

A Review of Age Structural Transition and Demographic Dividend in South Asia: Opportunities and Challenges

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Abstract South Asia is experiencing rapid demographic changes that accompany age structural transitions creating a window of opportunity for potential demographic dividend. Studies on age-structural changes and their implications for socioeconomic development are rather limited for South Asia. In this paper we critically review, analyse and synthesize the unfolding age structural transition and its potential for demographic dividend in South Asia. After a brief description of demographic transition in the countries of South Asia, we estimate the first demographic dividend using the accounting framework. This is followed by a discussion of the socioeconomic development opportunities and challenges arising from age structural transition in South Asian countries. We focus on the five major South Asian countries, namely Bangladesh, India, Nepal, Pakistan and Sri Lanka. Among the South Asian countries, India has an added advantage arising from its regional differentials in the timing and pace of age structural transitions which other comparable countries have not had. With rapid reduction in fertility, Bangladesh has had greater potential to benefit from first demographic dividend. Nepal and Pakistan have just began to reap the benefits from the window of opportunity. Sri Lanka is already past the period that was available for first dividend, but opportunities are becoming available to benefit from the second demographic dividend. With the right institutional contexts, social and public policies, there is most likelihood for South Asia to experience high economic growth and increased standard of living.

Keywords Demographic transition · Age structural transition · Demographic dividend · Window of opportunity · South Asia

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Introduction

Age structural transition involving 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. The age structural transition goes through three broad stages. In stage 1, the predominant feature is young dependency ratios. This is followed in stage 2 by an increasing share of working age population leading to a period of a window of demographic opportunity. The final stage is characterized by rising proportions of old age population and high old age dependency ratios. During the second stage of the age structural transition the child dependency ratio declines due to falling fertility and increase in the working age population as children born during the high fertility period move into working ages. If this window of opportunity is duly utilized, there is greater potential for realizing demographic dividends through increased savings and investment for economic growth (Lee et al. 1997; Bloom and Williamson 1998; Pool et al. 2006; Pool 2007; Mason 2003). Demographic dividends can accrue at two different points over the age structural transition period. The first demographic dividend accrues through increase in and productive employment of the labour force during the 'window of opportunity'. The second dividend flows from improved health, longevity and smaller family size, which make savings easier and more attractive (Bloom et al. 2003; Pool 2007; Mason and Kinugasa 2008). If the accumulated wealth and savings are directed towards productive investments, it will contribute to higher economic growth during the period of population ageing. To reap benefits during the demographic window of opportunity, it is critical to make appropriate investment in education and health (Bloom and Williamson 1998; Bloom et al. 2003).

About half of the world's poor live in South Asia. Though South Asia's share of world population is only 24 %, about 40 % of the world poor live in this region. Socioeconomic development also varies within and between South Asian countries. For recent years around 2009, the GDP per capita (in 2005 \$ PPP) was highest in Maldives (\$4,972), Bhutan (\$4,643) and Sri Lanka (\$4,333) and lowest in Nepal (\$1,049) and Bangladesh (\$1,286). India (\$2,970) and Pakistan (\$2,369) are in the middle ranges (ADB 2011). Although India (4.9 % during 1991–2008) and Bangladesh (3.2 % during 1991–2005) experienced impressive annual growth in per capita GDP, this growth did not necessarily translate into concomitant reduction in poverty levels. Most South Asian countries are also facing major challenges in achieving the Millennium Development Goals. One third of the global under-five deaths are occurring in South Asia. Though Sri Lanka and Maldives have made progress in improving the literacy level, other countries are still lagging behind (Mahbub ul Hag HDC 2007). Along with these social and economic challenges, South Asian countries are also going through major and rapid changes in the size and age structure of their populations. While the age structural transition provides an opportunity to invest in education and health, it also poses challenges in terms of generating employment as the supply of labour force is likely to exceed the demand under the current labour market conditions.

Being home to 1.64 billion people, it is critical that South Asian countries utilize the demographic opportunity arising from age structural transition to improve the material and social conditions of their populations. This requires that researchers and

policy makers need to grasp the nature and magnitude of age-structural changes and their implications for socioeconomic development. Towards this end, in this paper we critically review, analyse and synthesize the unfolding age structural transition and its potential for demographic dividend in South Asia. The paper is organized as follows: a brief summary of demographic transition and population growth in the countries of South Asia is followed by a discussion of age structural transition. We then estimate the first demographic dividend by employing the accounting framework and discuss the implications. And finally, we discuss the socioeconomic development opportunities and challenges arising from age structural transition in South Asian countries. We focus on the five major South Asian countries, namely Bangladesh, India, Nepal, Pakistan and Sri Lanka. Maldives and Bhutan together accounting for only 0.02 % of South Asia's population were excluded due to their small population size.

Demographic Transition and Population Growth

The population of South Asia is expected to reach 2.32 billion by the year 2050 under the medium fertility assumptions (United Nations 2009). Around 76 % of South Asia population lives in India followed by 11 % in Pakistan. Bangladesh accounts for 9 % and Nepal and Sri Lanka 2 % and 1 % respectively. The population of South Asian countries, excluding Sri Lanka, grew at over 1.5 % per year during 2000–2010. The corresponding growth rate in Sri Lanka was below 1 % and it is projected to reach zero growth by 2040. While the growth rate was over 2 % in Pakistan, Nepal and Bhutan, it was less than 2 % per year in India and Bangladesh (ADB 2011). Further, India and Bangladesh will approach zero growth by 2050.

Not only are the countries in South Asia differ between them, there are also huge demographic variations within each. In India, the population is expected to increase by 371 million during 2001–26 but nearly 50 % 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 % of the increase. In contrast, the southern states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu would account for only about 13 % of India's population growth during 2001–26 (Registrar General of India 2006). These differences will have implications for socioeconomic development of the country as a whole.

In the last several decades, fertility has been declining in all the countries in South Asia. However, the timing and pace of decline varied. Total fertility rate in South Asian countries was over 6 births per woman during the 1950s. Fertility decline was rapid in Sri Lanka since the 1960s and reached replacement level during 1995–2000. Though fertility began to decline in India in the 1960s, the decline was gradual since then and TFR reached 2.6 children per woman in 2010. Within India, TFR was below replacement level in Andhra Pradesh, Goa, Kerala and Tamil Nadu but 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 one generation away from reaching replacement fertility.

Bangladesh experienced a rapid fertility decline since the late 1980s. Total fertility rate was above 6 children per women till the late 1980s and it declined to 2.2 in 2010, a decline of more than 50 %. In Pakistan, Bhutan, Maldives and Nepal, total fertility rates remained high (around 6 children per women) until the 1980s and started declining thereafter.

Mortality has improved 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 2005–10, the life expectancy at birth was over 65 years in most countries. However, the estimated life expectancy at birth in Sri Lanka and Maldives was 75 years in 2005–10—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. Infant mortality rate was 70 per 1,000 live births in Pakistan and around 50 in India in 2009. All other South Asian countries have an IMR of around 40 per 1,000 live births. The rates were 13 and 11 per 1,000 live births in Sri Lanka and in the Maldives respectively in the same year (UN-ESCAP 2011).

Age Structural Transition

The pace of fertility and mortality transitions determine the trajectories of age structural transition. The variations in demographic transition between South Asian countries would result in differences in their age structural transitions and the attendant social and economic implications. To examine the age structural transitions in South Asian countries, the populations have been classified as child (age group 0–14), youth (15–24), young working age (25–49), mature working age (50–59) and elderly (60+). This classification corresponds to broad life cycle stages and the impact of populations of different age groups on the general economy. As the child population (0–14) is dependent on adults for their consumption, they incur health and education expenditures. The youth population (15–24) also consumes health and education; however, their pattern of consumption would be different. The prime working age population (25–49) saves little as they consume most of what they earn. The population in the middle age group 50–59 is likely to earn more and thus save more. Majority of the old people aged 60+ would depend on others to meet their consumption needs. Thus macroeconomic performance of any country is dependent on the relative size of populations in different life cycle stages.

The age structural changes of South Asian countries from 1950 to 2050 are presented in Fig. 1. Consequent upon secular 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 % in 1970s to 30.6 % in 2010. The trend is projected to continue in the future and would reach around 18 % in 2050.

Due to rapid decline of fertility in Sri Lanka, the share of child population declined from 41 % in 1965 to 25 % in 2010. According to UN projection, the child population in Sri Lanka expected to reach around 17 % in 2050. As fertility started declining in Bangladesh only from the 1980s, the share of child population declined from 45 % in 1985 to 31.3 % in 2010 and expected to decline further and would reach around 18 % in 2050, very similar trend to India's. The proportion of child population started declining only from the 1990s in Nepal and Pakistan. It is expected that the

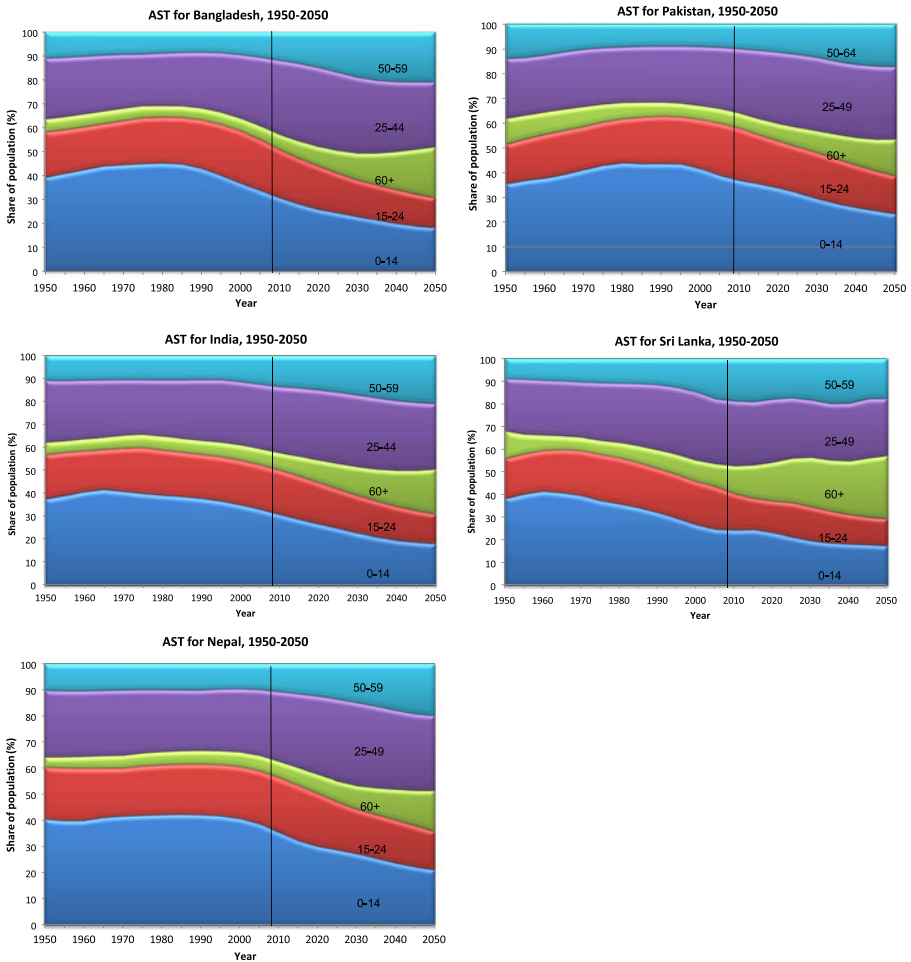


Fig. 1 Age Structural Transitions (AST) in South Asian countries, 1950–2050

proportion of child population would decline further well into the future in all the countries of South Asia. As the child population is declining in all the countries, this gives an opportunity to improve basic education and provide quality child health care services in South Asia.

Bangladesh and India have been experiencing the youth bulge (around 20 %) from the 1980s and this is expected to last until 2020. While youth bulge in Nepal and Pakistan is also projected to persist until 2030, in Sri Lanka the share of youth 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 continue to increase before it finally stabilizes. This youth bulge will pose several challenges in meeting their needs, in particular higher education and employment opportunities.

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 from the 1980s in India and Bangladesh; and from 2000 in Nepal and

Pakistan. The trend is expected to continue in all the countries until 2050. This provides both challenges and opportunities in these countries. If sufficient employment opportunities are created to meet the expected increases in labour supply, it will have greater positive impact on the economy. However, the challenge is to create quality employment (secure and well paid jobs) opportunities to absorb the huge supply of labour force. Hence, the respective governments need to come up with appropriate policies to productively absorb them into the labour market.

The age structural transition also provides another opportunity when the absolute and relative size of the population in the age group 50–59 increases. Figure 1 clearly shows that the absolute and relative size of the population in all the South Asian countries in this age group is expected to increase in the future. This is a great opportunity to realize the second demographic dividend. During this phase, the saving ratio is expected to increase which in turn may boost the capacity for investment for economic growth.

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 % in 2005 to 20 % in 2025 and then to 28 % in 2050. Meeting the health care and social security needs of the elderly would be a major challenge in Sri Lanka and other countries as their populations age. However, if the opportunities for demographic dividends are taken advantage of through appropriate education and employment policies, the challenges of population ageing can be relatively easily met.

A significant difference among the South Asian countries at the middle of the 21st century would be in the level of population ageing. For instance, while Sri Lanka, India and Bangladesh would have about 18 % of their populations aged under 15 years (child dependency), the population aged over 60 years would be 28 % in Sri Lanka which would be far greater than the corresponding figures for India and Bangladesh. This arises from the divergence in demographic trajectories that the three countries have been going through.

First Demographic Dividend

During the process of age structural transition, the first demographic dividend arises when the rate of growth of producers exceeds the rate of growth of consumers. This is a one-off opportunity termed as ‘window of opportunity’ for economic growth. 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. The 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 1998). From the identity equation above, 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 around the ages 25 to 59 in most countries (Ogawa and Chawla 2009), 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 was absorbed into the productive sectors.

The period of ‘window of opportunity’ can be utilized in three ways to reap dividends (Bloom and Williamson 1998; Bloom et al. 2003; Mason 2007):

- (i) by making the available labor force productively employed which would raise Gross Domestic Product (GDP);
- (ii) by directing accumulated wealth and savings into productive investments. The window of opportunity is characterized by improved health, longevity and smaller family size which makes 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 allows greater investment in education and health contributing to 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 their additional income in children’s health and education.

This opportunity would be available only once and the duration it is likely to last 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 per capita GDP growth during their period of rapid economic growth (Mason 2003, 2007).

Figure 2 provides the estimates for first demographic dividends in South Asian countries. South Asia would derive demographic dividend for a period of about 50 years. Bangladesh would gain the highest dividend which is estimated at around one per cent during the period of window of opportunity (1980–2020) followed by Nepal (0.8 %) and Pakistan (0.56 %) and then Sri Lanka (0.5 %). The first demographic dividend can be interpreted as indicating that around one per cent of per capita GDP growth in Bangladesh during the period 1980–2020 would be due to age structural transition if policies were in place to increase productive high quality employment. The estimated greater demographic dividend in Bangladesh is due to its more rapid fertility decline than in other South Asian countries. India would attain the smallest dividend (0.4 %) among South Asian countries but it 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

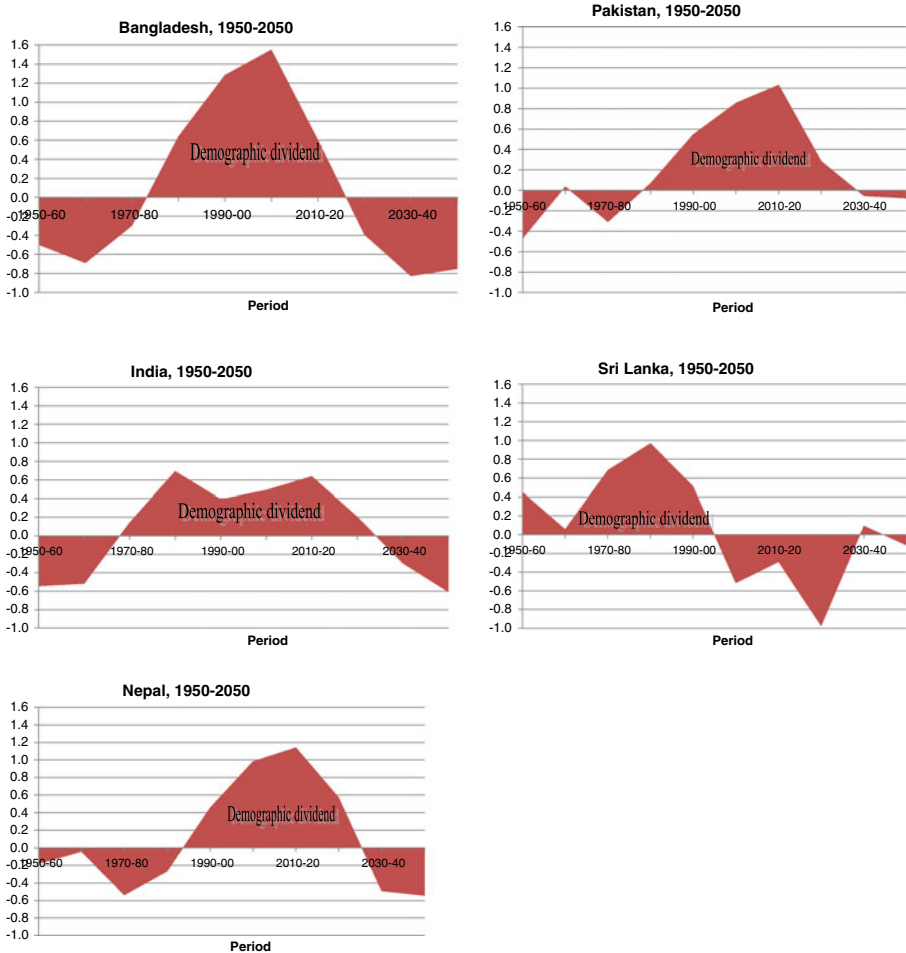


Fig. 2 Estimated first demographic dividend for South Asian countries (*difference in the growth rate of producers and consumers*)

period of 40 years. The highest dividend (1.55 %) is expected during the period 2000–2010 in Bangladesh. In other words, in Bangladesh about 1.55 % of per capita GDP growth is likely to be due to labour supply alone during the period 2000–2010. 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 potential benefits from increased labour supply. Though opportunities are available for a longer period for India, the magnitude of the estimated dividend is less 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 per cent in per capita GDP growth during 2010–2020 would be due to the growth of labour force alone in these countries, provided opportunities are created to productively employ the large labour force. The window of opportunity 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 % during 1950–60

and declined to 0.06 % during the 1960s, and thereafter it increased to around 1 % during 1980–90.

Labour force participation among women is currently low in most South Asian countries. However, increase in 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 resulting from more women entering the labour force. The economic benefit from increased female labour force participation is expected to be greater than the economic benefits that would accrue from increase in the overall labour supply (Bhat 2001).

Economic Support Ratio

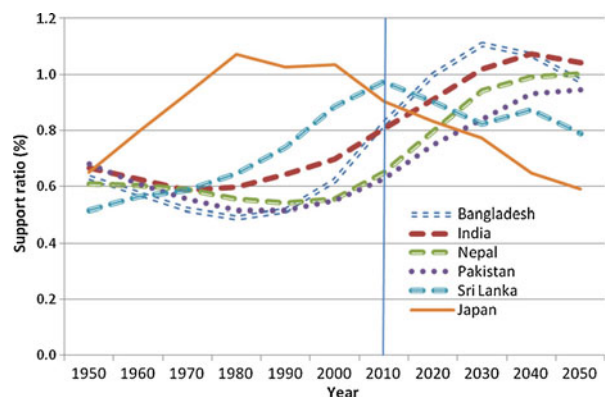
Economic support ratio is an alternative measure used to study the potential for demographic dividend. It is defined as a ratio of productive population (25–59 age groups) to the consuming population or non-productive population. The non-productive population consists of the young and the elderly populations and productive population is largely in the working ages. Given the wide age range of the working population, the productive population is weighted to adjust for age variation in labour force participation rates and productivity. The weight is assumed to be 0.9 for the age group 0–24 and 1 for old age. Analogously, the economic support ratios for the South Asian Countries (ESR) have been computed using:

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

Where W_{25-59} is the population (working age) in the age group 25–59 and D_{0-24} and D_{60+} are populations (dependent) in the age groups 0–24 and 60+ respectively. It has been shown that the support ratio estimated using the above formula closely approximates the ideal economic support ratio and this can be used for studying the timing of the demographic dividend (Miller 2008).

The trends in support ratio for most South Asian countries from 1950 to 2050 are depicted in Fig. 3. For comparison, we have also included the support ratio for Japan.

Fig. 3 Trends in support ratio for South Asian countries and Japan, 1950–2050



It is observed from the figure that the timing and pace of increase in support ratio varies across the South Asian countries. The support ratios in all the South Asian countries were more homogeneous during the 1970s and became more heterogeneous in the later period implying that the potential dividends from demographic transition would vary among 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. For India, support ratio was declining during 1950–1970 and then it started increasing. This increasing trend is expected to continue until 2040. The increase would be rapid in the next 20 years up to 2030 and would exceed 1 % during 2030–2050. Similarly in Bangladesh, 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 greatly exceed total consumption in Bangladesh during 2030–40. In the case of Nepal and Pakistan, 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 in Sri Lanka as observed for Japan. Sri Lanka is already past the period for first demographic dividend; however, the country still has potential for second demographic dividend. It is also interesting to note that support ratio for Bangladesh and India will exceed that experienced by Japan during their period of window of opportunity. However, unlike these countries, Japan's labour force during the window of opportunity was well educated and of sound health. Therefore, all these countries would reap greater benefit from the increase in the support ratio provided they adopt the appropriate policies that would enable investment in education and health, and create employment opportunities which would then boost economic growth.

Second Demographic Dividend

Developed countries, Sri Lanka in South Asia and Kerala state in India are already experiencing population ageing. The increase in the elderly population places strain on the economy through increased demand for the provision of pension and health care. This could lead to pessimism about economic performance over the coming decades. However, Mason and Kinugasa (2008) argued that population ageing could provide the opportunity for second demographic dividend. They argued that the prospects of a longer life and an extended period of retirement act as a powerful saving incentive in the absence of familial support systems. It was estimated that demographic transition in East Asia accounted for about 92 % of the increase in their saving rates. Though familial support system is strong in South Asia, this is expected to wear away due to fertility decline (smaller families) and out-migrations. It was also estimated that capital deepening through increased savings and accumulation of assets could produce an increase in output per worker by an additional 1.1 % per year (Mason and Lee 2007)

All the South Asian Countries will experience smaller families and longer life in the future and consequently decline in support ratio and ageing of the population.

This gives opening for the second demographic dividend in which individuals have incentives to save and accumulate assets for their old age (Mason 2007; Mason and Lee 2006, 2007; Ogawa and Chawla 2009). Unlike the first dividend, the second dividend is not transitory in that capital deepening and higher per capita income are permanent (Mason 2007; Mason and Lee 2006; Ogawa and Chawla 2009). It was noted that life expectancy is increasing in all the South Asian countries and this is expected to stimulate accumulation of wealth and assets during the late working years in which size of the population would also be greater and thereby enabling the second demographic dividend. If this wealth is productively invested, the South Asian countries will gain greater benefit from second demographic dividend. The second dividend is expected to occur in all the countries except in Sri Lanka at the end of the first dividend (2025/2040), when support ratio begins to decline. Sri Lanka was expected to enter the phase of second demographic dividend in 2010. Policies aimed at providing incentives to save and accumulate wealth during this phase would facilitate optimal utilization of this opportunity. The estimates of demographic dividend for a number of countries showed that the second dividend is larger than the first (Mason 2007; Ogawa and Chawla 2009). It was estimated that the total demographic dividend in terms of contribution to per capita GDP growth in South Asian countries during 1970–2000 was 0.80 % a year. Of which, the first dividend through increase in labour force supply was 0.10 % a year and the second dividend was 0.69 % a year (Mason 2007). It was estimated that the second demographic dividend for Bangladesh, India and Pakistan was respectively 5.1 %, 2.3 % and 5.5 % during the period 2010–20 (Ogawa and Chawla 2009). A caveat for second demographic dividend in the context of South Asia is that majority of the workers are in informal sectors. The benefits of second demographic dividend would depend on the extent to which there would be shift in the structure of employment from low quality to high quality in the future. This shift can occur if there are concerted efforts to improve education and health of the population.

Discussion and Policy Implications

Age structural transitions are underway in South Asian countries but the timing and pace vary across them and thus the period of window of opportunity. The period for potential first dividend is 1975–2020 for Bangladesh; 1970–2030 for India; 1980–2030 for Nepal; 1980–2030 for Pakistan and 1950–2000 for Sri Lanka. The window of opportunity for the first dividend is already closed in Sri Lanka but the rest of South Asia is expected to reap benefits over the next 10–20 years. This age structural transition creates various and divergent opportunities and challenges across age groups. The economic support ratio increases and dependency ratio declines during the period of window of opportunity. There will be more workers than consumers, and thus opportunity to boost economic growth and savings provided investments occur simultaneously in education and health. Historical evidence shows that higher economic growth will lead to reduction in poverty.

The opportunity for first demographic dividend has been available from 1970 in India. Concomitant to this, the incidence of poverty has declined from 55 % in 1973–74 to 22 % in 2004–05. Though the opportunity for first demographic dividend was

relatively small during the 1980s, it has been greater since the 1990s. The reduction in poverty was also rapid since the 1990s. As regards the incidence of poverty across the Indian states, it is as heterogeneous as demographic transition. Further, the per capita Net State Domestic Product (NSDP) has also increased in most states in India during the 2000s compared to previous decades; however, there were variations between states in economic growth (Kumar and Subramanian 2012).

To what extent the demographic heterogeneity in Indian states contributes to divergence in economic performance is unclear. But there seems an obvious link between demographic differences and incidence of poverty. The incidence of poverty is over 40 % in Bihar and Orissa but it is below 10 % in Haryana, Punjab and Himachal Pradesh. Although Bihar, Madhya Pradesh, Uttar Pradesh and Orissa constitute only 39 % of India's population, they account for 55 % of the poor (Govt. of India 2005). Income inequality among social groups is also widening in relatively advanced states like Kerala and Maharashtra. Again it is unclear as to whether differing fertility transition among social groups contributes to economic disparity between them.

In Bangladesh, the percentage of population below poverty line has declined from 59 in 1990 to 40 in 2005. Though the quantum of dividend is greater in Bangladesh, the incidence of poverty is also higher. Poverty also declined in Nepal and Pakistan. The incidence of poverty in Nepal declined from 42 % in 1996 to 25 % in 2009 and in Pakistan it fell from 28 % in 1993 to 22 % in 2006. In the case of Sri Lanka, the incidence of poverty declined from 26 % in 1991 to 7.6 % in 2009 (ADB 2011). It appears that further reduction in poverty in South Asian countries would depend on how these countries and some states in India with high levels of poverty which are also lagging behind in demographic transition would reap the benefit from their impending age structural transition.

The relative share of child population in South Asian countries is projected to decline in the future. This provides an opportunity to improve human capital through public policy measures aimed at improving nutrition, education and healthcare. Malnutrition among children is widespread in South Asia. The proportion of underweight children is twice that for Sub-Saharan Africa and also highest in the world (ADB 2011). Around 40 % of children under five years of age are underweight in India, Bangladesh and Nepal. According to the National Family Health Survey II carried out in India during 1998–99, around 43 % of children under age 3 years were found to be underweight. The National Family Health Survey III (2005–06) indicates that this has declined only marginally to 40 %. Further, there is wide variation in the level of malnutrition among the states in India. For instance, around 60 % of the children under 3 years of age were found to be underweight in Madhya Pradesh, whereas it was only 23 % in Kerala. The proportion of underweight children is significantly higher in northern states than in the southern states.

The declining share of child population during the age structural transition enables parents to send their children to school, including girl children. Bloom and Canning (2008) discuss 'quantity–quality tradeoffs' whereby any reduction in the number of children per household (quantity) leads to investments in human capital (quality). In other words age structural transition has the potential to help achieve universal schooling including for girl children. The lowest net enrolment in primary education was found in Pakistan (66 %) followed by Nepal (74 %) in 2008. Primary school

enrolment ratio was 86 % and 95 % in Bangladesh and India respectively in 2008 (ADB 2011). In countries where universal school education has already been achieved, for example in Sri Lanka (99 %) and in Kerala state in India, the window of opportunity allows for improvement in the quality of school education. In Sri Lanka and southern Indian states which are in an advanced age structural transition phase, the opportunity for investing in higher education is large. As the cost of higher education would increase in the future, the age structural transition gives an opportunity to reallocate resources from primary school sector to secondary and tertiary sectors. Public expenditure on higher education and health needs to be increased as it is essential for human capital accumulation. Although there have been improvements, females 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 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. 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 informal labour market is growing as a result of demographic transition and growth of younger adults. As these countries are unable to generate adequate employment in organized sector, the 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 meet the challenge when these cohorts move onto old age.

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 if growth in labor productivity is maintained. As a significant share of workforce is engaged in agriculture in rural areas, it is important to improve agricultural technology to raise productivity and develop the irrigation system as well as facilitate innovation in agriculture to increase productivity and thereby benefit from the demographic dividend (Hayami 2001). During the period of window of opportunity, East Asian countries expanded employment opportunities in more productive sectors like manufacturing and service (Mason 2003). In all South Asian countries more than half in the labour force are employed in agriculture but this sector contributes less than a quarter of the GDP reflecting a large supply of labour force in less productive employment. And, employment in informal sector is also higher in South Asian countries. Employment in informal sector characterised by low paid and irregular jobs was highest in Bangladesh (85.9 % in 2005) closely followed by India (81.9 % in 2008) and Nepal and Pakistan (74 %); the lowest was in Sri Lanka (40 %) (ADB 2011). The corresponding figures are much lower in many

Southeast Asian countries including Malaysia (21.9 %), Singapore (10 %) and China (10.7 %). In general, productivity is 5–10 times lower in informal sector than in formal sector (ADB 2011) and thus moving out of informal sector into formal sector is critical for economic growth.

Overall employment growth in South Asian countries was also lower than labour force growth during the period 1991–2008 (ADB 2011). Generating employment is crucial to meet the challenges arising from age structural transition. As most in the labour force would have had no schooling or only primary education in most South Asian countries, investing in education is vital for developing a labour force endowed with appropriate human capital. The exceptions to this pattern are the state of Kerala in India and Sri Lanka where human capital is well developed but experience high level of unemployment among the educated (Navaneetham and Dharmalingam 2010). Productively employing this segment of the labour force in Sri Lanka and Kerala would be a challenge for the respective governments. 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.

Gender disparity in education is still high in South Asian countries: the ratio of literate women to men among 15–24 year old was 0.69 in Pakistan, 0.75 in Nepal, 0.80 in India and 0.90 in Bangladesh. This makes it imperative that adequate and timely investment is committed to education and employment creation while the demographic dividend is available. The increased level of schooling and paid work will advance women's empowerment at home and in the society. These changes would then allow women enter the labour market during the period of window of opportunity. This would empower them within the household and encourage participation in public office and community activities.

The size of the female labour force would also increase during the period of window of opportunity resulting from behavioral changes associated with declining fertility (Bloom et al. 2007). It is expected that labour force participation among females would increase due to improvements in their level of education and shortening of the span of reproductive years as the time required for child-bearing declines. This seems to be already happening in some countries. In 2009, the employment to population (15+) ratio for females was highest (62 %) in Nepal followed by Bangladesh (56 %) (UN-ESCAP 2011). There was a moderate increase between 2000 and 2009 in these three countries. In India and Sri Lanka, the rates were hovering around 31–32 % during the 2000s. Pakistan recorded the lowest employment to population ratio of 19.8 % in 2009 and had increased only moderately from 13.5 % in 2000. Though employment to population ratio is higher in Bangladesh and Nepal and comparable to many Southeast Asian countries, a significant share of the employment is in agriculture. The share of female agriculture employment to total female employment in these countries is: 68 % in Bangladesh; 71 % in India; 73 % in Nepal; 75 % in Pakistan and 37 % in Sri Lanka around 2008. As in most developing countries, the share of value added from agriculture in the countries of South Asia is around only 20 % (UN-ESCAP 2011). Though cultural factors may hinder mothers entering the labour force in the formal sector (Basu 2011), this is expected to change in the future due to expansion of education among women. If appropriate policies and programmes are directed towards creating employment for

women in both service and manufacturing sectors, South Asian countries will have an added demographic bonus from the absorption of female labour force in the economy.

Life expectancy is improving in all the South Asian countries and thus the size of old age population will also increase. Longer life will also induce behavioral changes that could increase savings for retirement (Bloom et al. 2004). Longer life is also an added incentive for investment in education as longer years of working life will also ensure increase in return to education. On the other hand, waning of traditional family support and high cost of living at old age may push many in old age to poverty. The size and share of the elderly population has already started increasing rapidly in Sri Lanka and in some Indian states (eg. Kerala, Goa and Tamil Nadu). Further, as life expectancy is expected to be higher among females, the number of female widows is likely to increase in the future as it is already happening in East Asian Countries. Mason et al. (2006) estimated that about half of all Korean and Indonesian women and 40 % of Thai and Filipino women who were aged 60–65 in 2000 were widows. This is being experienced in the state of Kerala in India and in Sri Lanka now; the rest of South Asia will eventually experience in the future. This will have far reaching implications for the support system, both financial and emotional. To meet the challenges, South Asian countries should evolve appropriate public and social policies directed at the provision of social security and health care and facilitate the development of social networks. In India, the central and state governments have taken initiatives to start a number of social security programmes including health insurance to the poor and workers in informal sector (Bloom et al. 2010)

Regional variation in age structural transition accompanying demographic transition within India has the potential for large scale internal migration and thus rapid urbanization. As the size of the young population has already shown signs of stabilization in states that are in advanced stage of demographic transition (eg. Kerala, Tamil nadu and Goa), the relative share of future supply of labour force for India as a whole would be greater from the northern states of Uttar Pradesh, Rajasthan, Bihar and Madhya Pradesh. But most in the labour force of northern states have had little or no schooling. Though these demographically and socio-economically less advanced states are expected to make considerable progress in education in the future, a significant proportion of their working age population would be illiterate or with low level of education (Navaneetham and Dharmalingam 2010). Conversely, states that are ahead in demographic transition and socio-economic progress would have a labour force dominated by those with at least secondary level education. The employability of this labour force with secondary level education in those states/countries with advanced demographic transition would play a significant role in future economic growth. The disparity in the human capital formation among the states in India may act as a catalyst for large scale movements of workforce across the states in India to cater to labour demand. This is already visible in the state of Kerala where large numbers of migrants from north or north-eastern states of India are employed in unskilled/semi-skilled occupations. On the other hand educated skilled workers from Kerala fill the labour markets in gulf countries and other Indian states. A similar trend is also likely to happen in South Asian countries. Thus 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 in all of South Asia. As the urban population is expected to grow faster due to rural–urban migration, it would be a major challenge for all South Asian countries to also provide quality water and sanitation facilities in urban areas.

Conclusion

The governments of South Asian countries should make concerted efforts to develop their human capital by investing in education, health and nutrition in order to reap the benefits that are likely to flow from 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 is likely to bring more opportunities for employment and growth. 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 along with investment in education are critical ingredients for economic growth (Bloom and Williamson 1998; Mason 2003; Navaneetham 2004). To realize the potential of the second demographic dividend, appropriate policies and programmes should be in place to encourage workers to save for their retirement and accumulate assets. Judging by domestic savings rate India seems to be moving in the right direction: domestic saving rates as per cent of GDP increased from 23 % in 1990 to 32 % in 2006. In other South Asian countries, the saving rate is still at a low level. There was only a marginal increase in saving rate in Sri Lanka, from 13 % in 1990 to 18 % in 2008. The saving rates were 11 % in Nepal, 14 % in Pakistan and 20 % in Bangladesh in 2008 (ADB 2011).

Demographic dividend accruing from the age structural transition is not a given. The quantum of dividend will depend on the speed of accompanying transitions in education, employment and technology. Age structural transition provides a unique opportunity. Policy makers should formulate social and economic policies to take full advantage of this opportunity. In order to meet future challenges, it is important to make use of the opportunity available for a relatively short period, a one-time ‘gift’ arising from demographic transition, by adopting appropriate economic and social policies. Among the South Asian countries, India has an added advantage in 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 have just entered it. This not only makes the window open for India as a whole available for a longer time period, but also makes the challenges emerging from demographic changes smoother and manageable. This also opens up the prospect for state specific policies to exploit the window of opportunity. With rapid reduction in fertility, Bangladesh has had greater potential to benefit from first demographic dividend. Nepal and Pakistan have just

entered the window of opportunity. Sri Lanka is already well past the opportunity for the first dividend, but opportunities are becoming available to benefit from the second demographic dividend. With the right institutional contexts, social and public policies, there is every likelihood for South Asian countries to experience high economic growth and increased standard of living.

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