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# Demographic Transition and Its Implications for Productive Absorption of Labour Force: The Case of Bangladesh

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## Abstract

*The article looks at the demographic transition and its relevance with respect to participation in labour force and productive absorption in Bangladesh. Drawing from a rich yet fragmented array of literature, the article attempts to propose a comprehensive framework that integrates the relations between changes in population age structure during demographic transition and economic development in the contexts of developing countries. Using the framework, the article finds that Bangladesh is passing through the intermediate stage of its demographic transition which offers a productive or 'dividend' phase and could accelerate economic growth principally through absorption into productive employment. The article finds that Bangladesh is yet to capitalize on the advantageous condition of having a population with large concentration at productive ages. The article also traces a number of challenges including harnessing job-intensive high productivity sectors, enhancing quality of labour and development of skills, and expanding the productive capacity of the economy to absorb the growing labour force for achieving sustained economic development.*

## Introduction

The article looks at the demographic transition and its relevance with respect to participation in labour force and their absorption into productive employment taking Bangladesh as a case. The trajectory of changes in the country's population size and its age structure can be outlined through different stages of demographic transition within the broader context of structural transformation of the economy. While the relation between population and development has been one of the most debated issues, it is now increasingly acknowledged that both economic growth and population change affect each other during the process of demographic transition (Bloom *et al.*,2000).

The impact of changes in age structure of population on the economy, which is termed as demographic dividend, has attracted much attention as most of the developing countries are undergoing successive phases of demographic transition due to rapid decline in mortality and fertility rates (Hock and Weil, 2012; Lee and Reher, 2011; Mason,

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2005; Lee, 2003; Bloom and Williamson, 1998). The relations between changes in age structure of population or 'age structural transition' and economic development have crucial implications for economic growth and social development in both developed and developing countries (Pool *et al.* eds., 2006; Feyrer, 2008). Tracing the rich array of literature on population-development dynamics, the article, however, argues that existing approaches either have remained confined to past legacies due to their narrow focus on population growth versus economic growth, or have concentrated on restrictive understanding of demographic transition using micro-economic models or have too much concentrated on empirical estimation of 'demographic dividends' or have emphasised on justifications for policy interventions. For bringing synergies to these fragmented approaches of studying population-development interaction, an attempt has been made to propose a comprehensive framework that integrates recent approaches for comprehending the relations amongst demographic transition, changes in age structure of population and economic development in the contexts of developing countries.

The article particularly analyses the dynamics of change in population of Bangladesh as it relates to utilizing the labour force for faster economic development, pursuing the proposed framework. Imperative for studying the case of Bangladesh is based on the fact that it is one of the most populous countries in the world with an estimated 161 million population in 2015, ranking 8$^{th}$ in terms of the size of population in the world while astonishingly it is a very small country, ranking 94$^{th}$ in terms of its geographic areas in the world (UN, 2015). In fact, Bangladesh is considered to be a 'special case' among the developing countries due to its unprecedentedly high population density coupled with a low level of socio-economic development (Streatfield and Karar, 2008).

The proportion of working age population (i.e. consisting of above 15 years to below 65 years old) in the country is currently increasing more than the growth of total population. This offers much potential for productive growth and acceleration of the pace of economic development, if the predominantly youthful and large size of labour force can be properly capitalized by absorbing into gainful employment. The prevailing unemployment, widespread underemployment and pattern of jobless growth, however, signal a gloomy prospect, particularly in view of the situation that the number of people seeking employment will increase further in next three decades in Bangladesh.

Against such backdrop, the article offers an examination into the composition of labour force and the state of its utilization. The first section of the article provides a critical review of literature and proposes an alternative framework that maps out changes in age structure of population and its implications on economic development and the latter sections provide an analysis of the state of labour force, its utilization and impending major challenges in light of the proposed framework.

**Demographic Transition and Economic Development: A Review and a Framework**

Population dynamics and its linkages with socio-economic development originate in the pessimistic political economic analysis of Malthus. Both population dynamics and development, as it is now acknowledged, are compound phenomena and do not interact in a straightforward way (Hayes and Jones, 2015). The linkage between population change and economic growth is found to be two-way process with former affecting the latter and vice versa (Bloom *et al.,* 2000). Demographic transition and its successive stages have notable but varied implications for economic growth and development while the pace and pattern of economic and social transformation considerably determine the trajectory of demographic changes. The exact nature of the interaction is, nonetheless, much debated and of late the focus has shifted from a narrow view of population growth vis-à-vis economic growth towards a more dynamic analysis of the implications of changing age structure of population on economic development (Headey and Hodge, 2009; Mason, 2005).

The article categorises the debates into four major approaches, after reviewing the rich yet diverse array of literature. The first one is termed as the *historical legacy approach* which originated from the ideas of Malthus (1798). In his 'Principles of Population' Malthus posited that rising prosperity will be accompanied by high fertility and rapid growth of population which would ultimately result in widespread poverty and starvation as food production would not be able to keep pace with the exponential growth of population. While Malthus' concern has proved grossly wrong, this view has its contemporary adherents who have remained prisoners of the past pessimism. During the 'age of development' in 1950s and up to 1990s, the problem of population was termed as massive, urgent and paralyzing to the economy of the poor countries (Coale and Hoover, 1958; Ehrlich, 1968; Crenshaw *et. al.,*1997; and Sachs, 1997). The neo-Malthusian resurgence, observing high population growth and poverty, holds the view that the economy may succumb to 'population-poverty trap', and majority of attention and resources (both intellectual and material) needs to be devoted towards halting the growth rate of population (Ehrlich and Holdren, 1971). Population control, family planning and massive public policy interventions have contributed to significant reduction in population growth in many developing countries, nevertheless, it also disturbingly dubbed large population as the cause of many problems and burden to the economy (UNFPA, 2015).

This pessimism has undermined the role of population as a productive force. Acknowledging this, a group adopted a more 'positive' view by documenting the role of human capital, innovation, agricultural and technological revolution (Boserup, 1981; Kuznets, 1967; Simon, 1981). Another group took a 'neutral' position about the role of population in development, finding weak or no positive association between growth of per capita income and population growth using cross-country regression studies (Kelley and Schmidt, 1995; Barlow, 1994; Bloom and Freeman, 1988). Taking together, this

approach, however, took a rather narrow view and focused only on effects of growth and density of population on economic growth.

While rapid population growth is widely considered to have a negative pressure on the economy, nevertheless, it fails to explain when population growth may positively affect 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, growth of adult working age population promotes economic development given appropriate policy inducements whereas growth of children and elderly does the opposite (Headey and Hodge, 2009; Crenshaw *et al.*, 1997). Stating that the per capita productive capacity of the country expands when working age population grows faster than the dependent population, the second approach portrays population as a productive force. Recent evidence has provided strong support for positive and significant role of large working age population in accelerating economic growth which has been termed as 'demographic dividend' (Bloom and Williamson, 1998; Mason, 2005).

This *dividend estimation approach*, as is termed here, has shifted the focus from aggregate population growth variables to dynamics of changes in population as they affect the age structure of population and also changed the direction from 'economic development to population growth' to 'population growth to economic development' (Walker, 2014; Guinnane, 2011; Lee, 2003; 1998). They note that changes in the population age structures are "the mechanism through which demographic variables affect economic growth" (Bloom and Williamson 1998). For example, Bloom and Williamson (1998) have found that 'dynamics of population changes' affect the economic growth through changes in age structure of the population rather than through the aggregate rate of growth in population. This claim was substantiated by their empirical findings that population dynamics explained much of the economic 'miracle' of East Asian Tigers as around one third of their economic growth from 1965 to 1990 was due to favourable changes in the age structures of population (Bloom and Williamson, 1998). Further, about 15 to 25 of economic growth in China between 1980 and 2000 was estimated to be due to demographic factors like large labour force (Wang and 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. It may be called as 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, this approach stresses that there is no deterministic relationship between demographic change and the economy (UNECA, 2013; Headey and Hodge,

2009). This means that a relative increase in the share of working age population would not directly result in higher economic growth rather positive effects of demographic dividend are decidedly dependent on conducive policy environment. This is evident from the experiences of South East Asian countries which are well documented (Bloom and Williamson 1998, Mason 2001). Further, studies on Latin American and African countries provide strong evidence that without good institutions and enabling policy environment, much of the potentials offered by large working age population cannot be translated into faster economic growth (Bloom *et. al.,* 2007). Poor institutional environment and absence of responsive policies also explain as to why several underdeveloped regions, for example, the Indian states such as Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh have derived little or no dividends from rising share of working age population compared to other developed states of India (Thakur, 2012). This approach seems to provide much justification for macro level policy interventions.

The final one, the *microeconomic approach* provides importance on individual choice and rationality. This approach links fertility choice with other economic variables like consumption and labour force participation. The microeconomic theory of fertility decline posits children as consumption goods and takes into account its relative costs, couple's income and alternative forms of consumption in explaining decline in fertility as a function of individual choice (Becker, 1960; Schultz, 1973). These neo-classical economists explain decline in fertility by formalizing an inverse relation between level of income and number of children and a positive relation between quality of child and rising income (de Bruijn, 2006). While Becker (1960) contributed to the demand side of fertility transition, Easerlin's approach later adds sociological variables like supply of children as well as effects of age cohorts on fertility (Esterlin, 1975). The microeconomic theories have received criticism partly because of their narrow and individualistic notion of choice and restrictive understanding of rationality and partly because of their overlooking of the broader determinants of fertility decisions (de Bruijn, 2006). Mason (1997) asserts that a combination of socio-cultural, environmental and institutional forces and factors causes fertility decline and the micro-economic theories provide little insights on demographic transition in terms of explaining its broader institutional implications on the economy.

The preceding review of four major approaches reveals that these approaches cover diverse issues and provide useful insights but lack coherence. For addressing the fragmented nature of different approaches to understanding the relationship between population change and economic development, the article proposes a framework by bringing synergies to different variables. The framework outlines three major stages of shifts in age structure of population during demographic transition as it relates to economic development by locating the relative position of key variables such as labour and capital that affect economic development. It must be acknowledged that this is not an entirely new formulation, but it offers an integrated approach. Before outlining the framework, briefly demographic transition and life cycle theories of consumption, which build the main premise of the proposed model, are discussed.

The theories of demographic transition were formulated first by observing the historical experiences of population change and development in the Western industrialized countries, which were later substantiated with a large body of evidence from developing countries (Kirk, 1996; Chesnais, 1992). Demographic transition is a worldwide phenomenon and virtually all countries of the world can be placed to be transitioning through the process. This is a gradual process of change which starts typically with a reduction in mortality rates followed by a fall in fertility rates due to economic and social modernization. The middle period between fall in mortality and fertility rates is marked by rapid population growth leading to natural increase of the population size. Eventually, the decline in fertility rate stabilizes the growth rate of the population (Lee, 2003). Before the beginning of the transition process, there are high birth rate along with high death rate with each offsetting the other and thus keeping total population in a relatively stable size.

The demographic transition typically passes through a number of stages and each features with dynamic changes in the age structure of population. During this whole process the age structure of the population shifts from having a large concentration of younger ages towards older people outnumbering the younger ones at the end. 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 adult working age population and this may last for several decades, having crucial implications for economic development.

Life cycle theories of consumption and production add further insights. Bloom *et al.,* (2003) have shown that young and old people consume more than they produce, if any, in the form of education, health or retirement expenditure. The adult working population supply labour, earn and produce more than they consume and save for their future consumption. As the relative share of these working and dependent population 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 age structure provides useful insights about its effect on socio-economic development.

Taking insights from preceding analysis, this article has outlined three phases of demographic transition (Table 1) by taking into account the changes in the relative size of the major age groups of population and dependency ratio (ratio of working age to dependent population). In conventional demographic transition theory, there can be at least five stages, and each has been defined based on the state of demographic variables such as mortality rate, fertility rate and population growth rate. This article has highlighted changes in age structure of population to figure out its implications on

economic development. Each stages of demographic transition provides a unique set of challenges and opportunities which can be seized to augment faster economic growth and social development. Failing to capitalize the opportunities would mean that challenges will prevail and the prospect of economic development will be compromised.

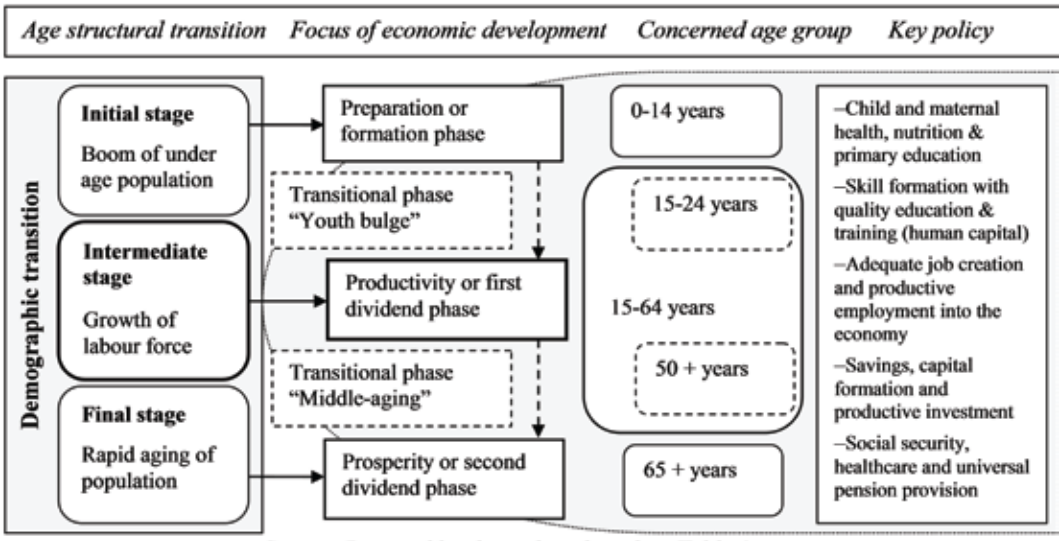
**Table 1: Demographic transition, changes in age structure and implications for development**

| | | |
|---|---|---|
| **Initial stage** | **Key stylized fact: Increase in the proportion of children and child dependency ratio**<br>*span of this period (30 to 50 years but effects continue even longer) | |
| | **Challenge:** Rising expenditure, expanding institutional capacity and required infrastructure, and adopting relevant policies for meeting educational, health and nutritional needs of large proportion of children | **Opportunity:** Formation of human capital by ensuring the supply of educated, healthy and skilled labour force, utilizing untapped potential of girls' education |
| **Intermediate stage** | **Key stylized fact: Increase in the proportion of working age population and decrease in the total dependency ratio to its minimum**<br>*span of this period (40 to 60 years with variations among groups of countries) | |
| | **Challenge:** 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 | **Opportunity:** Passing period of demographic dividend with 'window of opportunities', unique economic advantage of having large labour force, accelerating economic growth, accumulating capital, and mobilizing savings, and capitalizing on female labour force participation |
| **Final stage** | **Key stylized fact: Rapid increase in the proportion of elderly population along with old-age dependency ratio and total dependency ratio**<br>*span of this period (indeterminate – continue even after the completion of transition) | |
| | **Challenge:** Rapid aging of population, ensuring social security of elderly population, health services for elderly, increased burden on the working age population as well as on government to support the elderly from private transfer or public pensions | **Opportunity:** 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 |

Source: Prepared by the authors based on different literature, particularly drawing on Lee (2003) and Mason (2005)

It formalizes 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 parts based on the current level of understanding of available literature, with primary emphasis in the context of developing countries which are currently undergoing 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 formation phase**

At the initial stage of demographic transition the shape of population age structure is dominated by large proportion of children and young dependent population who are in need of food, nutrition, health care and education. A large share of private and public expenditure is needed to cater for their needs but most governments and families struggle to meet these challenges. This phase is also critical as it provides opportunity for human capital formation by way of adequate investment in quality education, skills development and improved health status of children who will enter the labour force within a decade or so. The age group concerned is below 14 years old. As it relates to economic development, the initial stage of age-structural transition is essentially the preparation or formation phase which builds the foundation for reaping dividends in later stages.

**Intermediate stage or productivity phase**

During the intermediate stage, the concentration of population shifts to prime working ages (between 15 to 65 years). This increases the size of the labour force or economically productive population who consume less than they produce and also save for their

consumption in old age. The dependency ratio gets to its minimum and the large size of labour force creates 'window of opportunity' for faster economic growth which is termed as 'first demographic dividend'. While this reduces economic burden of bringing up children and also tends to improve prospects for girls in families with fewer children and lesser responsibility to take care of, the female working age population becomes economically active and enters productive sector and contribute to the growth of the economy. Unlike previous phase, enough resources become available for investment in the productive activities generating faster growth of the economy and consequent rise in the per capita income of the country (Mason and Lee, 2007).

This stage marks the productivity or first dividend phase and is hugely 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 vast potential and daunting challenges to cater for a growing labour force both in relative and absolute terms. Among working age population aged between 15-64, there are two age groups – youth age group (aged between 14-24 years) and middle-age group (50 years and above) who warrant priority policy attention. For the first group, the challenge is to ensure smooth transition from education to employment by matching levels of skills with appropriate jobs in growing and productive sectors of the economy. Creating favourable environment for savings and investment along with incentivising the middle age group, who tends to save more, requires prioritisation during this stage as well.

**Final stage or prosperity phase**

The final stage experiences population aging as the large cohort of working age population becomes old (65 or above). This raises the overall dependency ratio and puts economic burden on the shrinking number of 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. The consequence of population aging is going to be similar or even worse for developing countries as well, if they do not have sufficient savings before they get old (UNFPA, 2015). Nevertheless, provided that there is sizable capital accumulation during the previous phase, capital labour ratio may increase in this stage due to dwindling size of labour force and resultant capital deepening can raise labour productivity (Cutler *et al.,* 1990, Lee *et al.,* 2000). Depending on the performance during earlier two phases, the final stage promises a prosperity or second dividend phase when economic growth can sustain despite the challenges of population aging and shrinking labour force, if increased savings and capital deepening can stimulate labour productivity in the economy.

**Transitional or transformation phases**

The notion of transitional phases implies that there is no clear-cut demarcation between any two stages and that is why appropriate policies are crucial for full leveraging of economic potentials from changes in population during the intermediate phase.To take

full advantage in augmenting economic growth, the productive capacity of an economy must be expanded to generate gainful employment for absorbing the growing labour force. Starting from the formative phase and throughout the productive phase, sufficient investments are needed to transform the 'youth bulge' into human capital by providing required education and training to meet the market demand and requirements of the expanding economic sectors. Moreover, with rises in per capita income, 'middle-age' populations are most likely to save portions of their current earning for future consumption. If a country can harness this by creating positive environment for savings and investment, it can achieve a sustained level of economic growth. For this to happen, economic policies must be directed at the appropriate ways by coinciding individual incentives with that of higher growth trajectory of an economy (Lee and Mason, 2006). The final emphasis is that economic outcomes are not only dependent upon rightly pursued policies but also equally conditional on timely execution of those policies during the intermediate stage.

These challenges as well as opportunities, as the article outlines, have particular relevance to developing countries, as they are presently passing through the initial or intermediate phases of the demographic transition. Currently being in the intermediate stage of demographic transition, Bangladesh has also experienced rapid growth in its labour force with consequent decline in dependency ratio which is offering an opportunity for realizing demographic dividend in the country and albeit with impending challenges to equip and utilise its growing labour force. The following sections illustrate the case of Bangladesh in light of this framework with particular emphasis on the changing composition of labour force and state of employment in the country.

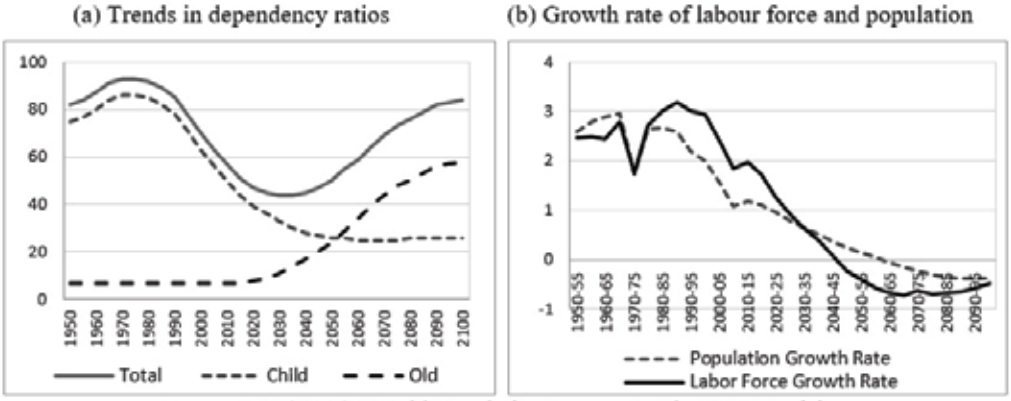
**Demographic Transition and Changes in the Composition of Labour Force in Bangladesh**

This part showcases major changes in the composition of labour force as well as in the age structure of the population in Bangladesh. Bangladesh is a developing country located in South Asia neighbouring with population giants like India and China. Demographic transition in Bangladesh started in the early decades of twentieth century when it was a part of greater India still under British dominion, similar to other countries in this region. The decline in mortality rate started as early as in 1920s, but the transition only gained momentum when the country gained its independence from Pakistan in 1971(UNFPA, 2015). The steady decline in fertility rate started from mid 1970s which reached its maximum 6.92 children per women in 1965-70 and then decreased substantially to 2.4 children per women in 2005-10 with over 65 percent reduction during 1965-70 period. Acombination of factors and forces including public health interventions, rising income and education, and changing poverty dynamics among others has contributed to fertility decline (Adnan, 1998).

During demographic transition, relative changes in the share of working age, and children and old population can be illustrated by the dependency ratio. After an initial phase of increasing trend due to high proportion of children, the total dependency ratio

has declined substantially by 45 percent from highest 93 in 1975 to 51 in 2015 and such trend will continue reaching the lowest level during 2030s [Figure 2(a)]. It will start to rise again from 2040 onwards due to increasing old dependency ratio. These transformations imply that dependency burden will shift from its current composition of young population to old age population in Bangladesh and this would necessitate required changes in state policies and institutions.

**Figure 2: Dependency ratios and growth rate of labour force and population in Bangladesh**

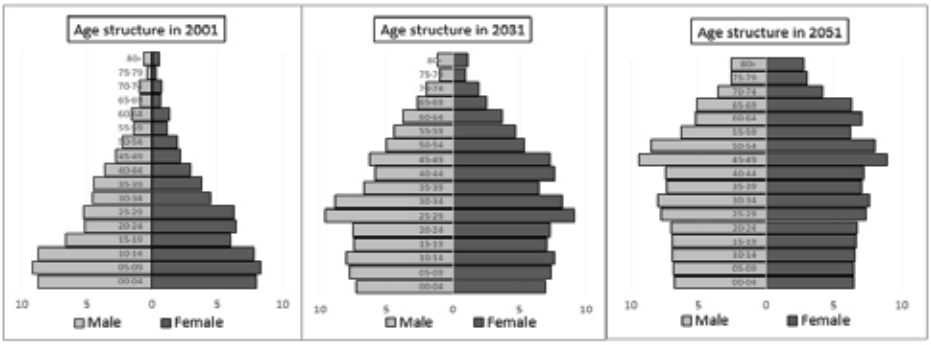



Source: UN (2015), World Population Prospects: The 2015 Revision

As stipulated by the age structural transition model, during the intermediate stage the highest concentration of population shifts from children to working age population. This productive or first dividend phase is marked by the period when the rate of growth of labour force exceeds the rate of growth of total population. This phase started in Bangladesh in 1980s and will continue for next two decades [Figure 2(b)]. Currently, Bangladesh has a youthful age structure with almost 52 percent belonging to age below 24 years and 32 percent under 15 years. The share of youth population will remain high in the age composition of the country for at least next three decades due to what is called population momentum effect, despite significant reduction in rates of fertility in the country. Starting from 2040s and 2050s the situation will reverse due to ageing of population when parts of present generation will be at their old ages leaving the labour force and adding up the share of old dependent population. Presumably, there is little prospect of offsetting this trend since new entry of young population into labour force will decline due to low fertility and population growth.

These changes in the age structure is also evident from 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 further increase in the next decades. All these changes in the age structure of the population over time are illustrated by population pyramids of Bangladesh in 2001, 2031 and 2051 (Figure 3).

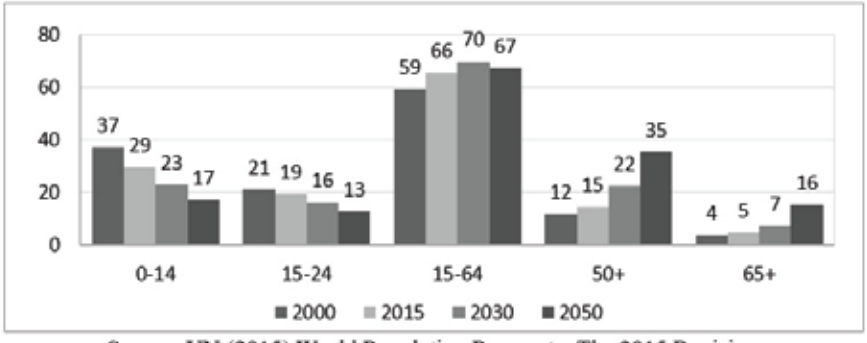
**Figure 3: Population Pyramids and changes in age structure in Bangladesh**




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

The transformation of age structure of population in Bangladesh resembles shape of a classic pyramid in the early 2000 indicating a high concentration at the bottom of the pyramid while age structure seems to be an onion-like shape in 2031, indicating that relative share of population in the working age ranges has increased. Future projections show that by 2051, the share of population of older ages will continue to rise relative to young and middle aged populations due to lower or negative rate of fertility and increase in life expectancy. These dynamic changes are observable in the relative share of key age groups (Figure 4).

**Figure 4: Percentage of total population by selected age groups in Bangladesh**




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

As the preceding analysis illustrates, three major changes can be seen to happen in the composition of the labour force in particular and total population in general during next three or four decades which are essential for 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 still this age group comprises of 29 percent of

total population, requiring priority attention for their human capital development. Second, the share of working age population (15-64 years) is increasing considerably with higher bulge in the young population aged below 24 years. According to the projections, this trend will prevail up to 2050, giving large opportunities to benefit from a larger labour force while equally posing challenges for creation of decent employment. Third, the share of older population aged more than 50 and 65 years will start to increase considerably from 2030s and they will constitute a major proporti on claiming for a large share of resources in terms of social security and old age benefitsfor next few decades. Informed by the framework, the article focuses mainly on the concerns relevant to working age population in the next parts.

**Demographic Dividend, Labour Absorption and Productive Employment**

During the intermediate stage of demographic transition, the direct channel through which demographic dividend can be harnessed for faster economic developmentis the increased labour supply from growing working age population. Having a large and growing proportion of population in their prime working ages, however, does not guarantee any dividend unless or until they are fully employed in high productivity sectors during the structural transformation of the economy. 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 growing labour force into productive employments and creates a virtuous cycle of faster economic development in effect (Unnayan Onneshan, 2014). This nexus gets further impetus in the presence of the 'window of opportunity' offered by first demographic dividend which marks the rapid and sustaining growth of labour force throughout the intermediate stage. Nevertheless, as emphasized earlier, the growing labour force must be absorbed into the productive sectors of the economy.

In Bangladesh, total size of labour force or economically active population aged 15 years or above is 60.7 million according to the latest available data, of which 70 percent is male and about 72 percent constitute rural labour force (Table 2). The size of the labour force increased by 1.44 million per year during last decade up to 2013. Quite significantly, the size of female labour force increased by 76.7 percent between 2002-03 and 2013 whereas the male labour force increased by only 18.05 percent during the same period.

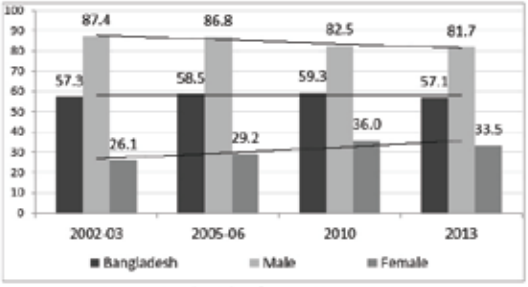
**Table 2: Economically active population/Labour Force (15 years +) in millions**

| | 2002-03 | | | 2005-06 | | | 2010 | | | 2013 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | M | F | Total | M | F | Total | M | F | Total | M | F |
| National | 46.3 | 36 | 10.3 | 49.5 | 37.3 | 12.1 | 56.7 | 39.5 | 17.2 | 60.7 | 42.5 | 18.2 |
| Urban | 11.3 | 8.6 | 2.7 | 11.7 | 8.9 | 2.8 | 13.3 | 9.3 | 4 | 17.1 | 12.0 | 5.1 |
| Rural | 35 | 27.4 | 7.6 | 37.8 | 28.5 | 9.3 | 43.4 | 30.2 | 13.2 | 43.5 | 30.5 | 13.1 |

Source: BBS (2015) Labour Force Survey 2013

The relative size of the labour supply available for productive activities is measured by labour force participation rate which was 57.1 percent in Bangladesh in 2013 (Figure 5). The male labour force participation is 81.7 and for female it is 33.5 percent. While participation rate for male labour decreased by 6.52 percent between 2003 and 2013, the rate of female labour force participation was increasing during 2000-2010 period and the rate has increased from 23.9 percent 36 percent but it fell to 33.5 percent in 2013. Youth labour force participation rate is also slightly decreasing, implying that they may be pursuing education for longer duration and perhaps finding employment is becoming difficult. Notably, female labour force participation is still low in Bangladesh compared to other countries (UNFPA, 2015). Increasing female participation is important in order to counterbalance the decline in the growth rate of labour force as the size of working age population will start shrinking within next decades.

**Figure 5: Trend in labour force participation rate in Bangladesh**




Source: BBS (2015) Labour Force Survey 2013

During the productivity or first dividend phase, labour force growth rate remains higher than 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 3). Bangladesh's economy has created 13.8 million jobs during the same period and employment to population ratio rose to 37.7 percent in 2013. Nevertheless, this has not been adequate to capture the extra dividend offered by large and growing labour force.

**Table 3: Population in Labour Force and 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 (2015) Labour Force Surveys (1999-2000, 2002-03, 2005-2006, 2010 and 2013)

Although the share of working age population is around 65 percent, the proportion of inactive population is still 29 percent of the population. Since 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). Inactive population in youth age group is very high at 62.3 percent but it includes full time students as well. Alternatively, the proportion of neither in education nor in employment or training (NEET) youth is 41 percent in Bangladesh and this gives a more accurate picture of the nature of economic activity (ILO, 2013). The large proportion of inactive non-student population reinforces the claim that the underutilization labour is prevalent in Bangladesh.

Observing the case of Bangladesh, it seems that the country could not, however, properly utilize its growing labour force as can be seen from low rate of labour absorption in the economy. UNFPA (2015, p.62) estimates labour absorption rate based on three different methods taking into account varying criteria for employment, unemployment and underemployment and finds that overall rate of labour absorption in Bangladesh is 47.2 percent with 34.3 percent for female and 61.3 percent for males. 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, high unemployment in the economy and low female labour force participation rate reflect this prevailing situation.

The overall unemployment rate is 4.3 percent in 2013, but this data does not reveal the real scenario of 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 in the country, the unemployment rate has been reported to be 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, agriculture sector accounts for 72 percent of underemployed labour while in case of industry the proportion is only 7 percent. Proportion of underemployment is highest among 15-29 age group (5 percent) whereas this rate is 3.5 percent for 30-64 age group (BBS, 2015).

Most notably, employment situation in Bangladesh is characterized to be overwhelmingly informal in nature. Large majority of workers (87 percent of 58.1 million labour force) are employed in informal sector which accounts for nine out of ten newly created jobs in the economy. According to latest available data, the incidence of informality is highest in agriculture sector, in rural areas, among female and less educated labour force and slightly higher among youth population aged between 15-29 years (BBS, 2015). The recent trend shows that the proportion of informal employment to total employment has increased by 14.6 percent between 2003 and 2013 with an annual increase of 1.46 percentage point (BBS, 2015). Apart from this, low skill level and

declining real wage, poor quality of employment, high degree of vulnerable employment, lack of safety and protection at work further characterize the labour market in Bangladesh (ILO 2013; Unnayan Onneshan, 2014). Growing informalisation of the economy affects quality of employment and skills formation and indicates a depressed employment situation in the country (Titumir and Hossain, 2003).

**Structural Transformation of the Economy and State of Employment in Bangladsesh**

Bangladesh has enjoyed a long period of intermediate productive phase and still left with two more decades, but it could not fully exploit the advantageous changes in its demographic age structure to accelerate its economic development as estimates in Mason (2005) show that Bangladesh had the lowest gains from demographic dividend among South Asian countries. The question that warrants attention is why the magnitude of dividend has been quite low in Bangladesh and how Bangladesh can maximize its gains from remaining years before demographic advantages turn negative. Responding to these questions in comprehensive manner is beyond the scope of this article, nonetheless, this section provides some insights on the state of economic transformation and employment in Bangladesh.

The economy of Bangladesh has been growing at a modest rate. During last one and half decades, average annual GDP growth rate was over six percentage points. Since population growth rate is below 1.4, rate of growth of per capita GDP has been also over 4.5 percent per year. As result of economic growth, Bangladesh has become a lower middle income country in 2015 and aspires to become a middle income country by 2021. The economic growth rate in Bangladesh is commendable in comparison with other South Asian and lower middle income countries (World Bank, 2015).

A critical assessment of the growth experience of the country, however, reveals that Bangladesh has actually performed below its potential and its achievement is quite lower compared to countries like China, Malaysia and Korea which were similar to Bangladesh in many respects during 1970s (Ahmed, 2014). Further scrutiny suggests that despite fast economic growth during last several decades, the economy did not experience real structural transformation as the percentage shares of GDP earned by three broad economic sectors - service, industry and agriculture - remained almost stagnated over the recent years only with noticeable growth in service sector [Figures 6(a) and (b)].

Structural composition of the economy changes with the level of economic development as the agriculture sector shrinks and industrial and service sectors expand qualitatively and quantitatively becoming more productive and creating large employment opportunities. Lack of transformation in the economy may have arrested the economic growth rate from further acceleration and it has far reaching impact on the outcomes of labour market. Consequently, this may also erode the gains from having a large working age population in an economy which cannot absorb the labour force. Particularly, structural transformation of the economy has important implications for

demand for skills and human capital formation as well (Sen and Rahman, 2015). If industrial sector does not grow, where large and growing labour force can be absorbed and if favourable changes in age structure of population do not coalesce with the transformation and expansion of economic opportunities, the much desired demographic dividend may not be harnessed for faster economic growth.

**Figure 6 (a): Structure of output by broad economic sectors (% of GDP)**

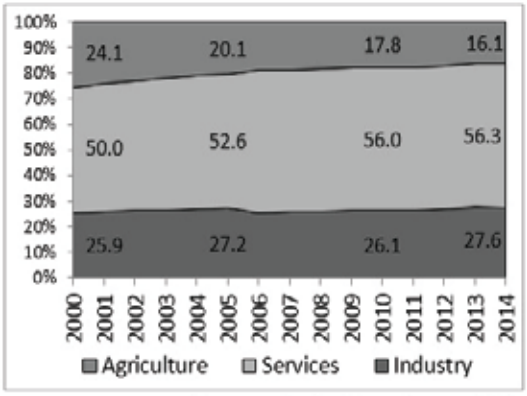
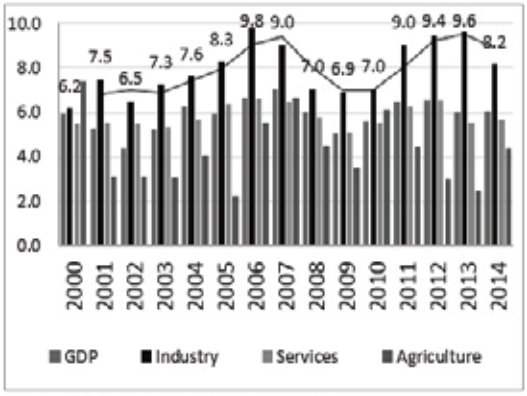



**Figure 6 (b): Growth of GDP by broad economic sectors in Bangladesh (annual %)**




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

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

Economic growth in Bangladesh has not been complemented by accompanying growth in productive employment in industrial sector with the exception in readymade garment manufacturing factories. This is unlike the spectacular growth and economic transformation experienced by the East Asian countries which enabled them to capitalize on 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 GDP in 2003 to 16.3 percent in 2013 – a 25 percent decline over a decade, but during the same period the share of employment in agriculture has decreased only by 12.7 percent and agriculture sector still accounts for half of total employment (45.1 percent) in the country (Table 4).

**Table 4: Distribution of output (% of GDP) and distribution of employment (% of total employment) by broad economic sectors**

| | 2000 | 2003 | 2005 | 2010 | 2013 |
|---|---|---|---|---|---|
| **Share of agriculture in GDP** | 25.5 | 21.8 | 20.1 | 17.8 | 16.3 |
| **Share of employment in agriculture** | 62.1 | 51.7 | 48.1 | 47.5 | 45.1 |
| **Share of Industry in GDP** | 25.3 | 26.3 | 27.2 | 26.1 | 27.6 |
| **Share of employment in Industry** | 10.3 | 13.7 | 14.5 | 17.7 | 20.8 |
| **Share of Service in GDP** | 49.2 | 52.0 | 52.6 | 56.0 | 56.1 |
| **Share of employment in Service** | 23.5 | 34.6 | 37.4 | 35.3 | 34.1 |

Source: BBS (2015) and World Bank Data

Over the same decade, share of industry in GDP changed little (4.9 percent increase during 2003-2013 decade) and share of service saw only slight increase as well. Nonetheless, percentage of 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 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 readymade garment sector accounted for much of the increase in employment (Raihan, 2016). In East Asian case, the employment elasticity of output growth was between 0.7 and 0.8 when real wage increased with rise in per capita income, but in case of Bangladesh, as some estimates showed, this rate may fall between 0.3 and 0.4 where employment elasticity with respect GDP growth is quite low and even declining (Bayes, 2010; Khan, 2005). Other estimates show that 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).

**Table 5: Annual growth in real GDP, real wage and labour productivity in Bangladesh (%)**

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

Source: Based on Osmani (2015)

Analysis of labour productivity and growth in real wage provides some revealing insights. For example, Osmani (2015, p.19) provides a critical analysis of inequality in the growth pattern of Bangladesh and observed that "high growth and rising inequality" were two sides of the same coin in the country. 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 decreases and non-labour factors of production like land or capital increases. This inevitably widens the gap between rich and poor in the economy since latter group provides most of the labour inputs. During 1980s labour productivity growth was only 0.25 percent whereas real wage rose at almost three percent rate per year (Table 5). Contrarily, the trends reversed in subsequent decades when growth in labour productivity increased but growth in real wages rate plummeted possibly due to "the presence of a large pool of surplus labour" (Osmani, 2015, p.18).

**Figure 7(a): GDP per worker by broad economic sector (in BDT)**

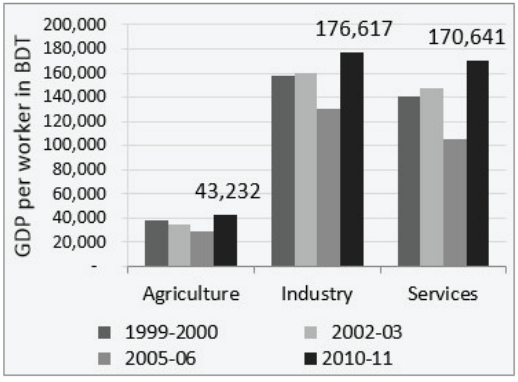
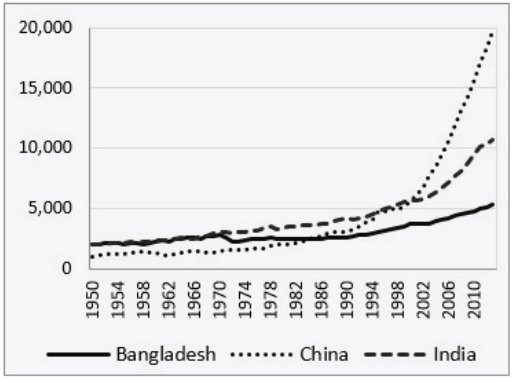



**Figure 7(b): Labour productivity in Bangladesh, India and China**




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

Taken as a whole, Bangladesh experienced little growth in real wage with low reruns to labour and rising inequality in labour income. Growth in labour productivity has also seen slow rise in recent years with around half of the labour force employed in low productivity agriculture sector [Figure 7(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 experienced rapid growth in productivity since year 2000 [Figure 7(b)]. Without gains in labour productivity, mere size of the labour force would not generate high dividend from advantageous population changes.

Finally, it is also important to note that this availability of cheap and surplus labour has so far provided Bangladesh the competitive advantage in the globalized economy and

led to higher growth trajectory since 1990s aided by growth in garments exports and remittance (Helal and Hossain, 2013; Osamni, 2015). Despite this fact, gains from demographic dividends have been found to be low which could have augmented much rapid growth in the observed period. Based on the preceding examination of data, three broad features of growth patterns in Bangladesh can be identified which are preventing the country from maximizing its gain in terms of rapid socio-economic progress by capitalizing on the available large labour force of the country. That is, economic growth pattern in Bangladesh has been characterized to be unequal, informal and low job-intensive. Measures must be taken to address these challenges mainly by harnessing economic growth to be more job-intensive in high productivity sectors, enhancing quality of labour and skill development, and expanding the productive capacity of the economy to absorb the growing labour force.

**Conclusions**

The article looks at the demographic transition and its relevance with respect to participation in labour force and their absorption into productive employment in Bangladesh by adopting a proposed framework that stipulates the relations between changes in population age structure, demographic transition and economic development in the contexts of developing countries. Dynamics of changes in the age composition of population provide useful understanding of the state of an economy. An increase in the proportion of working age population could augment faster economic growth provided that enabling institutions, policy measures and appropriate response strategies are devised in due course of time 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 realize its potentials from advantageous changes in the composition of its population having a proportionately large labour force.

The current state of Bangladesh in the transition process and the state of labour force, its utilization and major impending challenges in the coming decades are analysed in the article. Despite some achievements, the current pattern of growth of the economy could not fully capitalize on the changes in the age structure of population. It is argued that in the absence of major structural transformation, gains from favourable changes in age structure of population and resultant demographic dividends cannot be realized. The economy of the country is not transforming structurally in recent years and failing to absorb the growing labour force productively. More than half of the country's working age population has not been absorbed in the economy with full time employment and there remains high unemployment and under-utilization of labour with negative consequences on the economic and social outcomes like inequality in labour income and overwhelming informality of employment. Considering the prevailing scenario, it seems that inevitable and powerful forces of population change would pose serious challenges for economic development and might even erode the sustainability of the country's future growth prospects.

As per the proposed framework, later stage of prosperity will largely depend on how well Bangladesh can address the existing challenges during the remaining years of its intermediate stage. Since Bangladesh's age structure is undergoing dynamic transition and with an addition of at least 50 million populations in next three decades, the country's economy requires a fundamental transformation away from agriculture to industrialization. Bangladesh needs to divert increasing attention to effectively reap opportunities and to address challenges at the cross-road of population-development dynamics.

The derivation of economic gains from growing size of labour force and changing age structure is a direct function of policy of the state which needs to be well informed by adequate understanding of the dynamic changes and be well-coordinated with major related policy fields. The industrial policies need to drive transformation from agriculture to labour intensive manufacturing sector while labour market policies must address problems of underutilization, unemployment and underemployment of labour and socio-economic policies need to aim primarily at building skilled labour force, accelerating employment creation and expanding the productive capacity of the economy.

The article has mainly focused on the composition and pattern of utilization of labour force for 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 examine the salience of all the stages and its propositions in the context of Bangladesh rigorously 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 effects of population aging in Bangladesh during remaining stages of the demographic transition process. This exercise has also useful policy implications for other developing countries with similar socio-demographic contexts like Bangladesh.

## References

ADB. 2015. *Key Indicators for Asia and the Pacific*. Manila: Asian Development Bank.

Adnan, S. 1998. Fertility decline under absolute poverty: Paradoxical aspects of demographic change in Bangladesh. *Economic and Political Weekly*, 30(1):1337-1348.

Barlow, R. 1994. Population growth and economic growth: Some more correlations. *Population and Development Review, 20*(1): 153-165.

Bayes, A. 2010. The Quality of Bangladesh's Economic Growth, *The Daily Star*, March 22, 2010, Dhaka.

BBS. 2012. *Household Income and Expenditure Surveys 1995, 2005, 2010*. Dhaka: Bangladesh Bureau of Statistics.

BBS. 2015. *Report on the Labour Force Survey 2013*. Dhaka: Bangladesh Bureau of Statistics.

BBS. 2015b. *Population Projection Bangladesh: Dynamics and Trends: 2011-2061*. Dhaka: Bangladesh Bureau of Statistics (BBS) and Institute of Statistics Research and Training (ISRT), University of Dhaka.

Becker, G.S. 1960. An Economic Analysis of Fertility. In *Demographic and Economic Change in Developed Countries: A Conference of the Universities-National Bureau Committee for Economic Research*, pp. 209- 31. Princeton: Princeton University Press.

Bloom, D.E., and Freeman, R.B. 1988. Economic development and the timing and components of population growth. *Journal of Policy Modeling, 10*(1): 57-81.

Bloom, D.E., and Williamson, J.G. 1998. Demographic transitions and economic miracles in emerging Asia. *World Bank Economic Review*, 12(3): 419-456.

Bloom, D.E., Canning, D., Fink, G., and Finlay, J. 2007. Realizing the demographic dividend: Is Africa any different. *Program on the Global Demography of Aging*, Harvard University, 1-23.

Bloom, D., D. Canning, and Malaney, P. 2000. Demographic Change and Economic Growth in Asia. *Population and Development Review*, 26: 257–90.

Boserup, E. 1981. *Population and technological change: A study of long-term change*. Chicago: Chicago University Press.

Chesnais, J.C. 1992. *The demographic transition: Stages, patterns, and economic implications*. OUP Catalogue.

Coale, A.J., and Hoover, E. 1958. *Population and Economic Development in Low-Income Countries*. Princeton: Princeton University Press.

Crenshaw, E.M., Ameen, A.Z., and Christenson, M. 1997. Population dynamics and economic development: Age-specific population growth rates and economic growth in developing countries, 1965 to 1990. *American Sociological Review,* 12: 974-984.

Cutler, D.M., Poterba, J.M., Sheiner, L.M., Summers, L.H. 1990. An Aging Society: Opportunity or Challenge? *Brookings Papers on Economic Activity*. (1): 1–56.

De Bruijn, B.J. 2006. *Fertility: Theories, frameworks, models, concepts*. NA.

Easterlin, R.A. 1975. An economic framework for fertility analysis. Studies *in Family Planning, 6*(3): 54–63.

Ehrlich P.R. and Holdren, J.P. 1971. Impact of Population Growth. *Science*, New Series, 171: 1212-1217.

Ehrlich, P. 1968. *The Population Bomb*. New York: Ballantine.

Ehrlich, P.R., and Holdren, J.P. 1971. Impact of population growth. *Science*, New Series, 171(3977): 1212-1217.

Feyrer, J. 2008. Aggregate Evidence on the Link between Age Structure and Productivity. *Population and Development Review, 34*: 78-99.

Guinnane, T.W. 2011. The historical fertility transition: A guide for economists. *Journal of Economic Literature, 49*(3): 589-614.

Hayes, G. and Jones, G. 2015. The Impact of the Demographic Transition on Socioeconomic Development in Bangladesh: Future prospects and Implications for Public Policy, *A Background Paper Prepared for the Bangladesh Planning Commission of the General Economics Division in Support of the Development of the 7th Five-Year Plan 2016-2020*. Dhaka: The United Nations Population Fund, Bangladesh Country Office.

Headey, D., and Hodge, A. 2009. The Effect of Population Growth on Economic Growth: A Meta-Regression Analysis of the Macroeconomic Literature. *Population and Development Review*, *35*(2): 221-248.

Helal, M., and Hossain, M.A. 2013. Four Decades of Economic Development of Bangladesh: An Assessment. *Journal of the Asiatic Society of Bangladesh, 58*(2): 335-362.

Hock, H., and Weil, D. 2012. On the dynamics of the age structure, dependency, and consumption. *Journal of Population Economics, 25*(3): 1019-1043.

ILO. 2013. Bangladesh country report: Trade and employment. Dhaka: International Labour Organization Country Office for Bangladesh.

Kapsos, S. 2005. *Estimating Growth Requirements for Reducing Working Poverty: Can the World Halve Working Poverty by 2015?* International Labour Office.

Kelley, A.C., and Schmidt, R.M. 1995. Aggregate population and economic growth correlations: the role of the components of demographic change. *Demography, 32*(4): 543-555.

Khan, A.R. 2005. Growth, employment and poverty: An analysis of the vital nexus based on some recent UNDP and ILO/SIDA studies. Documento de debate sobrecuestiones de empleo y pobreza, 19.

Kirk, D. 1996. Demographic transition theory. *Population studies, 50*(3): 361-387.

Kuznets, S. 1967. Population and economic growth. *Proceedings of the American philosophical Society,* 111(3): 170-193.

Lee, R. and Mason, A. 2006. What is the Demographic Dividend? Finance and Development, volume 43, no. 3, accessed from: http://www.imf.org/external/pubs/ft/fandd/2006/09/ basics.htm

Lee, R.D. 2003. The Demographic Transition: Three Centuries of Fundamental Change. *Journal of Economic Perspectives,* 17(4): 167-90.

Lee, R., and Reher, D. 2011. Introduction: The Landscape of Demographic Transition and Its Aftermath. *Population and Development Review,* 37: 1-7.

Macunovich, D.J. 1998. Fertility and the Easterlin hypothesis: An assessment of the literature. *Journal of population Economics,* 11(1): 53-111.

Malthus, T. 1798. *An Essay on the Principle of Population*. London: J. Johnson.

Mason, A. 2001. *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized*. California: Stanford University.

Mason, A. 2005. *Demographic Transition and Demographic Dividends in Developed and Developing Countries*. United Nations Expert Group Meeting on Social and Economic Implications of Changing Population Age Structure, (pp. 81–102). New York: United Nations.

Mason, A., and Lee, R. 2007. Transfers, capital, and consumption over the demographic transition. *Population aging, intergenerational transfers and the macroeconomy*, 30: 128-162.

Mason, K. O. 1997. Explaining fertility transitions. *Demography,* 34(4): 443-454.

Osmani, S.R. 2015. *Linking Equity and Growth in Bangladesh*. Background paper prepared for The Seventh Five Year Plan of the Government of Bangladesh.

Pool, E.I., Wong, L.R., and Vilquin, É. (eds.). 2006. *Age-Structural Transitions: Challenges for Development*. Paris: Committee for International Cooperation in National Research in Demography.

Raihan, S. (ed.). 2016. *Structural Change and Dynamics of Labor Markets in Bangladesh: Studies on Labor and Employment.* Dhaka: South Asian Network on Economic Modeling (SANEM).

Sachs, W. 1997. *The Development Dictionary: A Guide to Knowledge as Power*. Orient Blackswan.

Schultz, T.W., ed. 1973. New Economic Approaches to Fertility: Proceedings of a Conference, June 8-9, 1972. *Journal of Political Economy,* 81(2): 23-31.

Simon, J.L. 1981. *The Ultimate Resource*. Princeton: Princeton University Press.

Streatfield, P.K. and Karar, Z.A. 2008. Population Challenges for Bangladesh in the Coming Decades, *Journal of Health, Population and Nutrition*, 26(3): 261-272.

Thakur, V. 2012. The Demographic Dividend in India: Gift or curse? A state level analysis on differing age structure and its implications for India's economic growth prospects. *Working paper series 2012*, No. 12-128, London: Development Studies Institute, London School Economics and Political science.

Titumir, R.A.M and Hossain, J. 2003. Learning for skill formation and employability: A strategic framework for informal sector in Bangladesh. *Journal of the Institute of Bangladesh Studies, XXXVI*: 17-38

Toufique, K.A. 2014. Labour Market Transition of Young Women and Men in Bangladesh. *Work4Youth Publication Series*. No. 13. Geneva: International Labour Organization.

UN. 2015. *World Population Prospects: The 2015 Revision, Key Findings and Advance Tables*. Working Paper No. ESA/P/WP.241. United Nations, Department of Economic and Social Affairs, Population Division.

UNECA. 2013. Creating and Capitalizing on the Demographic Dividend for Africa, *CoM 2013: "Industrialization for an Emerging Africa", 21-26 March 2013*. Abidjan: United Nations Economic Commission for Africa.

UNFPA. 2015. *The Impact of the Demographic Transition on Socioeconomic Development in Bangladesh: Future Prospects and Implications for Public Policy*. Dhaka: The United Nations Population Fund, Bangladesh Country Office.

Walker, J.R. 2012. *Malthus: Theories of Demographic Transition*. Economics 623, Spring 2012.

World Bank. 2016. *World Development Indicators Data set.* World Bank Website.