

# ***Changes in Population Age Structure and Economic Development: The Case of Bangladesh***

***Rashed Al Mahmud TITUMIR<sup>1</sup>***

***Md. Zahidur RAHMAN<sup>2</sup>***

## **Abstract**

Using the case of Bangladesh, this article critically explores the dynamics of changes in population age structure and their implications for economic development. It argues that the existing literature, though rich and covering a wide range of issues, is highly fragmented. The existing literature either narrowly focuses on population growth vis-à-vis economic growth; concentrates too much on empirical estimation of ‘dividend’; makes justifications for policy interventions; or concentrates on restricted microeconomic models of choice and rationality to understand demographic change. This article attempts to propose a comprehensive framework that stipulates the relations amongst changes in population age structure, demographic transition, and economic development in the contexts of developing countries. Per the proposed framework, Bangladesh is positioned in the intermediate stage of its demographic transition, which is supposed to be marked by a productive phase of ‘demographic dividend’ and could affect economic growth principally through changes in the composition of the labour force, as conditioned by a number of policy variables. Using this framework, the article finds the recent development performance of Bangladesh to be lower than expected, as it has not been able to fully capitalise on advantageous changes in the age structure of its population. This paper also identifies a number of challenges in terms of harnessing economic growth to be more job-intensive in productivity sectors, enhancing quality of labour and formation of skills, and expanding the productive capacity to absorb a growing labour force. All of these have useful implications for other developing countries in similar socio-demographic conditions.

***Keywords:*** *Population Change, Demographic Dividend, Economic Development, Bangladesh.*

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<sup>1</sup> PhD and MSc. Professor of Economics, Department of Development Studies, University of Dhaka (Bangladesh). E-mail: rt@du.ac.bd.

<sup>2</sup> MSS. Lecturer, Department of Development Studies, Bangladesh University of Professionals (Dhaka, Bangladesh).

## **INTRODUCTION**

This article explores the dynamics of changes in population age structure during demographic transition and their implications for economic development as illustrated in the case of Bangladesh. Population has always been one of the most debated aspects of economic development, especially with reference to the relations between demographic variables and economic growth. An evolving consensus acknowledges that there exists a two way linkage between population change and economic growth, and both are affected by each other during the process of demographic transition and economic transformation (Bloom, Canning, & Malaney, 2000). The existing literature can be compartmentalised into four different approaches to understanding population change and economic development: studies that have remained prisoners of the past by confining themselves to the historical legacies of Malthusian ideas about adverse economic consequences of population, as a result focusing too narrowly on population growth vis-à-vis economic growth; studies that have concentrated too much on empirical estimation of the dividend effects of population age structural change on economic growth; studies that have provided justification for finding the validation of policy interventions; and studies that have concentrated on microeconomic models of choice and rationality, overlooking the broader institutional factors that greatly condition demographic transition and its consequences on an economy. Though the existing approaches to population-development interaction are rich and cover a wide area of study, the current literature broadly appears to be fragmented in nature. This article makes an attempt to propose a comprehensive framework that integrates recent approaches and formalises the relations amongst changes in population age structure, demographic transition, and economic development in the context of developing countries.

Since most developing countries are currently undergoing a demographic transition characterised by rapid decline in mortality and fertility rates, the impact of changing population age structure particularly what is termed as ‘demographic dividend’ on the economy has attracted much attention from economists and demographers recently (Hock & Weil, 2012; Lee & Reher, 2011; Mason, 2005; Lee, 2003; Bloom & Williamson, 1998). The essence of these studies is that demographic shifts in population

age structures have crucial implications for economic growth and social development. Understanding the relationship between population age structure and economic development is worthwhile because it provides empirical assessment of the current population-development scenario and allows useful predictions about the future courses of change. Second, the relationship between age structure and economic growth has been found to be strong and significant in a number of contexts in both developed and developing countries (Pool, Wong, & Vilquin, 2006; Feyrer, 2008).

This article follows a proposed framework to study population dynamics in Bangladesh as it relates to economic growth and social development following. For a number of reasons, the case of Bangladesh is compelling. It is a small developing country that ranks 94th in terms of its geographic area but also ranks 8th in terms of its population size. With an estimated population of 161 million in 2015, it is one of the most populous countries in the world (United Nations, 2015). Among all developing countries, Bangladesh is considered to be a “special case” due to its unprecedentedly high population density and its poor socio-economic status. The country is seemingly facing a very challenging situation, as the current population density is five times higher than any other country with a population of over 100 million (Streatfield & Karar, 2008). Contrary to this gloomy picture as portrayed by high figures of population size and density, a more promising account can be found by looking at the composition of the population and dynamics of changes in its age structure. For example, the total population of Bangladesh is undergoing a dynamic transition in which the proportion of the working age population (i.e. 15-64 years of age) is increasing, with much potential for productive growth. This trend offers an opportunity to accelerate the pace of economic development in Bangladesh.

Against this backdrop, the article provides an examination of the economy, its growth pattern, and economic structures to reveal Bangladesh’s standing in capitalising upon opportunities created by inevitable yet fairly predictable changes in the population age structures. A look at the structure of the economy of Bangladesh, however, seems to suggest that the country has not been able to derive much benefit out of advantageous changes in its population age structure. It can be emphasised that these challenges could loom large if adequate actions are not put in place to harness the potential

gains from changes in age structures.

The rest of the article is organised as follows: the first section critically reviews the literature on population-development dynamics and proposes a framework that links changes in age structure with economic development, and latter sections provide analysis of Bangladesh's recent development performance and major impending challenges in light of the proposed framework.

### **POPULATION DYNAMICS AND ECONOMIC DEVELOPMENT: A REVIEW AND A FRAMEWORK**

The linkages between population dynamics and socio-economic development have been debated as far back as Malthus. The linkage between demographic variables and economic growth has always persisted in both academic and policy debates. It is now acknowledged that population dynamics and development are both compound phenomena and do not interact in a straightforward way (Hayes & Jones, 2015). There exist two- way linkages between population change and economic growth, with one affecting the other and vice versa (Bloom et al., 2000). The pace and pattern of economic and social transformation implicate the process of demographic transition, whereas different stages of demographic transition have their consequent implications on economic growth and development. The nature of the relationship is, however, much debated among researchers, and the focus of these debates has shifted from a narrow view of population growth vis-à-vis economic growth towards a more dynamic and macroeconomic analysis of the implications of the changing age structure of population on economic development (Headey & Hodge, 2009; Mason, 2005).

This article categorises these debates into four major approaches. The first one is described as the 'historical legacy approach', which has its origin in the ideas of Malthus. In *An on the Principle of Population* (1978), Malthus posits that rising prosperity will be accompanied by increasing fertility and rapid population growth, which will ultimately result in widespread poverty and starvation, as food production will not be able to keep pace with the exponential growth of population. This view has its contemporary adherents, who have remained prisoners of the past pessimism of Malthus.

During the ‘age of development’ between the 1950s and 1990s, the problem of population was considered as a massive, urgent, and paralysing pressure on the economies and societies of poor countries (Coale & Hoover, 1958; Ehrlich, 1968; Crenshaw, Ameen & Christenson, 1997; and Sachs, 1997). The neo-Malthusian resurgence during this time held the view that the economy might succumb to a “population-poverty trap”, and to counter this pessimism, the majority of attentions and resources (both intellectual and material) was devoted towards halting population growth (Ehrlich & Holdren, 1971). Population control, family planning, and massive public policy interventions have achieved this objective of significantly reducing the population growth rate (UNFPA, 2015). Nevertheless, this scholarship has disturbingly created an impression that large populations are the source of many problems with and is burdens on the economy.

While this pessimism was not entirely unfounded, it undermined proper understandings of the productive role of population on the economy of a country. As a result, a group of observers adopted a more ‘positive’ view of population, citing the roles of human capital formation, innovation, agricultural revolution, and technology development (see, for example, Boserup, 1981; Kuznets, 1967; and Simon, 1981), while another group took a ‘neutral’ position regarding the role of population in development. This latter group found little to no significant association between population growth and economic development, based upon regressions of per capita income growth on population growth using cross-country data sets (Kelley & Schmidt, 1995; Barlow, 1994; Bloom & Freeman, 1988). This approach, however, took a rather narrow view, focusing only on the effects of population variables such as growth rate, size, and density on economic growth.

The former approach portrays population as a productive force, stating that the per capita productive capacity of the country expands as working age population grows much faster than the dependent population. New evidence has provided strong support for the positive and significant role of population in augmenting economic growth, which has been termed as ‘demographic dividend’ (Bloom & Williamson, 1998; Mason, 2005). While rapid population growth is widely considered to have a negative pressure on the economy, nevertheless, past approaches failed to indentify

when population growth may become beneficial for economic growth. Alternatively, taking into account the growth of the labour force, it has been found that aggregate population indicators hide more than they reveal. That is, the growth of the adult working age population promotes economic development with appropriate policy inducements, whereas the growth of the populations of children and the elderly results in the opposite (Headey & Hodge, 2009; Crenshaw et al., 1997).

This ‘dividend estimation approach’, as is termed here, has shifted the focus from aggregate population growth variables to the dynamics of population changes as they affect the population age structure and has changed the direction from ‘economic development to population growth’ to ‘population growth to economic development’ (Walker, 2014; Guinnane, 2011; Lee, 2003; 1998). This approach notes that changes in population age structures comprise “the mechanism through which demographic variables affect economic growth” (Bloom & Williamson, 1998). For example, Bloom and Williamson (1998) have found that the ‘dynamics of population changes’ affect economic growth through changes in the age structure of the population rather than through the aggregate rate of growth of the population. This claim was substantiated by empirical findings that showed that population dynamics explained much of the economic ‘miracle’ of the ‘East Asian Tigers’, as around one-third of their economic growth from 1965 to 1990 was due to favourable changes in their population age structures (Bloom & Williamson, 1998). Further, about 15 to 25 percent of the economic growth in China between 1980 and 2000 was estimated to be due to demographic factors (Wang & Mason, 2008). This approach, however, concentrates too much on empirical estimation of the magnitude of dividends and most frequently studies diverse groups of countries together without adequate attention to the specific context of a particular country.

The third approach is quite similar to the dividend approach but slightly differs in its strong emphasis on institutional conditionality. Here it is called the ‘policy success approach’, as it regards the dividend period to be merely a ‘window of opportunity’ with potentials rather than a guaranteed gain of faster economic growth. While a number of studies have found that demographic changes have significant but varied implications for

economic growth and social development, this approach stresses that there is no deterministic relationship between demographic change and the economy (UNECA, 2013; Headey & Hodge, 2009). This means that a certain type of change in the demography for instance, a relative increase in the share of the working age population would not directly lead to higher economic growth; rather, the positive effects of the demographic dividend are decidedly dependent on pursued policies. This is evident from the well documented experiences of Southeast Asian countries (Bloom & Williamson, 1998; Mason, 2001). Further, studies on African countries provide strong evidence that without good institutions and an enabling policy environment, much of the potentials offered by favourable changes in age structure cannot be translated into faster economic development (Bloom, Canning, Fink, & Finlay, 2007). A poor institutional environment and the absence of responsive policies also explain why several underdeveloped regions have derived little to no dividends from the rising share of working age population. For example, Indian states such as Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh have performed more poorly with regard to socio-economic indicators compared to the more developed states of India (Thakur, 2012). This approach seems to provide much justification for policy interventions.

The final approach, termed the ‘microeconomic approach’, assumes the importance of choice and rationality. The microeconomic theory of fertility decline sees children as consumption goods and takes into account their relative costs, a couple’s income, and alternative forms of consumption in explaining the decline in fertility as a function of individual choice (Becker, 1960; Schultz, 1973). This microeconomic model links fertility choices with other economic variables like consumption and labour force participation. These neo-classical economists explain decline in fertility by formalising an inverse relation between level of income and number of children and a positive relation between the quality of the life of the child and income (De Bruijn, 2006). While Becker (1960) contributed to the demand side of fertility transition, Easerlin’s (1975) approach later added sociological variables like supply of children as well as the effects of age cohorts on fertility. These formulations do not consider the role of social and institutional factors that shape individual fertility choices (Mason, 1997).

The microeconomic theories have received criticism partly because of their narrow and individualistic notion of choice and their restrictive understanding of rationality and partly because of their overlooking of the socio-cultural and political determinants of fertility decisions (De Bruijn 2006). Mason (1997) asserted that a combination of socio-cultural, environmental, and institutional forces and factors cause fertility transition and added that the micro-economic theories provided little insights on demographic transition in terms explaining broader institutional implications. Given that a large body of literature has detailed the transition process along with the decline in mortality and fertility, emphasis is not placed on the causes but on the macroeconomic consequences of age structure changes during and even after the transition process (see Lee (2003) for a detailed discussion).

The preceding review of four major approaches reveals that these approaches cover diverse issues but are lacking coherence. To address the fragmented nature of these different approaches to understanding the relationship between population change and economic development, this article proposes a framework that brings synergies to different variables. The framework outlines three major stages of shifts in population age structure during demographic transition as it relates to economic development by locating the relative position of key variables that affect economic development, such as labour and capital. It must be acknowledged that this is not an entirely new formulation but instead offers an integrated approach. Before outlining the framework, a brief discussion of demographic transition and life cycle theories of consumption is required.

Demographic transition is a worldwide phenomenon that has been experienced by all countries in the world and studied extensively in several fields of the social sciences. The theories of demographic transition were formulated first by observing the historical experiences of population changes and development in Western industrialised countries and later substantiated with a large body of evidence from developing countries (Kirk, 1996; Chesnais, 1992). Demographic transition is a gradual process

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<sup>1</sup> For example, Lee (2003) asserted that “patterns of change in fertility, mortality and growth rates over demographic transition are widely known and understood. Less well understood are the systematic changes in age distribution that are an integral part of the demographic transition and that continue long after the other rates have stabilized” (p. 180).

of population change that starts typically with a reduction in mortality rates followed by a fall in fertility rates. The middle period between the fall in mortality and fertility rates is marked by rapid population growth leading to a natural increase of the population size. Eventually, the decline in the fertility rate stabilises the growth rate of the population (Lee, 2003). Before the beginning of the transition process, there is a high birth rate along with a high death rate, with each offsetting the other and thus keeping the total population at a relatively stable size.

The demographic transition typically passes through a number of phases, and each features dynamic changes in the population age structure. During this gradual process, the age structure of the population shifts as popularly pictured through an initial bottom heavy 'pyramid'-shaped population structure with a large concentration of younger ages and a narrow 'dome'-shaped population structure with older individuals outnumbering the younger individuals at the end of the transition process. As Lee and Reher (2011) observed, "the transition transforms the demography of the societies from many children and few elderly to few children and many elderly", while the transient period between these two phases experiences an increase in the share of the adult working age population. This period might last for several decades. This transitory period has significant implications for economic development that will be elaborated later in this article.

Life cycle theories of consumption and production add insights. Bloom, Canning, & Sevilla, (2003) have shown young and old people consume more than they produce, if any, in the form of education, healthcare, and retirement expenditures. The adult working population supplies labour, produces more than it consumes, and saves for its future consumption. As the relative share of these working and dependent populations changes, it changes the overall economic scenario of the country. Bloom et al. (2003, p. xi) have explained that "[b]ecause people's economic behaviour and needs vary at different stages of life, changes in a country's age structure can have significant effects on its economic performance". Hence, looking at the challenges and opportunities created by present and future changes in demographic age structure provides useful insights about its effect on socio-economic development.

Informed by the preceding explications, this article has outlined three phases of demographic transition (in Table 1) by taking into account the changes in the relative size of the major population age groups and dependency ratio. While in conventional demographic transition theory, there can be at least five stages, with each defined based on the state of demographic variables such as mortality rate, fertility rate, and population growth rate, in this framework, the article has considered changes in population age structure to reveal its implications for economic development. Each stage of demographic transition provides a unique set of challenges and opportunities that can be seized to augment faster economic growth and social development. Failing to seize these opportunities will mean that challenges will prevail and the prospect of economic development will be compromised.

*Table 1. Demographic transition, changes in age structure, and implications for development*

<b>Initial stage</b>	<p><b>Key stylized fact: Increase in the proportion of children and child dependency ratio</b>          (*Span of this period: (30 to 50 years, but effects continue even longer)</p>
	<p><b>Challenges:</b> Rising expenditure; expanding institutional capacity and required infrastructure; adopting relevant policies for meeting educational, health, and nutritional needs of large proportion of children  <b>Opportunities:</b> Forming human capital by ensuring the supply of educated, healthy and skilled labour force; utilising untapped potential of girls' education</p>
<b>Intermediate stage</b>	<p><b>Key stylized fact: Increase in the proportion of working age population and decrease in the total dependency ratio to its minimum</b>          (*Span of this period: (40 to 60 years with variations among groups of countries)</p>
	<p><b>Challenges:</b> Expanding productive capacity of the economy; attracting investment; creating employment; addressing unemployment; rising inequality and falling capital labour ratio; adopting 'job-rich' growth enhancing policies for rapidly growing working age population  <b>Opportunity:</b> Passing period of demographic dividend with 'window of opportunities'; unique economic advantage of having large labour force; accelerating economic growth; accumulating capital; and mobilising savings; and capitalising on female labour force participation</p>

**Final stage**

**Key stylized fact: Rapid increase in the proportion of elderly population along with old-age dependency ratio and total dependency ratio**

(\*Span of this period: (indeterminate – continues even after the completion of transition)

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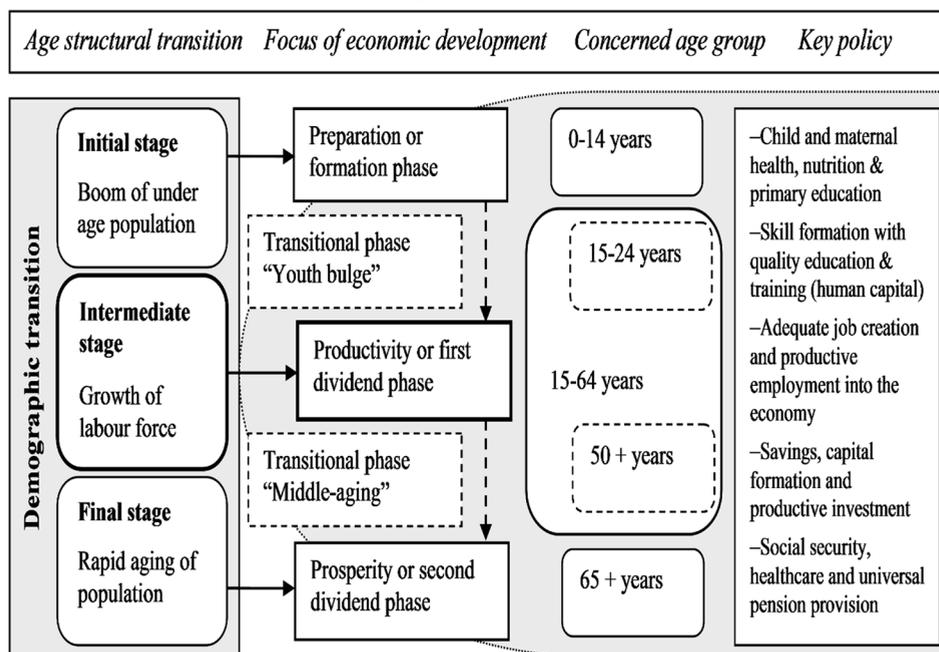
<b>Challenge:</b> Rapid aging of population; ensuring social security of elderly population; providing health services for elderly; increased burden on the working age population as well as government to support the elderly from private transfer or public pensions	<b>Opportunity:</b> Continuing increased and sustained economic growth employing savings and wealth accumulated in earlier phase (second dividend); rising capital labour ratio; stimulating labour productivity growth due to capital deepening
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*Source:* Prepared by the authors based on different literature, particularly drawing on Lee (2003) and Mason (2005).

It has been well established that age structure is the mechanism through which population variables affect economic growth, with three possible channels of impact in the form human capital, labour supply, and savings (Bloom & Williamson, 1998). To comprehensively capture the relations between changes in population age structure, demographic transition, and economic development, a framework has been developed (Figure 1). It formalises how age structural transition creates imperatives for economic development during the progressive phases of demographic transition in a country. The transmission mechanism and properties of each of the three stages are delineated in the following sections based on the current level of understanding in the available literature, with primary emphasis in the context of developing countries, which are currently undergoing the initial or intermediate stages of their demographic transitions.

**Figure 1.** Age structural transition and economic development:  
A framework



Source: Prepared by the authors based on Table 1

### Initial stage, or the formation phase

At the initial stage of demographic transition, the shape of population age structure is dominated by the large proportion of children, making up a young dependent population that is in need of food, nutrition, clothing, housing, education, and health care. A large share of private and public expenditure is needed to cater to the needs of this young population, but most governments and families struggle to meet these challenges. This phase is also critical as it provides opportunity for human capital formation by making adequate investments in quality education, skills development, and the improved health of children who will enter the labour force in the next phase.

As it relates to economic development, the initial stage of age-structural transition is essentially the preparation or formation phase that builds the foundation for reaping dividends in later stages. The age group concerned is

below 14 years of age. A key proposition of this phase holds that increased labour supply is not likely to boost economic growth unless improved health conditions, quality education, and skill formation are ensured in line with the structural transformation of the economy.

### **Intermediate stage, or the productivity phase**

During this stage, the concentration of the population shifts to prime working ages. This creates an increase in the economically productive population, which consumes less than it produces and also saves for its consumption in old age. The dependency ratio reaches its minimum, and the large size of labour force creates a ‘window of opportunity’ for faster economic growth. This reduces the economic burden of bringing up children and also tends to improve prospects for girls in families with fewer children and responsibilities. The female working age population becomes economically active, enters the productive sector, and contributes to the growth of the economy. Unlike in previous phase, enough resources become available for investment in productive activities, generating the faster growth of the economy and the consequent rise in the per capita income of the country (Mason & Lee, 2007). As the number of dependents per worker decreases, the per capita income raises, a relationship found to describe 22 percent of the case of India (Lee, 2003, p. 182). This period, however, may also experience rising inequality (Osmani, 2015) and a falling capital labour ratio (Coale & Hoover, 1958) as the number and proportion of the working age population peaks.

This stage marks the productivity or ‘first dividend’ phase and is a crucial in determining a country’s path of economic development. As the shifts in age structure create a bulge in working age population and particularly in youth population, this phase simultaneously provides huge potential and daunting challenges to cater for a growing labour force both in relative and absolute terms. The larger working age population of people aged 15-64 include a ‘youth age group’ (between 14 and 24) and a middle-age group (above 25 years of age). These groups warrant priority policy attention. For the first group, the challenge is to ensure a smooth transition from education to employment by matching levels of skills with appropriate jobs in growing and productive sectors of the economy. Creating a favourable environment for savings and investment along with incentivising the

middle-age group, who tend to save more, also requires prioritisation. Some key propositions of this stage hold that the additional and growing size of the labour force will not generate higher economic growth unless they are employed productively. The realisation of the maximum potential economic growth is less likely to be achieved without a threshold level of capital deepening in the economy.

### **Final stage, or the prosperity phase**

This stage experiences the aging of the population as the large cohort of the working age population gets older and again becomes dependent. This raises the overall dependency ratio and puts economic burden on the shrinking working age population. For governments and families, greater resources are required to take care of the elderly population. Population aging is a grave concern for most of the high-income countries, which are now at the final stage of their demographic transition. For example, the rapidly aging population in Japan is the cause of serious economic challenges as it reduces the savings rate and increases social security and healthcare costs (Hurd & Yashiro, 2007). The consequence of population aging will be similar or even worse for developing countries as well if they do not have sufficient savings before they get older (UNFPA, 2015). This is likely to reduce the rate of aggregate savings as shown by the life cycle savings model (Browning & Crossley, 2001). Nevertheless, provided sizable capital accumulation during the previous phase, the capital labour ratio may increase in the final stage due to the dwindling size of labour force, though the current savings rate may become lower (Cutler et al., 1990; Lee et al., 2000). The resultant capital deepening may expedite labour productivity growth and sustain improvements in standards of living. Nevertheless, this would depend on the extent of savings mobilisation and capital accumulation by inducing private savings or by devising institutional requirement – or both – as was the case found in Singapore (Lee, 2003, p. 183).

Depending on the economy's performance during the earlier two phases, the final stage promises a prosperity or 'second dividend' phase when economic growth can withstand the challenges of population aging and a shrinking labour force if increased savings and capital deepening can stimulate labour productivity in the economy. The age group concerned in

this stage is the population above 65 years, which would incur increasing resource costs irrespective of the level of institutional capacity to support them. The main proposition of this stage holds that economic development will not be inclusive and sustainable unless comprehensive social security, including a universal pension system, is developed in a country.

### **Transitional or transformation phases**

To take full advantage in augmenting economic growth during the intermediate stage when population age structure changes favourably as the working age population starts to increase relative to the young and old populations, the structure and capacity of an economy must be expanded to generate productive employment for absorbing the growing size of the labour force. Starting from the formative phase and throughout the productive phase, sufficient investments are to be made to transform the 'youth bulge' into human capital by providing required education and training to adequately meet market demand and the requirements of the expanding economic sectors.

If efforts to reap the benefit of the first dividend are successful, then there will be a sizable increase in the population's per capita income. Moreover, since middle-age populations are most likely to save portions of their current income to maintain their level of consumption in the future, a rise in the size of this age group creates greater prospects for savings, which will result in capital formation and the accumulation of wealth. If a country can harness the change in the population's saving and investment by creating a positive environment for investment, it can achieve a sustained level of economic growth, which is defined as the 'second demographic dividend'. The benefit of the second dividend is usually larger than the first and can last much longer (Mason, 2005). For this to happen, economic policies must be directed using the appropriate methods by coinciding individual incentives with the higher growth trajectory of an economy (Lee & Mason, 2006). Thus, it is necessary to stress that advantageous demographic changes will not automatically generate higher economic growth; rather, economic opportunities arising out of demographic changes must be capitalised upon through required institutional and policy responses.

The final emphasis is that economic outcomes are not only dependent upon

appropriate pursued policies but also equally conditional on timely execution of those policies during particular stages. As the notion of ‘transitional phases’ implies, there is no clear-cut demarcation between any two stages, and that is why appropriate policies are crucial for fully leveraging the economic potentials of population changes during the intermediate phase. These challenges as well opportunities, as the article outlines, have particular relevance to developing countries, as they are presently passing through the initial or intermediate phases of their demographic transitions (Mason, 2005). Currently being in the intermediate stage of demographic transition, Bangladesh has experienced rapid growth in its labour force, and its dependency ratio has decreased, which is offering an opportunity for realising demographic dividend in the country, albeit with impending challenges relating to equipping and utilising its growing labour force.

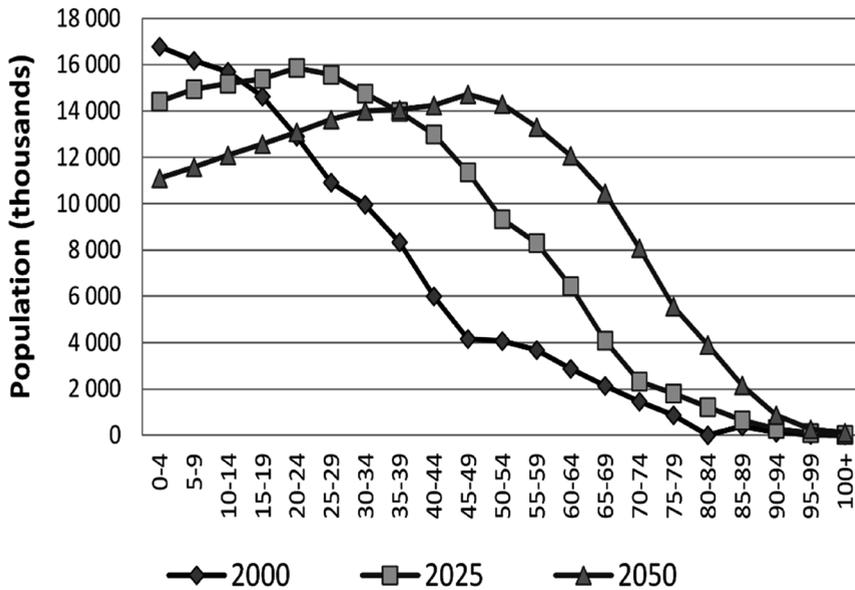
## **DEMOGRAPHIC TRANSITION AND CHANGES IN POPULATION AGE STRUCTURE IN BANGLADESH**

Bangladesh is a lower middle-income country located in South Asia and neighbouring population giants like India and China. Like other countries in this region, Bangladesh started its demographic transition in the early decades of twentieth century when it was a part of the Indian subcontinent still under British dominion. Although the mortality rate began to decline in the 1920s, the transition did not gain momentum until the country gained its independence from Pakistan in 1971 (UNFPA, 2015). The fertility transition or steady decline in the fertility rate started from the mid-1970s, around which it reached a maximum 6.92 children per woman in the 1965-70 period and then decreased substantially to 2.4 children per woman in the 2005-10 period, with a more than 65 percent reduction from the 1965-70 level. The population growth rate has also declined significantly during this period. It was found that a combination of factors and forces including public health interventions, rising income and education, and changing poverty dynamics, among others contributed to the decline in fertility (Adnan, 1998).

During the course of the demographic transition, Bangladesh has been undergoing dynamic changes in its population age structure as stipulated by the age structural transition model. In Figure 2, the demographic transition and the consequent changes in the age structure of the population of the

country are shown for the years of 2000, 2025, and 2050. It is apparent that the highest concentration of the population is shifting from children to the working age to the elderly population across these years.

**Figure 2.** Shifts in population age structure in Bangladesh, 2000, 2025, 2050



Source: UN (2015) World Population Prospects: The 2015 Revision

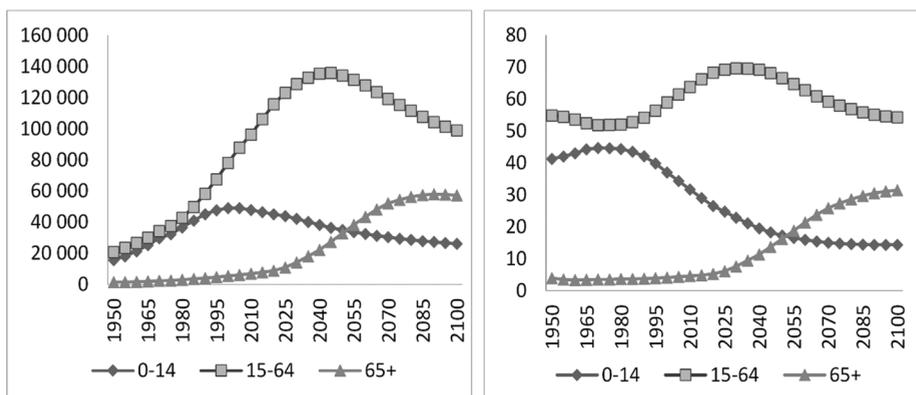
At present, Bangladesh has a youthful age structure with almost 52 percent of Bangladeshis belonging to below 24 years of age and 32 percent under 15 years of age. Although Bangladesh has achieved a significant reduction in its mortality and fertility rates, the proportion of the youth population will remain high in the age composition of the country for at least the next three decades due to what is called the ‘population momentum effect’. For instance, the proportion of the working age population has increased from its lowest point of 51.9 percent in 1970 to 63.7 percent in 2010 a 22.74 percent increase. The UN projects that it will peak at 69.6 percent in 2030 followed by a period of gradual decline. In contrast, the proportion of the young population (aged 0-14) has decreased 29.08 percent, from its highest point of 44.7 percent in 1970 to 31.7 percent in 2010. The UN

projects that the young population will be around 20 percent of the total population in 2040, after which it will decline further before stabilising during the 2080s (UN, 2015).

**Figure 3.** Total Number and Proportion of Young, Working-age and Old Population in Bangladesh (Medium Variant), 1950-2100

(a) Total number by age groups (thousands)

(b) Proportion by age groups (%)



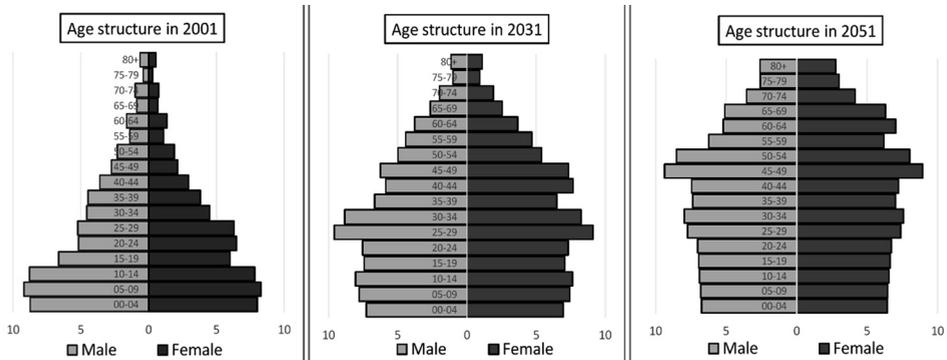
*Source:* UN (2015) World Population Prospects: The 2015 Revision

During the last couple of decades, the proportion of older population aged 65 years and above remained quite low at around four to five percent of the total population. However, the future trend indicates that this situation will reverse with a rapid increase in the number of older population and a gradually declining young population. Projections based on UN (2015) data reveal that the share of the old population will double from its present size by 2035, becoming 9.4 percent of the total population; it will continue to increase at a faster rate thereafter, becoming 16.2 percent by 2050 and, finally, 31.4 percent by 2100.

In contrast, the consequent share of the working age population will start to decline more visibly from 2040 on, decreasing to 14.6 percent by 2070 and declining even further thereafter, though at a decreasing rate. It is predicted that due to the declining and then negative population growth rate, the size of the working age population will start to decrease mostly from 2040,

and this trend will be intensified by the acceleration of population aging during the post-2050 period. These changes in the age structure are also evident from the gradually increasing median age of the population, as it is projected to increase from 24 years in 2010 to 28.4 years in 2020, 33.8 years in 2030, and 36.1 in 2040, with a further increase throughout the following decades. Population pyramids most vividly illustrate these changes in the age structure of the population over time. Figure 4 shows the gradual changing shapes of the three population pyramids of Bangladesh in 2001, 2031, and 2051.

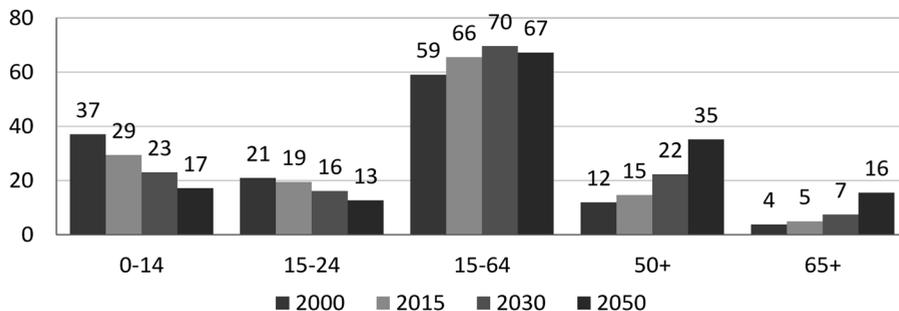
**Figure 4.** Population Pyramids and changes in age structure in Bangladesh



*Source:* Prepared by authors based on BBS (2015b)

The transformation of the population age structure in Bangladesh resembles a classic pyramid shape in the early 2000s, indicating a high concentration at the bottom of the pyramid, while in 2031, the age structure seems to be an onion-like shape indicating that the relative share of the working age population increased. Future projections show that by 2051, the share of the older population will continue to rise relative to the young and middle-age populations due to a lower or negative fertility rate and increasing life expectancy. These dynamic changes in the relative share of key age groups in Bangladesh are shown in Figure 5.

**Figure 5. Percentage of total population by selected age groups in Bangladesh**



*Source:* UN (2015) World Population Prospects: The 2015 Revision

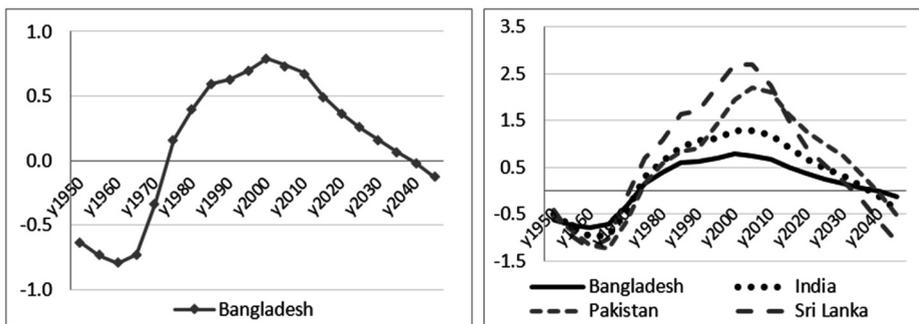
Based on the above analysis, several trends can be expected to happen in next three or four decades that should be taken into account when deciding the course of economic development of the country. First, the share of young dependent population aged below 14 years is decreasing at a faster rate, but this age group will still comprise 29 percent of the total population, implying that a sizable amount of resources is needed to cater for their human capital development. Second, the share of the working age population (15-64 years) is increasing considerably, with a higher bulge in the young population aged below 24 years. This trend will prevail until 2050, providing considerable opportunities for taking benefit from a larger labour force while equally posing challenges of absorption in productive sectors and employment creation in the economy. Third, the share of the older population (approximately more than 5065 years) will start to increase considerably from 2030s on, and it will constitute a major proportion claiming a large share of resources in terms of social security and old age benefits in the following few decades.

## DEMOGRAPHIC DIVIDEND, ECONOMIC GROWTH, POVERTY REDUCTION, AND INEQUALITY IN BANGLADESH

Demographic variables contribute to economic development through changes in population age structure. After estimating the relationship between changes in population age structure and economic growth among 127 countries for the period of 1950-2010, the World Bank found that a 1.0 percentage point growth of the working age population has led to a rise in per capita GDP growth by 1.1 to 1.2 percentage points (World Bank, 2016). This direct effect of the growing size of the working age population on economic growth is termed as ‘first demographic dividend’. As this article has identified, Bangladesh is currently in the intermediate stage of its demographic transition and halfway through the productive or first dividend phase. A number of estimates have been made to approximate the effect of the growing working age population on the economic development in the country (Raihan, 2016; UNFPA, 2015; Mason, 2005). The estimate carried out by Mason (2005) shows that the phase of first demographic dividend with the window of opportunity started in 1975 and will end in 2040. The magnitude of the first demographic dividend in Bangladesh, however, has been the lowest among South Asian countries, as shown in Figure 6.

**Figure 6.** First demographic dividend in Bangladesh and in other South Asian countries

(a) First demographic dividend in Bangladesh      (b) First dividend in selected South Asian countries



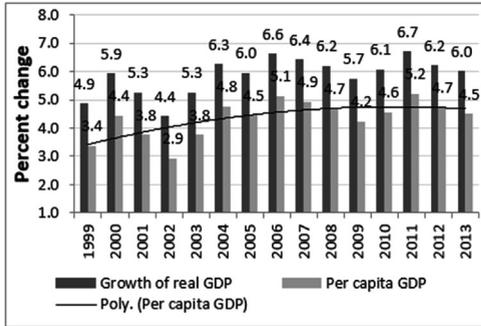
Source: Prepared by authors based on country estimates in Mason (2005)

Overall estimates show that in South Asian countries, the demographic dividend contributed to a rise in per capita GDP growth by 0.80 percent a year during the 1970-2000 period. During that same period, Bangladesh experienced only a 0.46 percent dividend per year (Mason, 2005). Comparatively, Sri Lanka has gained the highest dividend in South Asia, but the magnitude of gains in economic growth due to demographic dividend is lower in Bangladesh than those of India and Pakistan. Other available estimates also found a low dividend in case of Bangladesh (Raihan, 2016). Despite the relatively longer duration of the dividend period, the economic gains that have been realized in South Asia are low in general and even lower in Bangladesh than in most of the East and Southeast Asian countries (Mason, 2005).

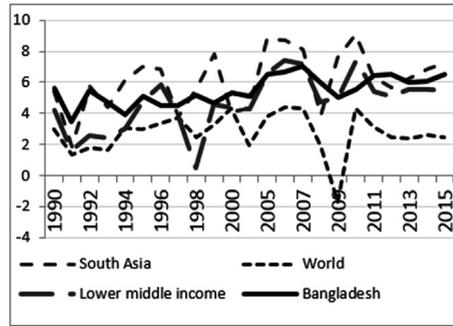
Bangladesh has enjoyed a long period of intermediate productive phase and is still left with two more decades, but it so far it has not fully exploited the advantageous changes in its demographic age structure in order to accelerate its economic development. The questions that need to be answered are why the magnitude of dividend has been so low in Bangladesh and how Bangladesh can maximise its gains in the remaining years before demographic advantages turn negative. A selective assessment of the Bangladeshi economy provide some insights in this regard.

Throughout the last several decades, the economy of Bangladesh has been growing at a moderate rate. During the last one and half decades, the average annual GDP growth rate was over six percentage points. Since the population growth rate is below 1.4, the growth rate of per capital GDP has been over 4.5 percent per year. As a result of rapid economic growth, Bangladesh became a lower middle-income country in 2015 and aspires to become a middle-income country by 2021. The trend of the economic growth rate in Bangladesh is commendable in comparison with other South Asian and lower middle-income countries, as shown in Figures 7(a) & (b).

**Figure 7 (a).** Real GDP growth and per capita GDP growth in Bangladesh, 1999-2013 (%)



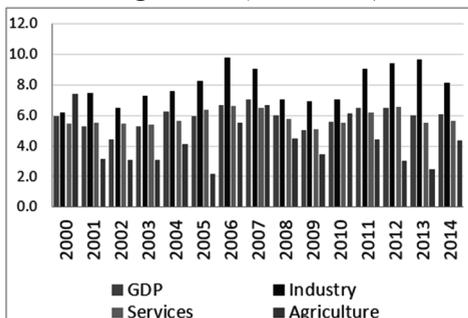
**Figure 7 (b).** Trends in annual GDP growth rates (%)



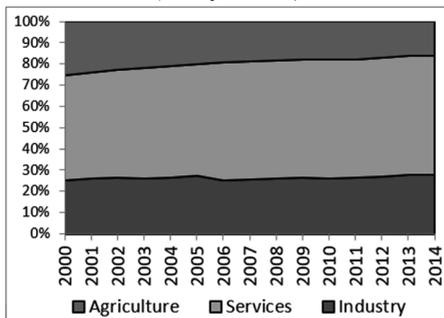
Source: BBS, Bangladesh Economic Reviews 2002, 2008 and 2015 and World Bank Dataset

Even so, a critical assessment of the growth experience of the country reveals that Bangladesh has actually performed below its potential, and its achievement is quite low compared to countries like China, Malaysia, and South Korea, which were similar to Bangladesh in many respects during the 1970s (Ahmed, 2014). A more careful observation shows that despite fast economic growth during the last several decades, the economy did not experience any major structural transformation, as the percentage shares of the GDP earned by three broad economic sectors – service, industry, and agriculture – remained almost stagnant over recent years, with noticeable growth only in the service sector, as shown in Figures 8(a) & (b) below.

**Figure 8 (a).** Growth of GDP by broad economic sectors in Bangladesh (annual %)



**Figure 8 (b).** Structure of output by broad economic sectors (% of GDP)

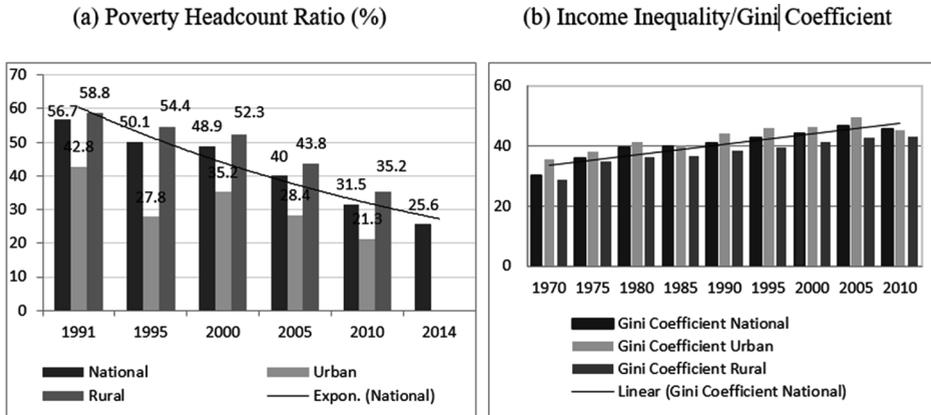


*Source:* Asian Development Bank (2015) Key Indicators for Asia

The structural composition of an economy changes with the level of economic development as the agriculture sector shrinks and the industrial and service sectors expand qualitatively and quantitatively, becoming more productive and creating more employment opportunities. A lack of transformation in the economy may have arrested the economic growth rate from further acceleration, and it has a far reaching impact on the labour market outcomes, as will be analysed later. Consequently, this may also erode the gains from having a large working age population, as an economy cannot absorb the labour force. Additionally, the structural transformation of the economy has important implications for the demand for skills and human capital formation as well (Sen & Rahman, 2015). If the industrial sector does not grow impeding the absorption of the large and growing labour force and if favourable changes in population age structure do not coalesce with the transformation and expansion of economic opportunities, the much-desired demographic dividend cannot not be harnessed for faster economic growth.

Apart from this, Bangladesh has also made a notable reduction in its poverty rate from 56.7 percent in 1991 to 25.6 percent in 2014 – a 55 percent reduction over the whole period, as recorded by national poverty estimates (Figure 9). Alternative measures also show that during the last several decades, the rate of poverty has decreased considerably. But in absolute terms, there is still a sizable portion of the population living under the poverty line, with estimates ranging from 48 million to 86 million in 2010 based on different international and regional poverty lines (UNFPA, 2015). Moreover, gains in poverty reduction are not evenly distributed, as there remain pockets of poverty with relations regional, rural-urban, gender, and other dimensions.

**Figure 9. Trends in poverty reduction and income inequality in Bangladesh**



Source: BBS, Household Income and Expenditure Surveys 1995, 2005, 2010

While much weight is often given to highlighting and celebrating the achievements in economic growth in Bangladesh, a critical look points out the loopholes in the existing growth pattern of the country. A sizable portion of population still remains under poverty, and inequality is increasing, as observed by different measures of poverty gap and inequality indices (see for example Legatum Prosperity Index, 2016; Osmani, 2015; Unnayan Onneshan, 2014; ADB, 2014). For example, Osmani (2015) provides a critical analysis of inequality in the growth pattern of Bangladesh and observes that “high growth and rising inequality” are two sides of the same coin in the country (p. 19). His analysis of dynamics of falling real wage and rising labour productivity shows that when the rise in real wage is slower than the rise in productivity, relative shares of labour inputs decrease and non-labour factors of production like land or capital increase. This inevitably widens the gap between rich and poor in the economy, since latter group provides most of the labour inputs.

**Table 2. Annual growth in real GDP, real wage, and labour productivity in Bangladesh (%)**

	<b>Real GDP</b>	<b>Nominal wage</b>	<b>Food CPI</b>	<b>Real wage</b>	<b>GDP per worker</b>
<b>1981-1989</b>	3.42	12.43	9.52	2.91	0.25
<b>1989-2000</b>	4.90	5.44	5.31	0.13	2.34
<b>2000-2010</b>	6.50	8.94	8.17	0.77	3.18

*Source:* Osmani (2015)

During the 1980s, labour productivity growth was only 0.25 percent, whereas real wage rose at a rate of almost three percent per year. In contrast, the reversal of the trend in subsequent decades when growth in labour productivity increased but growth in the real wages rate plummeted was possibly due to “the presence of a large pool of surplus labour” (Osmani, 2015, p. 18). It is also important to note that this availability of cheap and surplus labour has provided Bangladesh a competitive advantage in the globalised economy and led to a higher growth trajectory since the 1990s, aided by a growth in garments exports and remittances (Helal & Hossain, 2013; Osmani, 2015). Despite this fact, gains from demographic dividends have been found to be low, which could have augmented the rapid growth in the observed period.

A critical examination of recent data identify three broad features of growth patterns in Bangladesh are preventing the country from maximising its gains in terms of rapid socio-economic progress by capitalising on favourable changes in population age structure. That is, the economic growth pattern in Bangladesh has been characterised to be ‘inequalising’, ‘informalising’, and ‘not job-intensive’. In line with this argument, the next section provides a selective assessment of the key dimensions of economic development in Bangladesh that are crucial for maximising gains from demographic dividends.

## **DEMOGRAPHIC TRANSITION AND SOCIAL DEVELOPMENT IN BANGLADESH**

Translating the ‘window of opportunity’ into ‘demographic dividend’ is highly policy driven and conditional upon an enabling policy environment, institutions, and infrastructures. There are a number of ways to link favourable population changes to desirable economic and social outcomes. As observed in the case of East Asian countries that made significant gains from the rising share of their working age populations, the gains from demographic dividends are not automatic and are entirely conditional on a complimentary policy environment that links dynamic changes in population age structure during initial and intermediate stages of age structural transition by adopting ‘formative’ and ‘productive’ policies to ensure adequate investments into human capital formation, expand the productive capacity of the economy to employ the growing labour force, mobilise adequate savings and investments into high productivity and job-intensive sectors of the economy, and transform the social security and welfare regime of the country.

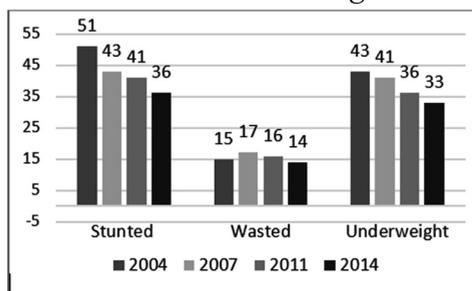
Along with these policies, two more factors are also critical to enable an economy to realise dividends from favourable population changes. First, much of the gains depend on a particular socio-economic context and specific timing as a country passes through different phases of the transition process. The challenges and opportunities that Bangladesh is facing now were not, and will not be the same in decades earlier or later, nor are they like those faced by other countries, as shown in Table 1. Second, the prevailing stage of a country’s economic growth and a state’s capacity (political and institutional) to engineer development are also critical for undertaking comprehensive interventions and considerable investments in an economy. Informed by these considerations, the article now analyses the state of social development in Bangladesh following the framework of age structural transition and economic development to assess its performance in the key policy areas during the passing of formative and productive phases.

### **Status of health, education, and human capital formation**

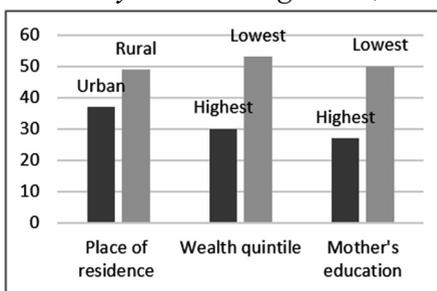
Human capital formation through improvements in health, education, and skill development is the highest priority during the ‘formative’ phase of age structural transition, and it is one of the key channels through which demographic dividend enhances economic development. In fact, human capital has been strongly established to be one of the key drivers of economic growth (Tamura, 2006; Mincer, 1984). In this section, the focus is on issues related to health, education, and skills formation for the target age groups: children (0-14 years) and youth (15-24 years). It is documented that demographic transition is largely conditioned by interventions in the health sector to achieve a reduction in rates of mortality and fertility. Over the course of the transition, priorities in the health sector changes, with child and maternal health earning the most attention. Bangladesh has performed well in a number of key health indicators, such as significant reduction in rates of fertility and child and maternal mortality. Improvement in health conditions is also evidenced by gains in life expectancy at birth, which has increased from 47 years in 1971 to 70.3 years in 2012. This is well above India (66.21 years) and Pakistan (66.44 years) but slightly lower than Sri Lanka (74.07 years) (UN, 2015).

There have been two major challenges where human capital development is concerned. The prevalence of malnutrition in Bangladesh is one of the highest in comparable country groups. The nutritional status of children is very poor, and there remains a high incidence of stunting (low height-for-age), wasting (low weight-for-height), and underweight status (low weight-for-age) among children, as shown in Figure 10.

**Figure 10.** *Proportion of children with malnutrition in Bangladesh*



**Figure 11.** *Inequalities in under-five mortality rate in Bangladesh, 2014*



Source: NIPORT (2016) Bangladesh Demographic and Health Survey 2014

The second problem relates to the prevailing high inequality (Figure 11). Despite gains in the health sector, high inequality persists among regional, rural-urban, and poorest-wealthiest income groups in the under-five mortality rate (Figure 11). In terms of major indicators such as the mortality and morbidity rate, the nutritional status of children and women, access to and provision of healthcare services, and a host of other dimensions, there remains high inequality (Osmani, 2015). Persistently high or even an increasing trend in inequality in health outcomes along with a high prevalence of undernutrition are serious deadlocks for healthy human capital development. Improving the nutritional and health status of underage children and addressing health issues particularly for adolescent girls are critical for achieving gains from demographic dividends. It is also important to note that the share of the old age population will increase in the coming decades relative to children and the young population, and the healthcare need of the aging population will be substantially higher. In order to meet these challenges, investments in basic infrastructure development in the health sector and universal coverage of health services warrant highest prioritisation.

The present coverage of public health infrastructure and healthcare resources in Bangladesh is hugely insufficient and is one of the lowest in South Asia and other comparable country groups (Table 3). Public expenditure in the health sector as percentage of the GDP is also one of the lowest in the world (about one percent of the GDP). The per capita government expenditure on health is only 26 US Dollars (BBS 2012a).

*Table 3. Physicians and hospital beds per one thousand people  
1990, 2000, and 2013*

	1990	2000	2013	1990	2000	2013
<b>Bangladesh</b>	0.18	0.23	0.36	0.30	0.30	0.60
<b>India</b>	0.48	0.51	0.70	0.79	0.69	0.70
<b>Nepal</b>	0.05	0.05	0.21	0.24	0.20	5.00
<b>Sri Lanka</b>	0.15	0.43	0.68	2.74	2.90	3.60
<b>Singapore</b>	1.27	1.40	1.95	3.61	2.90	2.00
<b>Malaysia</b>	0.39	0.70	1.20	2.13	1.80	1.90

*Source:* Asian Development Bank (2015)

Turning to education, which is another major component of human capital, Bangladesh also made gains in achieving universal primary education and attaining gender parity at both the primary and secondary levels during the last couple of years. The net enrolment ratio is more than 97 percent, and the ratio of girls in both primary and secondary education is over 100 percent (DoPE, 2016). Nevertheless, there are several challenges that are inhibiting the formation of educated human capital in the country. The adult literacy rate is still 58.8 percent in 2012 in Bangladesh, which means more than two-thirds of the population cannot write or read. The adult literacy rate in Bangladesh has only increased from 11.3 percent since 2001. In comparison to South Asian countries (Table 4), the adult literacy rate in Bangladesh is quite low. This has negative effects on employability of the labour force in modernising sectors of the economy and diminishes the prospects of growth in productivity and earnings and thus, from securing demographic dividends.

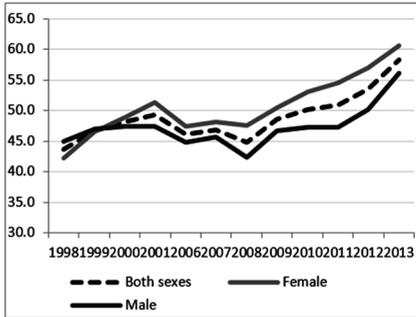
**Table 4. Adult literacy rate (15+) in selected South Asian countries**

Countries	Both Sexes				Female				Male			
	2000		2013		2000		2013		2000		2013	
<b>Bangladesh</b>	47.5	(2001)	58.8	(2012)	40.8	(2001)	55.1	(2012)	53.9	(2001)	62.5	(2012)
<b>India</b>	61.0	(2001)	62.8	(2006)	47.8	(2001)	50.8	(2006)	73.4	(2001)	75.2	(2006)
<b>Nepal</b>	48.6	(2001)	57.4	(2011)	34.9	(2001)	46.7	(2011)	62.7	(2001)	71.1	(2011)
<b>Sri Lanka</b>	90.7	(2001)	91.2	(2010)	89.1	(2001)	90.0	(2010)	92.3	(2001)	92.6	(2010)

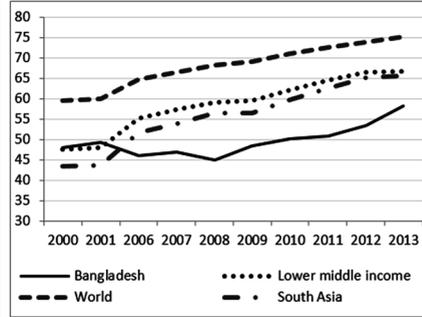
*Source: Asian Development Bank (2015)*

Another recurring challenge that grabs particular attention is that of the attainment in secondary education, which has remained persistently low and has seen little average growth during the last decade. As shown in Figure 12, the gross enrolment ratio in Bangladesh is also the lowest among South Asian and other comparable countries. Another notable trend, even so, is the unprecedented growth of female education, with a number of positive chain effects on the economic and social development of the country (see, for example, Duflo, 2012).

**Figure 12 (a).** Gross enrolment rate in secondary level, male and female 1999-2012



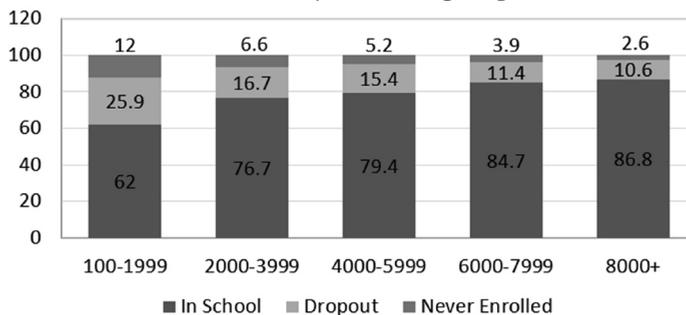
**Figure 12 (b).** Gross enrolment rates in selected South Asian countries (both sexes)



Source: World Bank (2016) World Development Indicators

Following an examination of education sector outcomes in Bangladesh, two major shortcomings can be identified: poor quality in education attainment and prevalent disparity in all levels of educational access and outcomes (Rahman, Khan, & Sabbih, 2016). The latest available data show that access to education and attainment in learning outcomes vary with the level of household income. Only 62 percent of children from households with income levels below 2000 taka are in school; 12 percent were never enrolled and 25.9 percent have dropped out of school (Figure 13). Thus, the educational attainment of lower income households is substantially low in spite of the availability of free and universal primary education and government support programmes.

**Figure 13.** Proportion of school-going, dropped-out and never enrolled children by income group



Source: Hossain and Zeitlyn (2010)

Improving education outcomes requires large investment in infrastructure and capacity building, since more than one-fourth of the population is now of school-going age (0-14 years). The large difference in the student-teacher ratio indicates that the country requires significant investment in education sector development (Table 5).

**Table 5.** *The student-teacher ratio at primary and secondary levels*

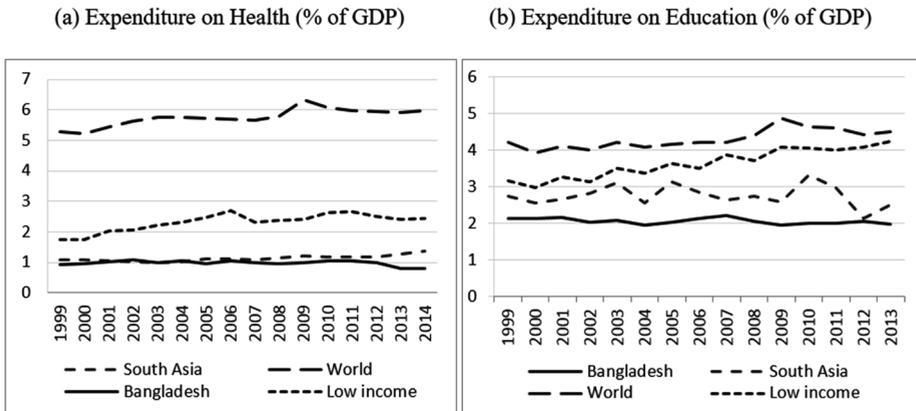
	Primary Pupil–Teacher Ratio			Secondary Pupil–Teacher Ratio		
	1990	2000	2013	1990	2000	2013
<b>Bangladesh</b>	63.0	57.1	40.2	27.4	38.4	32.2
<b>India</b>	46.0	40.0	35.2	28.7	33.6	25.9
<b>Nepal</b>	39.2	38.0	25.6	31.1	30.2	29.2
<b>Sri Lanka</b>	29.1	26.3	24.4	19.1	19.6	17.3
<b>Singapore</b>	25.8	25.6	17.4	17.9	19.4	14.9
<b>Malaysia</b>	20.4	19.6	12.5	19.3	18.4	13.6

*Notes:* Country data was taken from the most recently available years to 1990, 2000, & 2013.

*Source:* Asian Development Bank (2015)

The amount of public investment in the education sector is very low in Bangladesh, and it has remained at only 2.2 percent of the GDP or even lower throughout the last several decades (Ministry of Finance, 2015). In terms of international comparison, the existing education infrastructure and current level of investment in education is quite low and insufficient for enhancing human capital. On top of that, the inefficient and corruption-ridden administration of the education system has resulted in poor implementation of the existing budget and policies in the country (Rahman, Khan, & Sabbih, 2016). Overall, public expenditure in health and education in Bangladesh is much lower than the world average rate, which is six percent and five percent of the GDP, respectively, and even lower than the average spending in low-income countries, as shown below (Figure 14).

**Figure 14.** Public expenditure on health and education as a share of GDP



Source: World Bank (2016) World Development Indicators

The preceding assessment of the health and education scenario in Bangladesh, despite citing evidence of achievements in many respects, reveals a grim picture of poor nutrition and persistent inequality in health along with low quality and disparity in educational outcomes. In this connection, the analysis of education and skills formation for the working age population provides useful insights. A major portion of the young working age population between the age range of 15 to 24 years continues to remain in education, and their proportion has increased during recent years, as is evident from the declining youth labour force participation rate in Bangladesh.

The education and skills development of the youth age group immediately contribute to economic growth by enhancing the gains in employability, productivity, and income earned by those who are already in or about to transition to the labour market, and thus, they can increase the magnitude of demographic dividends (ADB, 2016). The overall attainment of education is low despite progress in recent years, as one-fifth of the labour force has no educational qualifications (Table 6). Female education at the primary and secondary levels is higher, but it remains low in tertiary levels. A great majority of the rural labour force is uneducated, and their proportion is almost five times higher than that of urban workers.

**Table 6.** Education of the labour force aged 15 and over in Bangladesh (%)

Level of education	Labour force				
	Total	Female	Male	Urban	Rural
None	21.2	21.3	21.2	5.7	27.3
Primary (Classes I-V)	28.2	33.5	25.9	21.6	30.8
Secondary (Classes VI-X)	30.4	29.0	31.1	36.2	28.2
Higher Secondary (Classes XI-XII)	13.4	11.6	14.2	21.0	10.4
Tertiary (All degrees or diplomas)	6.3	4.3	7.2	15.3	2.8
Other/unknown	0.4	0.4	0.5	0.2	0.5
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

*Source:* BBS (2015a)

Segregated data on the highest educational attainment of population age groups of 15 years and above (Table 7) show that only 40.4 percent of 20-24 year-olds completed higher secondary level education in 2011. The proportion of graduates is very low for all ages over 15 and constitutes only nine percent for age groups 20-29 in Bangladesh. More strikingly, about 58 percent of the 50 years and above population has no education, and the rate is 77.5 percent for all those aged above 40 years.

**Table 7.** Educational attainment of population aged 15 and over by 5-year age group, 2011

Highest Class Passed							
Age group	No schooling	Primary	Junior secondary	Secondary/ higher sec.	Graduate	Masters or higher	Total
15-19	1.6z	23.1	28.4	46.8	0.2	0.0	100
20-24	2.2	26.6	26.9	40.4	3.7	0.3	100
25-29	3.4	30.2	25.4	33.8	5.3	1.8	100
30-34	5.2	32.2	22.7	31.0	6.2	2.7	100
35-39	7.4	35.5	21.6	27.6	5.6	2.3	100
40-44	9.5	35.9	20.2	26.5	5.7	2.2	100
45-49	10.4	37.3	20.0	25.9	4.6	1.8	100
50-54	13.3	39.0	17.8	24.4	4.3	1.3	100
55-59	13.6	39.3	17.2	24.4	3.9	1.5	100
60-64	15.1	41.1	16.3	22.8	3.7	1.1	100
65+	15.6	41.4	17.4	21.7	3.0	0.8	100
<b>All ages 15+</b>	<b>7.1</b>	<b>32.7</b>	<b>22.7</b>	<b>32.0</b>	<b>4.1</b>	<b>1.4</b>	<b>100</b>

**Source:** BBS (2012b)

Returns on education are modest and do not increase much between uneducated workers and those who have completed primary or secondary education (Table 8). The rise in income premium from completing basic education is only six percent and even lower for secondary education (ADB, 2015). This might explain the reasons for lower enrolment in secondary levels, as the low returns to education do not compensate for the loss in income that may be incurred while attending schools. Overall returns on education are substantially lower in Bangladesh compared to other poor countries as well as to the international standard (ADB, 2016; Asadullah, 2006). This situation implies that an increase in educational attainment has not been matched with the availability of remunerative job opportunities in the economy.

**Table 8.** Returns on education and employment income, 2013

Level of education	Monthly Employment Income (in Tk.)		
	Rural	Urban	Total
None/Never Attended School	8,884	8,996	8,985
Primary (Classes I-V)	11,243	10,202	10,550
Secondary (Classes VI-X)	11,620	10,792	11,122
Higher Secondary (Classes XI-XII)	14,195	12,770	13,469
Tertiary (All degrees or diplomas)	21,715	14,413	19,566

*Source:* BBS (2015a)

Finally, it is expected that with the transformation and diversification of an economy, the variety and requirement of skills tend to increase. In the case of Bangladesh, however, data on the skill levels of the workforce are not directly available, since the country's Labour Force Surveys collect data only based on education qualifications and do not have classifications based on skill levels. Alternatively, data from the Bureau for Manpower Export and Training (BMET) on migrant workers give some indications that skill formation is not up to the expected level. For example, among a total of 568,062 manpower exported in 2011, professional workers constituted only 0.2 percent and skilled workers only 40 percent, whereas the share of semi-skilled and less skilled workers was five percent and 55 percent, respectively (BMET, 2012).

Taking into account this prevailing pattern of low skill formation in the country, it is clear that there might be a widespread skills -gap and mismatch of skills in many sectors of the economy. For instance, estimates suggest that around 62 percent of young workers are undereducated with regard to the requirements of their jobs in mainly skilled agriculture, trades, and other related fields (Toufique, 2014). According to the Bangladesh National Skill Survey (2012), the first of its kind, the estimated gap between the demand and supply of skilled labour in selected manufacturing and trade sectors is approximately 1.458 million each year, which is a considerable figure. Put together, the educational attainment of the existing labour force is still low, with fewer gains in income from additional schooling. Less skilled and semi-skilled workers constitute the majority of the labour force, and there remains a widespread skills gap. The existing allocation, infrastructure, and capacities of technical and vocational training is also limited (Sen & Rahman, 2015). All these have clear consequences on the formation of human capital, which eventually builds the foundation for rapid economic development during the age structural transition through realising the potentials of an increasing labour supply.

### **DEMOGRAPHIC DIVIDEND, EMPLOYMENT, AND PRODUCTIVE EXPANSION OF THE ECONOMY**

An increased labour supply from a growing working age population is the direct channel through which demographic dividend can be harnessed for faster economic development. Having a large and growing proportion of population in their prime working ages does not guarantee any dividend unless or until they are fully employed in high productivity sectors during the structural transformation. This only happens when fast economic growth coalesces with high employment growth along with growth in productivity and real wage. In fact, the interaction between economic growth and employment is a dynamic two-way process where ‘job-rich’ economic growth absorbs the growing labour force into productive employment and creates a virtuous cycle of faster economic development in effect (Unnayan Onneshan, 2014). This nexus derives further impetus in the presence of the ‘window of opportunity’ offered by the first demographic dividend, which marks the rapid and sustaining growth of the labour force due to changes in population age structures throughout the intermediate stage of the demographic transition. Nevertheless, as emphasised earlier, the growing

labour force must be absorbed into the productive sectors of the economy.

Observing the case of Bangladesh, however, it seems that the country has not been able to properly utilise its growing labour force, as can be shown by the very low rate of labour absorption in the economy. The UNFPA (2015) has estimated the labour absorption rate based on three different methods taking into account varying criteria for employment, unemployment, and underemployment and found that the overall rate of labour absorption in Bangladesh is 47.2 percent, with 34.3 percent for females and 61.3 percent for males (p. 62). This implies that over the past decade (2000-2010), the country's economy has not been able to absorb more than 50 percent of its labour force into fulltime productive employment. Widespread underemployment and high unemployment in the economy reflect this prevailing situation.

The relative size of the labour supply available for productive activities is measured by the labour force participation rate, which was 57.1 percent in Bangladesh in 2013. The male labour force participation is 81.7, and for females it is 33.5 percent. While the participation rate for male labour decreased by 6.52 percent between 2003 and 2013, the rate of female labour force participation was increasing during the 2000-2010 period, and the rate previously increased from 23.9 percent to 36 percent but falling to 33.5 percent in 2013. Youth labour force participation is also slightly decreasing, implying that young people are pursuing education for a longer duration. Notably, female labour force participation is still low in Bangladesh compared to other countries. Increasing female participation is important counterbalancing the decline in the growth rate of the labour force, as the size of working age population will start shrinking within the coming decades.

During the productivity or first dividend phase, the labour force growth rate remains higher than the population growth rate. An analysis of the state of employment in Bangladesh shows that the labour force has grown by around one and half million annually, with an average growth rate of 3.04 percent per annum during the last decade between 2003 and 2013 (Table 9). Bangladesh's economy has created 13.8 million jobs during this same period, and the employment to population ratio rose to 37.7 percent

in 2013. Nevertheless, this has not been adequate for capturing the extra dividend offered by the large and growing labour force.

**Table 9.** *Population in the labour force and the employment situation in Bangladesh*

Year	Total Population (in millions)	Labour Force (in millions)	Employed Population (in millions)	Unemployed Population (in millions)	Inactive Population (in millions)	Employment to Population Ratio (%)	Unemployment Rate (%)
2000	129.8	40.7	39.0	1.7	33.5	30.05	4.3
2003	133.4	46.3	44.3	2.0	34.5	33.21	4.3
2006	138.8	49.5	47.4	2.1	35.1	34.15	4.3
2010	147.9	56.7	54.1	2.6	38.9	36.58	4.5
2013	154.1	60.7	58.1	2.6	45.6	37.70	4.3

*Source:* BBS (2015a)

Although the share of the working age population is around 65 percent, the proportion of the inactive population is still 29 percent of the population. Since the economically inactive population is dependent on family income, it means a much higher dependency burden than what is implied by the theoretical dependency ratio (Tawfique, 2014). The inactive population in the youth age group is very high at 62.3 percent, but it includes full time students as well. Alternatively, the proportion of youth neither in education nor in employment or training (NEET) is 41 percent in Bangladesh, and this gives a more accurate picture of the nature of economic activity (ILO, 2013). The large proportion of the inactive non-student population reinforces the claim that the underutilisation of labour is prevalent in Bangladesh.

The overall unemployment rate was 4.3 percent in 2013, but the data do not reveal the real situation of the labour market in the country. The absence of unemployment benefits, intrinsic compulsion from poverty, lack of income earning opportunities, and prevalence of underemployment mask the extent of unemployment in the economy (Unnayan Onneshan, 2014). Among the youth population (aged 15-29 years) who comprised 38 percent of labour force in the country, the unemployment rate has been reported to be the highest at 8.1 percent. Unemployment is also higher among

educated youth with secondary or post-secondary education. Furthermore, there is widespread underemployment in the economy. Singlehandedly, the agriculture sector accounts for 72 percent of underemployed labour, while in case of industry the proportion is only seven percent. The proportion of underemployment is highest among the 15-29 age group (five percent), whereas this rate is 3.5 percent for the 30-64 age group (BBS, 2015a).

Most notably, the employment situation in Bangladesh is characterised to be overwhelmingly informalising in nature. A large majority of the workers (87 percent of the 58.1 million strong labour force) are employed in the informal sector, which accounts for nine out of ten newly created jobs in the economy. According to the latest available data, the incidence of informality is highest in the agriculture sector, in rural areas, and among the female and less educated labour force, and it is slightly higher among the youth population (15-29 years) (BBS, 2015b). Recent trends show that the proportion of informal employment to total employment rose by 14.6 percent between 2003 and 2013, with an annual increase of 1.46 percent (BBS, 2015). Apart from this, the low skill and wage rate, poor quality of employment, high degree of vulnerable employment, and lack of safety and protection at work further characterise the labour market in Bangladesh (ILO, 2013; Unnayan Onneshan, 2014). Growing informalisation of the economy affects the quality of employment and skill formation and indicates a depressed employment situation in the country (Titumir & Hossain, 2003).

Turning to demographic dividend, it must be stressed that whether changes in population age structure are increasing the pace of economic growth depends on how much the prevailing pattern of growth is creating adequate opportunities for the young and dynamic labour force by expanding productive capacity in mainly job-intensive manufacturing and modern sectors of an economy. As indicated earlier in this paper, during the last one and half decade, Bangladesh's economy has experienced little transformation away from agriculture to industry. Despite having moderate to high economic growth during the last two decades, the economy has not experienced any major structural transformation, with a similar trajectory of growth being documented in other South Asian countries (Khan, 2005).

Economic growth in Bangladesh has not been complemented by accompanying growth in productive employment in the industrial sector, with the exception of the manufacturing of readymade garments. This is unlike the spectacular growth and economic transformation experienced by the East Asian countries, which enabled them to capitalise on the demographic dividend. For example, in South Korea, between 1980 and 1990 the share of employment in agriculture halved from 34 percent to 17 percent with a 40 percent decline in absolute share of employment in agriculture (Khan, 2005). In Bangladesh, nonetheless, the share of agricultural output has decreased from 21.8 percent of the GDP in 2003 to 16.3 percent in 2013 – a 25 percent decline over a decade. However, during the same period the share of employment in agriculture has decreased only by 12.7 percent, and the agriculture sector still accounts for half of total employment (45.1 percent) in the country (Table 10).

**Table 10.** *Distribution of output (% of GDP) and distribution of employment (% of total employment) by broad economic sectors*

	2000	2003	2005	2010	2013
<b>Share of agriculture in GDP</b>	25.5	21.8	20.1	17.8	16.3
<b>Share of employment in agriculture</b>	62.1	51.7	48.1	47.5	45.1
<b>Share of industry in GDP</b>	25.3	26.3	27.2	26.1	27.6
<b>Share of employment in industry</b>	10.3	13.7	14.5	17.7	20.8
<b>Share of service in GDP</b>	49.2	52.0	52.6	56.0	56.1
<b>Share of employment in service</b>	23.5	34.6	37.4	35.3	34.1

*Source:* BBS (2015) and World Bank Data

Over the same decade, the share of industry in the GDP has changed little, amounting to a 4.9 percent increase during the 2003-2013 decade. The share of service saw only a slight increase as well. Nonetheless, the percentage of the labour force employed in industry doubled between 2003 and 2013 but still accounts for only one fourth of total employment. The share of employment in the service sector has in fact seen a decline from its 2005 level, which was growing in the previous decade. A further breakdown of employment growth in manufacturing sub-sectors shows that employment growth in the readymade garments sector accounted for much of the increase in employment (Raihan, 2016). In the East Asian

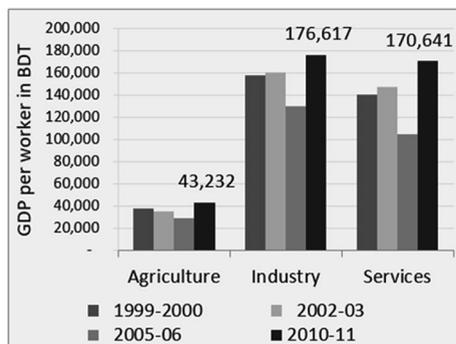
case, the employment elasticity of output growth was between 0.7 and 0.8 when real wage increased with a rise in per capita income, but in the case of Bangladesh, as some estimates showed, this rate may have fallen between 0.3 and 0.4 where employment elasticity with respect to GDP growth is quite low and even declining (Bayes, 2010; Khan, 2005). Other estimates show that the overall employment elasticity is low in South Asian countries, and this region experienced little structural transformation compared to East and South East Asia (Kapsos, 2005).

Taken as a whole, Bangladesh experienced little growth in real wage with low returns on labour and rising inequality in labour income as discussed earlier in this paper. The growth in labour productivity has also seen a slow rise in recent years, with around half of the labour force employed in the low productivity agriculture sector, as shown in Figure 15(a). A comparative trend analysis of labour productivity in Bangladesh, India, and China shows that Bangladesh's gain in labour productivity growth is substantially lower than those of China and India, both of which have experienced rapid growth in productivity since year 2000.

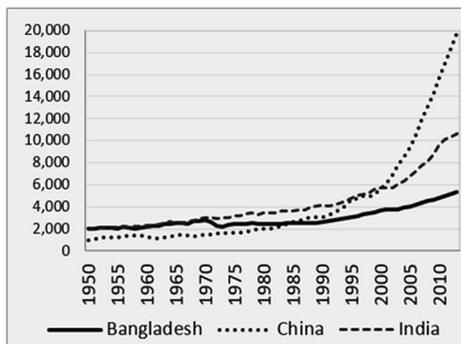
### **The state of savings, investment, and capital formation**

Expanding the productive capacity of an economy requires that an increasing amount of resources will be mobilised and invested in infrastructure, human capital development, and productive employment creation. First and foremost, the rate of economic growth and productive capacity of an economy cannot be expanded without mobilising increased domestic savings and investment in a country. In the case of Bangladesh, the domestic savings rate was 22.3 percent and the national savings was 29.01 percent of the GDP in the 2014-15 period, as shown in Figure 15(a). Although showing a moderate increasing trend over the last two decades, the level of savings has been low in comparison to other developing countries (Agarwal & Sahoo, 2009). Similarly, the investment scenario has experienced growth mainly due to growth in private investments. Total investment was 28.97 percent of the GDP in the 2014-15 period, and private investment constituted 22.07 percent. The rate of growth of public investment has not accelerated in recent years, and overall investment rates have fluctuated due to frequent political instability in the country.

**Figure 15 (a).** GDP per worker by economic sector (in BDT)



**Figure 15 (b).** Labour productivity in Bangladesh, India and China



*Source:* Authors’ calculation based on Labour force survey and economic review various years and The Conference Board (2014) Total Economy Database

Another way of leveraging domestic resources is to increase government revenue. Generating domestic finance through broadening the tax base and raising tax revenue provides a country much manoeuvrability to embark on investments in productive sectors to accelerate creation of employment opportunities for a larger working age population. Currently tax revenue collection in Bangladesh is quite low, as it was 9.29 percent of the GDP in the 2014-15 period. Although the volume of total revenue saw a slight increase in recent years, the growth of tax revenue collection has been very slow over the years (Table 11).

**Table 11.** Revenue receipts in Bangladesh (as % of GDP)

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
<b>Total revenue</b>	9.00	9.63	9.81	9.97	10.39	10.89	11.65	11.66	10.79
<b>Tax revenue</b>	7.14	7.64	7.88	8.02	8.63	9.12	9.74	9.69	9.29
<b>Non-tax revenue</b>	1.86	1.99	1.94	1.95	1.76	1.76	1.91	1.97	1.50

*Source:* Bangladesh Economic Review 2015.

Bangladesh’s revenue collection is the lowest even in comparison to other South Asian and lower middle income countries, whereas in South Asia, low tax collection and persistent expenditure deficit have badly affected the performance of these economies (Padda & Akram, 2010). Generally, the tax revenue to GDP ratio in most developing countries like Bangladesh

is two to four times lower than that of developed countries. Mobilising tax revenue by at least 25 percent of the GDP is decisive for strengthening the government's capacity to engineer development by undertaking comprehensive interventions and considerable investments in the economy. Coupled with domestic resource mobilisation, attracting more foreign direct investment (FDI) can boost economic growth and add dynamism to the domestic economy. This has been a powerful driver of growth in East Asian countries as well. In 2015, the total volume of FDI in South Asia was 50.48 billion USD, of which India alone secured 44.21 billion USD, or 87.56 percent, while Bangladesh only received 4.43 percent (UNCTAD, 2016). Finally, taking into account the volume of illicit financial outflow from the country, which was 1.3 billion US Dollars in 2013, it becomes clear that the country is failing to keep its surplus capital invested in the economy (Kar & Spanjers, 2015). This amount of illicit capital flight from Bangladesh has damaging consequences, and it is certainly depriving the domestic economy, as a large portion of its investible surplus is leaving its borders.

By and large, a brief overview of the economy of Bangladesh as presented above reveals that, despite recent gains, the rate of savings, investment, and capital formation as well as the government's capacity to mobilise domestic resources have been inadequate for creating a springboard for faster economic development in the country, even in the presence of advantageous demographic conditions. In order to become a middle income country by 2021, Bangladesh needs to raise its GDP growth to 7.5-8 percent per year while accelerating job creation in productive sectors of the economy as well as increasing investment by at least five percentage points from the current level of 28.97 percent (World Bank, 2015). Creating conducive institutional arrangements and encouraging an environment for private savings should assume priority in order to harvest the prosperity promised by demographic dividends. Priority must be given to creating incentives and a conducive institutional environment for domestic savings, capital formation, and foreign investments as well as to improving governance capacity to raise revenue and reduce illicit capital flight from the country.

## **CONCLUSION**

In this article, an attempt has been made to propose a comprehensive framework that stipulates the relations amongst changes in population age structure, demographic transition, and economic development in the context of developing countries through an examination of the case of Bangladesh. The dynamics of changes in population age structure have powerful policy implications for economic growth and social development. An increase in the proportion of the working age population could augment faster economic growth provided that institutions are enabled and appropriate policy measures and response strategies are devised during the demographic transition as outlined in the proposed framework. Currently being in the intermediate stage of demographic transition, Bangladesh is passing through the transient 'dividend' period like many other developing countries, but the country is found to have performed much lower than the expected level and has not been able to fully realise its potential gains from advantageous changes in its population age structure.

This article critically assessed the current state of Bangladesh in the transition process and identified major gaps in its institutions, infrastructure, policy interventions, and overall response measures, preventing it from seizing opportunities offered by dynamic changes in its population age structure. Despite some achievements in economic growth and social development, the current pattern of growth in the economy has not been able to fully capitalise on the changes in the population age structure. The prevailing problem with the pattern of economic growth is that it is not inclusive, and prosperity is not evenly shared with all segments of the country's population. Gains in nutritional status, quality education, and skills development are poor and plagued by persistently rising inequality. There remains low performance in expanding the productive capacity of the economy, resulting in high unemployment and underutilisation of labour with negative consequences on the economic and social outcomes, such as inequality in labour income and the overwhelming informality of employment. In addition, the growing proportion of an older population will pose challenges to accommodating the rise in the dependent population within the next few decades. This needs to be explored further, as it is not covered in this article.

It is argued that if an economy remains stagnant in the absence of major

structural transformation, gains from favourable changes in the population age structure and resultant demographic dividends cannot be realised. This article has shown that the economy of the country has not been transforming structurally in recent years and has been failing to absorb the growing labour force productively. More than half of the country's working age population has not been absorbed into the economy with full time employment, and there remains high unemployment, poverty and inequality as well as poor attainment in human development indicators. Considering the prevailing scenario of the economic growth, the absorption of labour force and employment, trends in sectoral transformation, and the state of poverty, inequality, and human development, it seems that the inevitable and powerful forces of population change will pose serious challenges for economic development and might even erode the sustainability of the country's future growth prospects. As the country's population age structure is undergoing dynamic transition, and with an addition of at least 50 million people in the next three decades, the country's economy requires a fundamental transformation away from agriculture to industrialisation. Bangladesh needs to focus increasing attention on effectively reaping opportunities and addressing challenges at the crossroads of population-development dynamics. As per the proposed framework, the later stage of prosperity will largely depend on how well Bangladesh can address the existing challenges during the remaining years of its intermediate stage.

This article emphasises the view that deriving economic gains from the growing size of the labour force and changing age structure is a direct function of state policy interventions, which needs to be well informed by an adequate understanding of the dynamic changes and well-coordinated with major related policy fields, such as the following: industrial policies, to instigate transformation away from agriculture to the labour intensive manufacturing sector; labour market policies, to address problems of the underutilisation, unemployment, and underemployment of labour; and socio-economic policies aiming primarily at building a skilled labour force, accelerating employment creation, and expanding the per capita productive capacity of the economy. Although this article has analysed the overall trend and pattern of economic development in the country within the framework of age-structural transition, one of the limitations that should be noted is that it could not rigorously examine the salience of the propositions in the context of Bangladesh,

which requires additional research. It highlights several areas where further investigations are needed, especially regarding the state of capital formation in relation to changes in age structure and the effects of population aging in Bangladesh during the final stage of the demographic transition.

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