rapidly in Sri Lanka and in states like Kerala, Goa and Tamil Nadu in India. Further, women are expected to outnumber men in the old ages due to higher life expectancy among females. Consequently, the number of widows is likely to increase in the future and is expected to live longer which is already happening in Kerala and Sri Lanka. To meet the challenges, Sri Lanka and India should evolve appropriate public and social policies directed at the provision of social security and health care and encourage the development of social networks. Meanwhile, Bangladesh, Pakistan and Nepal will also experience increase in the number and proportion of old age people.

To sum up, governments should make concerted efforts at developing their human capital by investing in education, health and nutrition in order to reap the benefits from the window of opportunity provided by age structural transitions. It is necessary to adopt policies that lead to the creation of diversified, dynamic, and competitive labour market sectors capable of absorbing the educated labor force to translate human capital into higher economic growth. The quality of institutions and public accountability is also important to realize the benefits of demographic dividend. Greater integration into the global market will bring more opportunities for employment and for growth. The total trade ranges between 30-60 percent of the GDP in all the South Asian countries but the

Maldives (ADB, 2007). The success story of East Asian countries reveals that greater openness to international trade during the window of opportunity and the flexibility of the labour market to accommodate the large supply of labour force are critical ingredients for economic growth during the window of opportunity (Bloom and Williamson, 1998, Mason, 2003; Navaneetham, 2004). To realize the potential of the second demographic dividend, policies should encourage workers to save for their retirement and accumulate assets. India seems to be responding as shown from the increased domestic saving rates as percent of GDP from 23 percent in 1990 to 32 percent, the saving rates remains low in other countries except Maldives (48%). There was only marginal increase in saving rates in Sri Lanka, from 13 percent in 1990 to 17 percent in 2006. The saving rates were 11 percent in Nepal, 14 percent in Pakistan and 20 percent in Bangladesh (ADB, 2007). It is important to establish a trusted and accessible financial system so that workers in the private and unorganized sectors will have confidence in saving.

Demographic dividend accruing from the age structural transition is not a given. Age structural transition will give an opportunity and the policy makers should take advantage of it to reformulate their social and economic policies. In order to meet the challenges in the future, it is important to exploit the window of opportunity available for a relatively short period, a one-time gift from demographic transition, with appropriate economic and social policies. Among the south Asian countries, India has an added advantage for its regional differentials in the timing and pacing of age structural transitions which may provide an opportunity that other comparable countries have not had. For instance, India does not have to deal with a burgeoning labour supply at one point in time across the entire country. While the southern states have more or less been through the window of opportunity, the northern states are just about to enter it. This not only makes the window open for India as a whole for a longer time period, but also makes the challenges emerging from demographic changes smoother and achievable. With rapid reduction in fertility, Bangladesh has greater potential to acquire from the first demographic dividend. The other countries Nepal and Pakistan have just entered to reap the benefits from the window of opportunity. Sri Lanka has closed the window of opportunity for the first dividend, but opportunities are becoming available to benefit

from the second demographic dividend, With the right institutional contexts and social and public policies, there is every likelihood for the South Asia to experience high economic growth and increased standard of living which will certainly help achieve the Millennium development goals of eradication of extreme poverty and hunger and substantial improvements in maternal and child health.

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