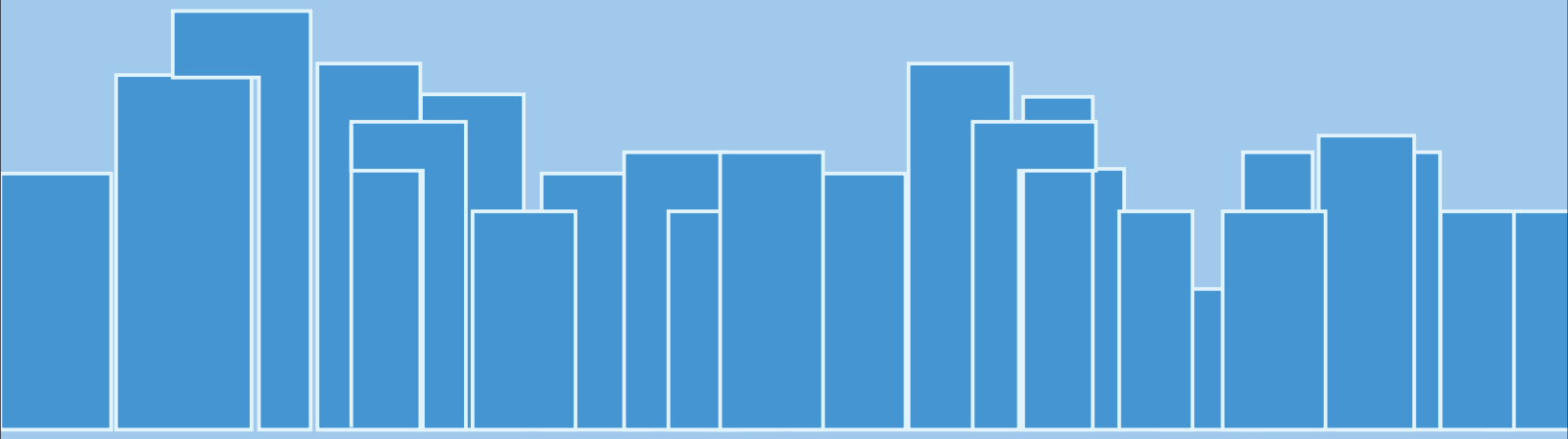
GED Policy Study

Effective Use of Human Resource for Inclusive Economic Growth and Income Distribution-an Application of National Transfer Accounts



General Economics Division (GED)

(Making Growth Work for the Poor)

Planning Commission

Ministry of Planning

February 2018

GED Policy Study

Effective Use of Human Resource for Inclusive Economic Growth and Income Distribution-an Application of National Transfer Accounts

General Economics Division (GED)

(Making Growth Work for the Poor)

Planning Commission

Ministry of Planning

February 2018

Published and Cover Designed by
General Economics Division (GED)
Planning Commission
Ministry of Planning
Government of the People's Republic of Bangladesh
Sher-e-Bangla Nagar, Dhaka-1207, Bangladesh
Website: www.plancomm.gov.bd

First Published: February 2018

Editor:
Professor Shamsul Alam
Member (Senior Secretary)
General Economics Division (GED)

Assisted By:
Khandker Ahsan Hossain
Joint Chief & Project Director
General Economics Division (GED)

Design & Printing:
Dot Printing & Packaging
168 Shaheed Sayed Nazrul Islam Sarani
(Old 3/2) Purana Paltan, Dhaka-1000
Mobile: 01711-581601
E-mail: dot.printing@yahoo.com

A H M Mustafa Kamal, FCA, MP
Minister
Ministry of Planning
Government of the People's Republic of Bangladesh

MESSAGE

It gives me immense pleasure to learn that the General Economics Division (GED) of the Bangladesh Planning Commission has taken steps to publish a study report "Effective Use of Human Resource for Inclusive Economic Growth and Income Distribution-an Application of National Transfer Accounts" that focused on revealing the trends and patterns of changes in age structure of Bangladesh population. The Report estimated population growth and made future population projections. Most importantly, the study attempted to develop the National Transfer Accounts for Bangladesh to illustrate in detail of the state of demographic dividend so that appropriate investments, policies and governance steps might be ensured. Moreover, it analyzed cross country investment gap to validate the investment policy linking appropriate human capital investments with the attainment of optimal demographic dividend.

The study report has been prepared through extensive consultations with ministries/divisions, development partners, academia, researchers, civil society think tanks, and NGOs. I thank all of them for their active participation in the process of refining the paper through dialogues and reviews. I would like to appreciate GED officials as well as UNFPA Bangladesh for providing their supports in preparing this report which will be beneficial for the policy makers, researchers, academia, planners and development partners dealing with the Population management and Development issues.

Finally, I hope that the methodology of National Transfer Account will help to evaluate the demographic benefit for Bangladesh in respect of effective use of human resource for inclusive economic growth and income distribution. I expect wide circulation of this important document to impact progressive social and economic changes.

(A H M Mustafa Kamal, FCA, MP)

M. A. Mannan, MP
State Minister
Ministry of Finance and Ministry of Planning
Government of the People's Republic of Bangladesh

MESSAGE

I am pleased to learn that the General Economics Division (GED) of Bangladesh Planning Commission is going to publish a comprehensive report titled "Effective Use of Human Resource for Inclusive Economic Growth and Income Distribution-an Application of National Transfer Accounts".

The main objective of this publication is to disseminate the concepts of National Transfer Account, a relatively new concept, relevant among various stakeholders engaged in efforts to integrate population issues into development plans of the country. The report identified cross country investment gap to validate the investment policy linking appropriate investments in human capital with the aim of attaining optimal demographic dividend. This report can play an important role in synthesizing population dynamics in the context of sustainable development challenges.

Bangladesh, currently, is experiencing a new stage of 'demographic transition' as a result of low birth rate and low death rate along with modest population growth. The resultant youth 'bulge' in the population structure of Bangladesh offers a one-time demographic window of opportunity, which we must use in our development activities. I hope the concept of National Transfer Account will be widely discussed among policy planners and a consensus should be reached. The lessons learned from this report will guide GOB planners as well as academia towards following a right course in developing and implementing population management policies.

I take this opportunity to thank the GED officials, Development Partners and the Economists in helping to prepare this research paper, which, I am sure, will be useful to the policy makers and others engaged in the activities of the country's development process.

(M. A. Mannan, MP)

Dr. Shamsul Alam
Member (Senior Secretary)
General Economics Division (GED)
Bangladesh Planning Commission

Prefatory Note

Around the year 1990, an important event happened in Bangladesh in terms of age structure: the demographic window of opportunities opened up the country. The country, as a result, is experiencing the early phase of demographic dividend. In this context, comes the concept of National Transfer Accounts (NTA).

In this report, the effective use of human resource in Bangladesh for inclusive economic growth through the National Transfer Accounts (NTA) is briefly narrated. The report analyses cross country investment gaps using panel data to validate the investment policy concerning development of human capital. As we know, in accordance with the recent economic progress, the critical nature of development of human capital investment in the health and education of children is changing. This may impact savings, particularly the accumulation of capital (both human and physical) and the productivity of the workforce.

Countries in South Asia, particularly Bangladesh has experienced impressive economic growth in recent years. Some of these gains have been attributed to demographic changes particularly to changing age structure and increasing proportion of economically active population. This phenomenon is termed as 'demographic dividend'. A decline in a country's birth and death rates and subsequent changes in the age structure leads to an increase in the working age population. This has an acceleration effect on the economic growth and demand for increased employment. The reason is the increasing ratio of productive workers to dependents (children and elderly) induces more savings leading to more investment for faster economic growth.

The National Transfer Accounts constitute a complete, systematic and coherent accounting of economic flows from one age group or generation to another, typically for a national population in a given calendar year. These accounts provide very rich and useful information for analysis and have a wide range of policy implications. It tries to find out the relation of the time period of demographic dividend, human capital investment and investment policy for optimal achievement of the age structure bonus. This study provides the policy recommendations so that optimum benefits are gained from favourable demographic age structure we have entered into nationally dividend.

One might be aware that there is some uncertainty about the population growth, especially in a developing country such as Bangladesh with yet high preparation of illiteracy and a large undernourished rural population. The extreme high density of population, rapid unplanned urban growth, a sticky socio-cultural environment, together with poor reproductive health status – characterized by as yet high maternal and infant mortality and morbidity, high incidence of communicable diseases, widespread malnutrition and a very high

teenage fertility rate with limited access to services for adolescents – makes the problems desperately serious. On a longer term perspective, another unwelcome, but seemingly inevitable, the prospect of rising sea level caused by global climate change would lead to large-scale displacement of population from low lying coastal areas. With very little absorption capacity in the rural areas of the already crowded country, a large proportion of the excess population would likely to gravitate to urban centers resulting in further growth of slum population. These situations depict the challenging scenario for the policy makers.

The existing unmet needs justify making family planning services to be re-invigorated as the most priority focus in population management policies. Policies should aim at, first, expanding access to safe, effective and affordable contraceptive services, secondly, improving reproductive health, and thirdly, implementing social and economic measures that would generate further demand for diminishing fertility.

Planning Commission has a key role in development planning and public expenditure management. Utilizing the potential strength of the economy to achieve a status of high middle-income country, a Perspective Plan 2011-2021 based on the Vision 2021 has been adopted and preparation of a second Perspective Plan (2021-2041) is underway. Lowering the rate of population growth was a major challenge for Bangladesh during the Sixth Five Year Plan and the priority is also carried forward in the Seventh Plan. In order to take advantage of the demographic dividend, the Sixth Five Year Plan addressed challenges in labour force quality due to low access and quality of education particularly among women by developing and implementing a well thought out human development, education and training strategies and associated policies and institutions. This study and the subsequent report will help implement Plan targets.

The Multi Sectoral Issues and Coordination Wing of the General Economics Division carried out the task under close guidance of the Member (Senior Secretary), GED. In light of the GED's mandate, roles and responsibility within the Government of Bangladesh, the 'Strengthening Capacity of the General Economics Division (GED) to Integrate Population Issues into Development Plans' project is designed to integrate population issues and gender concerns into national plans and policies and that the in-house capacity for utilizing research and key findings for policy analyses on critical population and development issues is brought to fore among government officials and personnel working within the Planning Commission.

I am thankful to the Consultant Dr. Bazlul Haque Khondker, Professor, Department of Economics, University of Dhaka for helping us in preparing this analytical report. I am also thankful to the reviewers Prof. Dr. Ahmed Neaz, Advisor, MHP Programme, American International University of Dhaka, Dr. Rumana Huque, Associate Professor, Department of Economics, University of Dhaka, for their analytical comments on the issues. The formulation and elaboration of this report has benefitted from a number of persons. I am grateful to all the contributors for their valuable time to share their wisdom with GED. I take this opportunity to thank all including concerned GED officials, representatives from different ministries/department. I specially thank our Hon'ble Planning Minister Mr. A H M Mustafa Kamal, FCA, MP and Mr. M.A. Mannan, Hon'ble State Minister for Planning for their intimate support and inspiration in bringing out this analytical report and its publication.

(Shamsul Alam, M.A. Econs., PhD)

ACKNOWLEDGEMENTS

I would like to express my profound regards and deep sense of gratitude to the Respected Member (Senior Secretary), GED for his kind valuable suggestions, continuous guidance and all out support in smooth completion of the study titled on 'Effective Use of Human Resource in Bangladesh for Inclusive Economic Growth and Income Distribution—an Application of National Transfer Accounts' and bringing out the report. Besides, I am extremely grateful to all officials of GED and the relevant Ministries/Divisions for their valuable contributions and inputs in preparing this report.

It is worth mentioning that UNFPA has provided generous supports in conducting the study and finalizing the report through the Project titled "Strengthening Capacity of the General Economics Division (GED) to Integrate Population Issues into Development Plans". Through the project, UNFPA works with GED in respect to policy adaptation that streamlines government responsiveness to Population, Gender, Sexual and Reproductive Health, and important emerging issues that need integration (e.g., the demographic window of opportunity, urbanization, etc.) within strategic planning. The project also enhances the in-house capacity of GED for utilizing research and key findings for policy analysis on critical population and development issues is brought to discourse among government officials and personnel working within the Planning Commission. I am extremely grateful to South Asian Network on Economic Modeling (SANEM) who were engaged in preparing this informative and analytical report.

I believe, GED officers, policy makers, researchers, and students of higher studies on population issues will be benefited immensely by this report.

(Khandker Ahsan Hossain)
Joint Chief & Project Director
General Economics Division (GED)
Bangladesh Planning Commission

CONTENTS

FIGURES

TABLES

1. Introduction

In recent year, policy makers have highlighted the favorable age structure in Bangladesh while formulating medium and long term development plan. The Seventh Five Year Plan postulates that the demographic dividend along with the scope for expanding the participation of female labor force from its present low levels provides Bangladesh with a great opportunity to convert these factors to its advantage by focusing on labor skills. “In general, average labor productivity is low in Bangladesh and investment in skill formation will pay rich dividends in terms of growth acceleration by enhancing labor productivity. Similarly, increasing female participation in labor force will increase growth by expanding the supply of labor. Additionally, serious efforts are needed to upgrade the capacity to deliver technical and vocational education and skills training. Although there is some skill development policy of GOB under the National Skill Development Policy project through BTEB. But implementation is now facing challenge. This is a major deficiency that has not received much attention in the past and goes beyond public investment. A substantial amount of training must come from private sector sponsored training (Bangladesh Seventh Five Year Plan: 2016-2020, page 41)”. Furthermore, the Seventh Five Year Plan stresses that Bangladesh has entered the window of population dividend opportunities from 1991 onward as the dependency ratio decrease. Government with assistance from development partners have taken initiatives to help Bangladesh strengthen skills development and increase employment in priority sectors which will scale up the quality and standards of training programs, focusing on six priority sectors. It will strengthen institutions in enhancing skills development and improve access to training programs, particularly for women and disadvantaged groups. However, the expressed time of the window of opportunities is not bolstered by observational confirmation. The absence of certain proof on the period and extent of the demographic dividend is a gap policy maker must address when setting needs for human resource and capital investment to gather the economic advantages of the demographic move. Applying the methodology of National Transfer Account (NTA), this study is an endeavor to fill this gap by indicating so as to evaluate the demographic benefit for Bangladesh in respect of effective use of human resource in Bangladesh for inclusive economic growth and income distribution.

2. Definition and Data Sources

The data sets for Bangladesh NTA include: (i) Household Income and Expenditure Survey (HIES), 2016 produced by the Bangladesh Bureau of Statistics (BBS); Labor Force Survey (LFS), 2015 produced by the Bangladesh Bureau of Statistics (BBS); (iv) UNFPA population prospectus data; and (iv) National Accounts Statistics (SNA), produced by the Bangladesh Bureau of Statistics (BBS).

According to the NTA methodology, the life-cycle deficit (LCD) at each age is the superfluous of consumption over labor income. In order to derive the monetary value of LCD by age, it is essential to measure labor income, which, in this paper, is the aggregate of wage of employees (including both in kind and cash) and a fixed part of mixed income (income from own business enterprise). In all societies, children and the elderly consume more than they produce, acquiring LCD. Working-age population has

surpluses in light of the fact that their labor income is generally more than their consumption needs. However, the conclusion may not be valid for women. As specified above NTA is an accounting system which brings age into SNA so that the assessments of labor income, consumption by segments and LCD are consistent. Also every indicator will be matched with the SNA to get the consistent outcome and validate NTA over SNA.

In order to derive age patterns of public and private consumption for education, health and other expenditures and labor income, member level and unit level data with public (government) and private (household) distinctions are required. Such information is usually found in a household budget survey. Thus in the case of Bangladesh, Household Income and Expenditure Survey (HIES), 2016 has been used. Among others, this survey provides important unit level information on household expenditure on education, health care, food, non-food, house rent, money borrowed, household credit, and enrolment status of children etc. This survey is supplemented by the Labor Force Survey (LFS), 2015 which is also the major source of micro level data on labor income from wages and salaries as well as self-employment. Macro aggregate controls for consumption for health, education and others for public and private household for the financial year 2015-16 are compiled from the national accounts statistics produced by the Bangladesh Bureau of Statistics. Macro aggregate control for labor income is the sum of compensation of employees (including net compensation of employees from rest of world) and two-thirds of mixed income.

The log of per capita income, lag of government expenditure per student on different level of education, share of gross fixed capital formation in GDP, the under-five mortality rate, trade-GDP ratio and manufacturing export to total export ratio is taken from World Bank Development Indicator. The demographic dividend is calculated from the data of the United Nations (Department of Economic and Social Affairs-Population Division). These data are of 130 countries for the period from 1995 to 2015.

3. Objectives

The overall objective is to analyze the effective use of human resource in Bangladesh for inclusive economic growth through the application of National Transfer Accounts (NTA). The specific objectives are:

a. To update the National Transfer Account for Bangladesh to find out the stages of demographic dividend for suitable investment policy.

b. To analyze cross country investment gap to validate the investment policy linking appropriate human capital investments with optimal demographic dividend using cross-country panel data from developing countries.

c. To find out the relation of demographic dividend, stages of investment with the time period of demographic dividend, human capital investment, investment policy for optimal achievement of demographic dividend to the economic growth implication.

4. Review of Literature

There is a large pool of literatures on demographic patterns and their effect on the economy. However, the evidence on the connection between economic growth and the working age proportion is limited. Bloom, Canning, and Malaney (2000) and Mason (2001) have suggested that the East Asia's high economic performance to a large extent has been associated to the noteworthy move in the age structure of the region. In studies based on Bloom, Canning, and Sevilla's (2003) approach, variables such as the proportion of the working-age population to total population, labor productivity, human capital, savings rate, trade policies and other variables have been used to assess the long-term growth of per capita income. Among others, an important feature is a positive association between high economic performance and the proportion of the working-age population- capturing the transition in the age structure. This provides observational evidence on positive effect of the demographic transition on economic growth.

Applying cross-country panel data from 1965 to 1995 mainly for economies which are open and when incentives are provided to realize that potential, Bloom and Canning (2004) have demonstrated a positive and important relationship between the economic growth and growth of the share of the working-age population. Furthermore, 'they inferred that the potential for the demographic dividend can be acknowledged in nations that can give a domain to economic advancement'. Mason (2006) proposed that every nation in the Asia and Pacific region need to act to gather the first demographic dividend.

Similarly, other papers (i.e. Fry and Mason (1982), Higgins (1998), and Kelley and Schmidt (1996)) have found positive association between national aggregate rates for major economic variables (namely savings, output, productivity) and demographic structure. Person (2002) found positive association between demographic structures and output and productivity in USA. According to Bloom, Canning and Sevilla (2002), 'Africa's moderately poor economic performance can be connected to an absence of the righteous circle which originates from a demographic transition'.

Following Rajan and Subramanian (2008)[1], the Global Monitoring Report (2015)[2], uses a Generalized Method of Moments (GMM) estimation method covering 1,796 observations (five-year average) from 127 countries for 1950-2010 to determine a causal relationship between change in the share of the working-age population on economic growth and savings. The results under different specifications suggest that an increase in the share of working-age population has a positive effect on per capita GDP growth and savings. More specifically, 1 percentage point increase in the working-age population

[1] Rajan, R. G., and A. Subramanian (2008), "Aid and Growth: What Does the Cross-Country Evidence Really Show?" Review of Economics and Statistics 90 (4): 643–65.

[2] World Bank and IMF (2015), "Development Goals in an Era of Demographic Change", Global Monitoring Report 2015/2016, Advance Edition, A joint publication of the World Bank Group and the International Monetary Fund

(15-64) has been estimated to enhance per capita GDP by 1.1 to 2 percentage points (i.e. the impact of first dividend). Furthermore, the estimation found that 1 percentage point rise in the share of working-age population is associated with an increase of 0.6 to 0.8 percentage point on savings.

Another paper by B. Sayema Haque et al applying cross country panel data from 1980 to 2014 taking 15 Asian countries to observe the Long Run Impact of Demographic Transition on Economic Growth. They have found a negative correlation between dependency ratio and per capita GDP growth which shows that reduction in dependency ratio or an increase in working age population in comparison to the non-working group resulting increase in per capita GDP growth of Asian countries.

5. Research Methodology

We have primarily used a relatively new but widely used tool – National Transfer Accounts to answers the above mentioned research questions. NTA method is still developing. Application of NTA in South Asian developing countries is on process, not completed.

5.1. National Transfer Account and Generational Economy

National Transfer Accounts provides a complete accounting of economic flows by age of the residents of a country of how economic resources are produced and consumed, and how each relies on government programs, family systems, and financial markets to achieve the final distribution of these economic resources. The accounts are all-inclusive in that all economic flows that emerge as a result of the production of goods and services amid the year are incorporated into the accounts. National Transfer Accounts (NTAs) are organized to underscore the generational economy and its key peculiarities: the monetary life cycle and age reallocations acknowledged by depending on intergenerational transfers and assets. The goal of National Transfer Accounts is to provide a systematic and comprehensive approach to measuring the economic flows from a generational perspective. According to Mason and Lee (2011) the generational economy is defined as (1) the social institutions and economic mechanisms used by each generation or age group to produce, consume, share and save resources; (2) the economic flows across generations or age groups that characterize the generational economy; (3) explicit and implicit contracts that govern intergenerational flows; (4) the intergenerational distribution of income or consumption that results from the foregoing.

The NTA gives an interesting and priceless system for exploring how changes in populace age structure will impact national improvement, economic security, generational equity, gender equality, public finance, and numerous other critical public policies. One of the major contributions of the National Transfer Accounts is to develop our comprehension of the implications of relations between development and population dynamics. Shift mechanism of economic resources from working ages to dependent ages depends on countries economic, social and other conditions. According to Geoffrey Hayes and Gavin Jones, in Bangladesh's current situation, particular stress must be placed on the need

for a major drive in educational investment, because of the leveling off of the number of school-aged children. The positive effects of the demographic bonus are, of course, contingent on the availability of jobs or of opportunities for self-employment in a growing economy. They also urged that the situation of women in Bangladeshi society has been improving, but very slowly and more rapid progress is needed. The greater involvement of women in the labour force, while to some extent reflecting the survival needs of families, also reflects important and on-going changes in gender norms. It is obvious that all advanced societies depend on varieties of institutions and economic mechanism for shifting economic resources. Local, regional and national government play an important role in shifting resource in various age group people. On the other hand, developing societies depend on the families and other mechanism. At the same, the shifting mechanisms from working ages to dependent are changing according to the pace of development in the developing countries.

5.2. NTAs to Demographic Dividend

The demographic transition can enhance economic growth in two broad ways. First, as the dependency ratios declines and the share of working age population grows relative to the total population, the average number of children per working age adult also falls. Assuming, this is associated with a freeing up of resources that previously would have been consumed by additional children -allowing living standards to rise. This is the first demographic dividend. Second, a second demographic dividend may also arise to positively affect economic growth and overall development. More specifically, the second dividend results in when the faster growth of first dividend (i.e. rise in working age population) leads to larger savings in the short run and higher investment in the human capital and investment per worker in the long run.

Important question with regard to the first demographic dividend is the impact of age structure on economic growth. More specifically, how, why and at which extent age structure influences economic growth? The total dependency ratio is purely a composite indicator to capture the change in age structure and it does not reflect the variations of earnings and the consumption according the age. This limitation is overcome in the NTA based on the economic life cycle approach (Mason et al. 2006).

The analysis starts with the decomposition of per capita income between labor productivity and support ratio:

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

With Y refers to income, L denotes the labor force and N represents the population. The support ratio $\frac{L}{N}$ is the inverse of the dependency ratio $\frac{N}{L}$. The formula of $\frac{L}{N}$ can be interpreted as the number of effective producers over the number of effective consumers. In terms of growth, the equation states that:

$$gr\left(\frac{Y}{N}\right) = gr\left(\frac{Y}{L}\right) + gr\left(\frac{L}{N}\right)$$

The above equation implies that the growth of per capita income is the sum of the productivity growth and the support ratio growth. This equation construes why age structure can influence growth through the support ratio?

Another point to start the analysis of the link between age structure and economic growth is the decomposition of per capita consumption: $\frac{C(t)}{N(t)} = c(t) * \frac{Y(t)}{L(t)} * \frac{L(t)}{N(t)}$; where $c(t) = \frac{C(t)}{Y(t)}$ the average propensity of consumption or the consumption rate. In terms of growth, the equation becomes $gr\left(\frac{C(t)}{N(t)}\right) = gr(c(t)) + gr\left(\frac{Y(t)}{L(t)}\right) + gr\left(\frac{L(t)}{N(t)}\right)$ meaning that the per capita consumption growth is the sum of the consumption rate growth (linked to the savings rate), the productivity growth and the support ratio growth.

The first demographic dividend is defined as the contribution of age structure to economic growth, precisely the per capita income or the per capita consumption, and **it is measured as the growth of the support ratio** $gr\left(\frac{L(t)}{N(t)}\right)$ **.** The first demographic dividend measures the effects of changes in age structure on consumption per equivalent adult holding the consumption rate and output per worker constant.

The support ratio $\frac{L}{N}$ is calculated holding the shape of the age profiles of consumption and labor income fixed as $\frac{L}{N} = \frac{\sum \gamma(a) * P(a,t)}{\sum \varphi(a) * P(a,t)}$ where, γ is the productivity by age and φ is the consumption needs by age.

5.3. Human Capital – An Investment GAP Analysis and Investment policy

Human capital hypothesis views education as an investment in skills and subsequently considered as an instrument for increasing worker's productivity (see, for instance, Schultz, 1960, 1961, 1971; Becker, 1975). This line of thinking prompts to growth accounting models in which efficiency or output growth is inferred as a function of the change in educational attainment. Due to data deficiency, government expenditure per student has been used as a proxy for the investment for developing human capital.

At first, we have complied data from 130 developing countries to find the relationship between investment at different level of education (i.e. primary, secondary and tertiary) and demographic dividend using scatter plot and the trend line. In these scatter plot Malaysia is taken as comparing country. Thereafter, a gap is computed between Bangladesh and those 130 developing countries using an average estimate of investment at different level of education. Finally, expenditure gaps as a percentage of GDP has been estimated using average expenditure gap of 130 developing countries, expenditure gap quartile and GDP quartile.

Investment policy on human capital in accordance to the different level of education is important to reap the most benefit of the demographic dividend at the shortest possible time span. Accordingly, the study has attempted to use three separate models to estimate the investment (per student government educational expenditure at different levels) effect and demographic effect on per capita income controlling both physical and social capitals. The models that have estimated are specified below:

$$\mathrm{LYPC}_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 \mathrm{GFCF}_{it} + \beta_3 \mathrm{DD}_{it} + \beta_4 \mathrm{MORRATE}_{it} + \beta_5 \mathrm{METRADE}_{it} + \beta_6 \mathrm{TRATIO}_{it} + \mathrm{E}_{it}$$

Where, i = 1, 2, ------ N denotes the cross sectional units and t = 1, 2, ------ T denotes time period.

Here, LYPC_{it} is log of per capita income I at time t. X_{it} is the lag of government expenditure per student for- primary, secondary and tertiary in econometric model, GFCF_{it} is share of gross fixed capital formation in GDP,

DD_{it} is demographic dividend, $\mathrm{MORRATE}_{it}$ the under-five mortality rate, $\mathrm{METRADE}_{it}$ the manufacturing export to total export ratio and TRATIO_{it} denotes Trade-GDP ratio. Finally, E_{it} denotes error term containing unobserved factors.

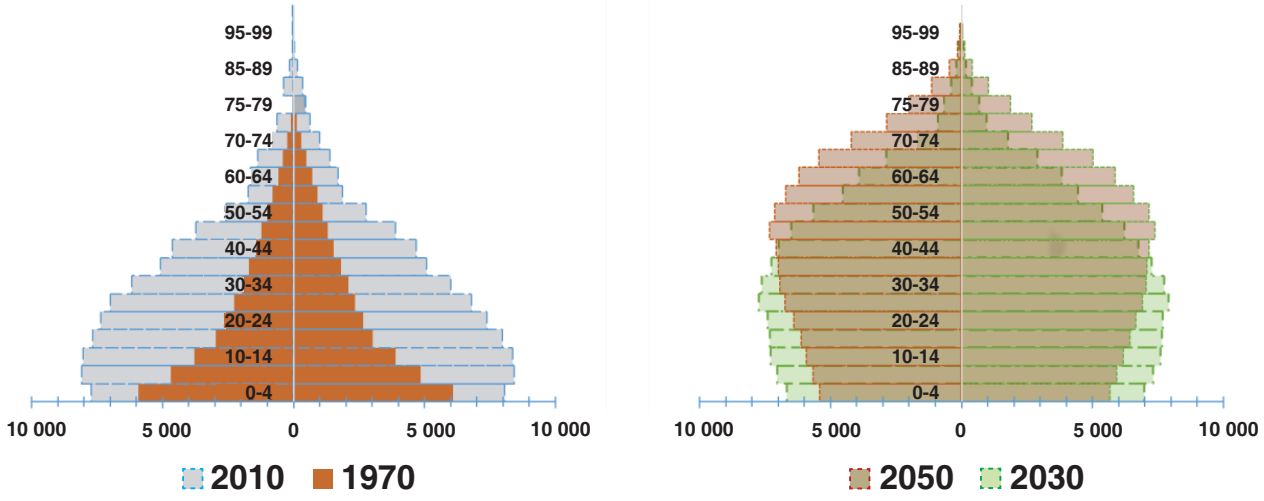
6. Overview of Demographic Transition and Employment Structure in Bangladesh

6.1. Demographic Transition of Bangladesh

Demographic transition captures the movement of a society from an equilibrium portrayed by high fertility and high mortality, to one depicted by low fertility and low mortality. In the initial phases of the transition, mortality falls first and especially among the children (Bloom et al, 2000, p.258). Improved survival among the young cohorts creates a boom generation and a surge in fertility decisions. Child dependency rate rise and population adjusted downwards to account for lower mortality, the population growth rates declines and the mean age of the population begins to increase. As the large cohorts enter the working age, the working age population expands relative to the total population and the child dependency ratios decline. The last stage of this transition is characterized by a surge in the size of the elderly population as large cohorts reach retirement age, compelling up the old-age dependency ratio.

According to the Census 2011, Bangladesh population stood at 149.8 million implying an increase of 25.4 million between 2001 and 2011. By 2030 the projected total population of Bangladesh will be 185.1 million due to two factors (i) an increase in life expectancy at birth for male and female respectively from 67.8 and 69.1 years in 2005-2010 to 74.4 and 76.6 in 2025-2030, and (ii) a decline in the total fertility rate (TFR) from 2.40 to 1.83.

Figure 1: Demographic and Age Structure Transition in Bangladesh

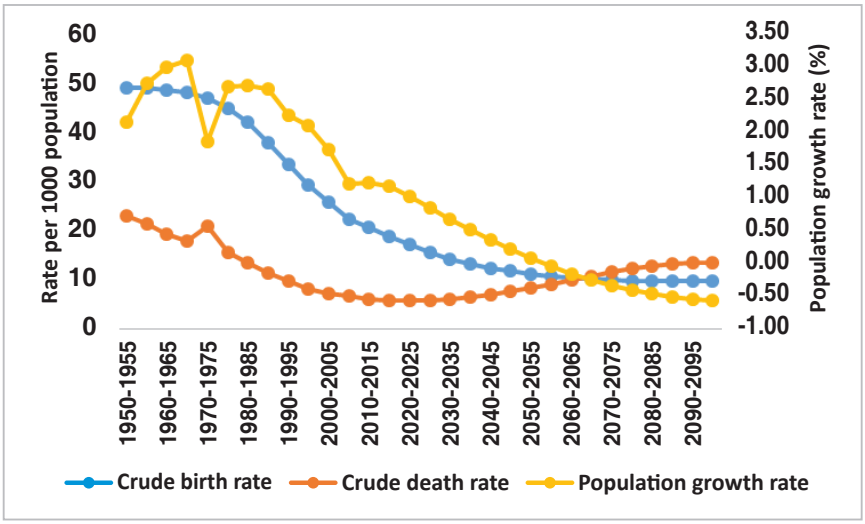


Population in thousand

Source: Constructed from United Nations World Population Prospects: The 2015 Revision (United Nations 2015)

Figure 1 shows the demographic and age structure transition in Bangladesh. According to the World Population Prospectus (2015), the implication of the demographic transition on age structure are evident for the population under 15 years of age as the share in the total population of this age group fell from 44.7 percent in 1970 to 31.7 percent in 2010; and is projected to decline to 17.3 percent in 2050. At the same time, the population under the age of 20 years fell from 54.7 percent in 1970 to 42.2 percent in 2010 and is projected to decline to 23.5 percent in 2050. The large decline in the share of the population under 20 years of age has been associated with a substantial rise in the proportion of the working age population (15-64 years) from 41.9 percent to 53.2 percent from 1970 to 2010 and is projected to be a maximum of 60.3 percent in 2050. This may vary from 7FYP. In this paper we are showing the demographic transition using the UNFPA population projection. In 7FYP data source is same but the presentation style is different from us.

Figure 2: Crude birth rate, crude death rate and population growth in Bangladesh



Source: Constructed from United Nations World Population Prospects: The 2015 Revision (United Nations 2015)

According to the Figure 2, the annual exponential population growth rate was above 2% between the late 1970s and the mid 1990 - the period with the birth rate was above 35 per 1,000 population and the gradual decline in the death rate. On the other hand, the annual exponential population growth rate was below 2% from late 1990s to the recent years when both the death and birth rates have been gradually declining. Although, population growth rates suggest somewhat smooth declining pattern, sudden large drop in the growth between 1970 and 75 deserves some elaboration. George T. at el (1976), relates this drop to marked fluctuation in the the crude death rate and simultaneously with the liberation war in 1971. In particular, the death rate climbed sharply to 210 per 1,000, 37% higher than the five - year average. By 1972-73, a significant recovery was noted (i.e. 162 death per 1,000), although the rate remained above normal levels. Full recovery to the trend was observed in 1973-74, three years after the liberation war. However during 1974-75 period – a period associated with exorbitant increase in price of good grans – mortality rate increased and fertility rate declined (please see Alauddin Chowdhury and George T. Curlin, 1978 for details). Both crude death rates and infant mortality (primarily post-neonatal mortality) increased sharply in 1974 and remained high in 1975.

The upshot of the above discussion points to the fact that the age structure of Bangladesh's population is likely to undergo remarkable transitions in near future leading to a decline in the relative share of children and an increase in the share of the elderly and working-age populations. It is evident that Bangladesh is experiencing window of opportunity in the demographic dividend due to the growing number of working age population since 1990. Demographic dividend can play an important role to achieve the target and goal of Seven Five Year Plan. However, Bangladesh has to invest in human capital to make proper utilization of the growing working age population for achieving the targeted GDP growth. Considering this, it is important to link between demographic dividend and the level of investment for growth in real GDP and economic development. However, analysis of the time period of

demographic dividend and window of opportunities can play a vital role in shaping the investment policy for economic growth and development of Bangladesh.

6.2. Economic Structure, Employment and Labor Force Participation

In the 1960s, the then East Pakistan's economy grew by an annual average rate of around 4 percent. About a fifth of that economy was destroyed during the 1971 Liberation War, and severe dislocations caused at that time left Bangladesh on a slower economic growth trajectory for the following two decades. Then the economic growth accelerated from 1990 to a growth rate over 4 percent in the first half of 1990s. During the latter half of 1990s, the growth rate exceeded over 5 percent. In the last decade it has been hovering around average 6 percent growth rate.

The sectoral economic growth as well as the structure of the economy has changed significantly over the past two decades. The growth rate of agricultural sector has varied over the last two decades with low to moderate magnitude. The manufacturing sector experienced significant growth. Growth rate of the services sector has been stable at around 5-6 percent over the last two decades. The share of agriculture in GDP declined from over 50 percent in 1972 to 16 percent in 2014, with a decline in employment share from about 75 percent to 45 percent. Since 1980, the share of manufacturing has been on the rise approaching 20 percent of GDP in 2014. However, Services, mostly informal, continued to make up the bulk of economic activity, holding at about 50 percent in 2014 compared to about 45 percent in 1972.

Structural transformation has also affected the employment structure, albeit to a lesser extent. Table 1 presents share of employed persons aged 15 years and above by broad economic sectors during six consecutive year categories: 1990-00, 2002-03, 2005-06, 2010, 2013 and 2015-16. Share of employment in agriculture was 51.1 percent in 1999-00. It slightly increased to 52.2 percent in 2002-03 but keep on decreasing after that. Despite the declining trend, it still accounts for 42.70 percent of the total employment in 2015-16.

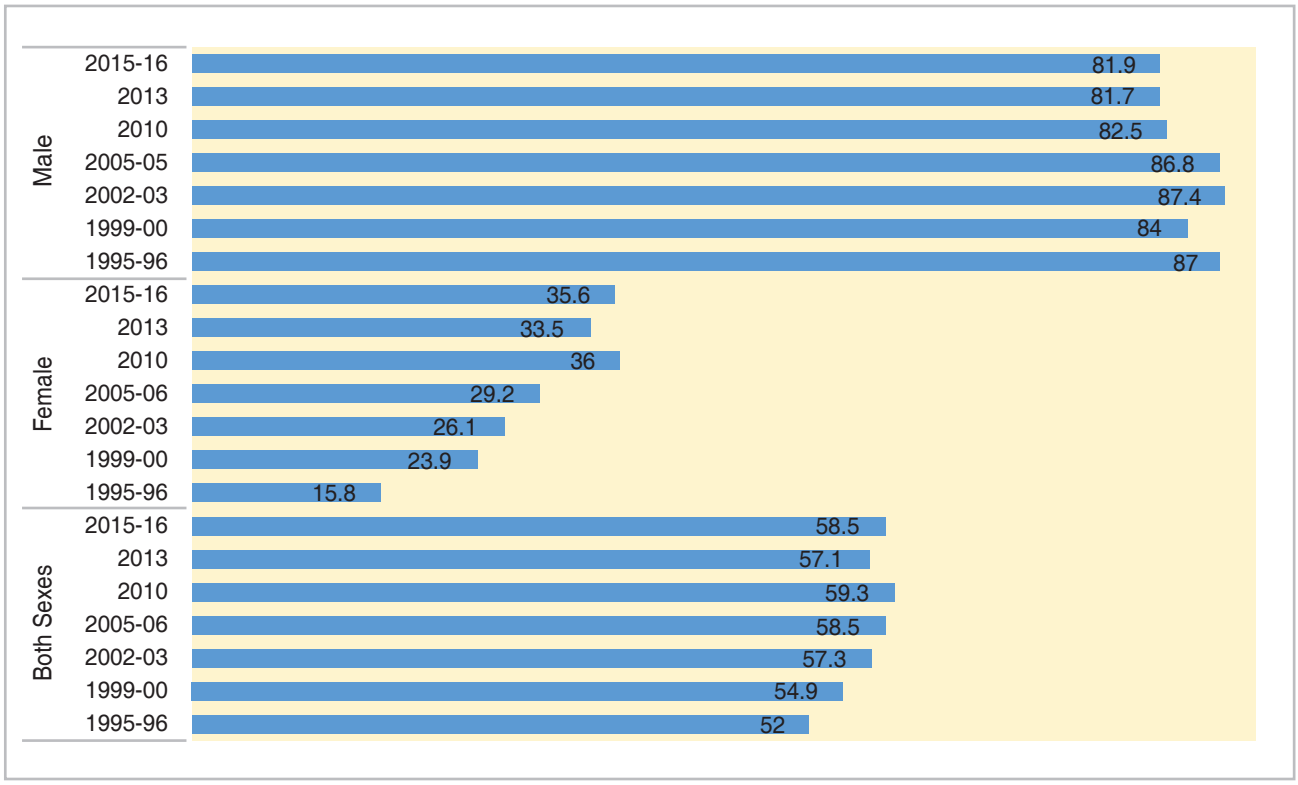
Table 1: Percentage of employed persons aged 15 years and over by broad economic sector

Broad Sector	1999-00	2002-03	2005-06	2010	2013	2015-16
Agriculture	51.06	52.15	48.21	47.51	45.10	42.70
Non-agriculture	48.94	47.85	51.79	52.49	54.90	57.30
Manufacturing	*9.53*	*9.75*	*10.95*	*12.34*	*16.40*	*14.40*
Other industry	*3.09*	*3.63*	*3.37*	*4.97*	*4.40*	*5.90*
Services	*36.32*	*34.47*	*37.47*	*35.17*	*34.10*	*36.90*

Source: Labor force survey

A major feature of the labor force participation in Bangladesh is the low level of female labor participation. Figure 3 shows considerable variations with respect to male and female labor force participation. It is found that labor force participation increased from 52 percent in 1996 to 58.5 percent in 2015-16. A structural shift in male and female labor force participation has been observed during this period. More specifically, male labor force participation decreased from 87 percent in 1996 to 81.9 percent in 2015-16 while female labor force participation experienced almost 100 percent increase; from 15.8 percent in 1996 to 35.6 percent in 2015-16.

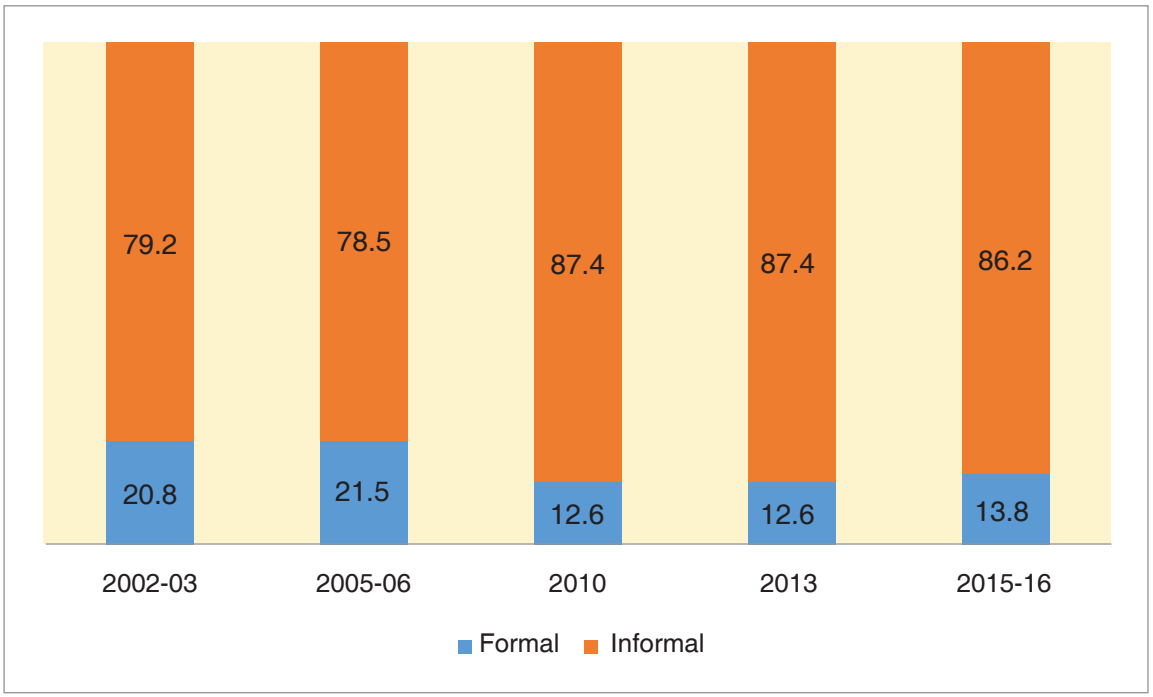
Figure 3: Labor force participation rate in Bangladesh (%)



Source: Labor force survey

Employment by formal and informal sources is shown in Figure 4. The share of informal employment has historically been high in Bangladesh. More than 75 percent of the workers were employed in the informal sector between 2002-03 and 2005-06. The share of informal employment increased to around 87 percent in 2010 from 79 percent reported for 2005-06. However, the share of informal sector remained same in 2013 and 2010 which decreased to 86.4 percent in 2015-16.

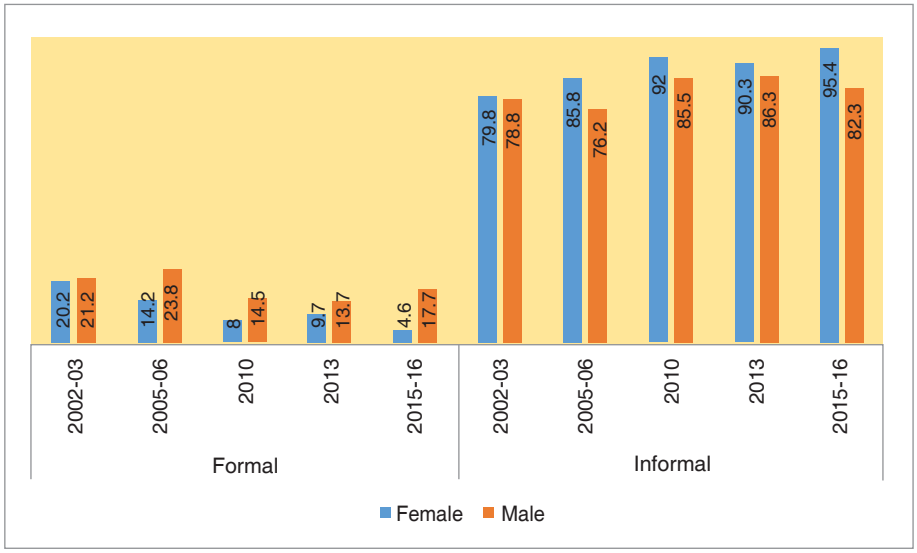
Figure 4: Percentage of employed Persons aged 15 Years and over by formal and informal sector (%)



Source: Labor force survey

Figure 5 shows employment by formal and informal sector and by gender for selected years. In year 2002-03, shares of employment for male and female were similar in both informal and formal sector. More specifically, 78.8 percent of male employment was in the informal sector while the corresponding figure for female employment was slightly higher at 79.8 percent. Thereafter, the share of female employment in the informal sector increased by about 6 percentage points between 2002-03 and 2005-06; and by about 12 percentage points between 2002-03 and 2010 which is remained same for 2013. However, female employment in informal sector increased by almost 5 percentage points between 2013 and 2015-16. The share of female employment in formal sector thus decreased.

Figure 5: Percentage of employed persons aged 15 years and over by sector and gender



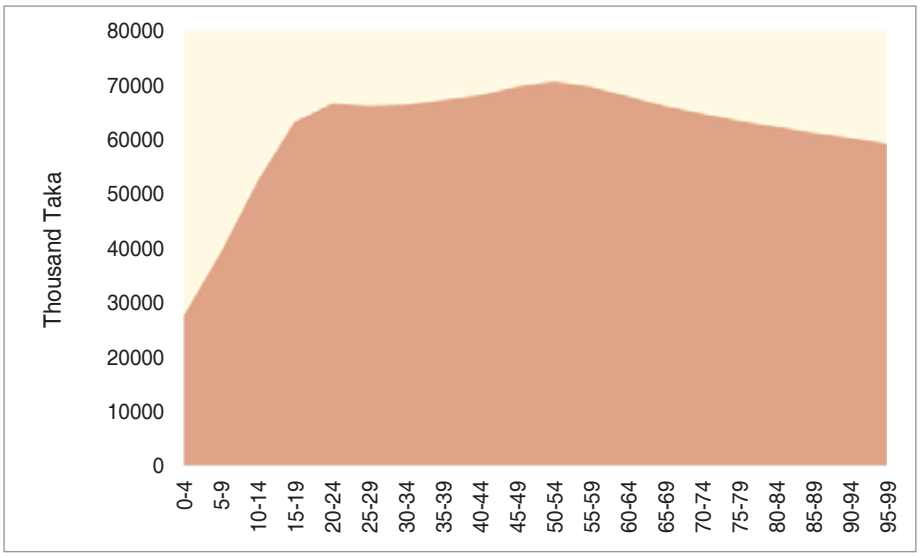
Source: Labor force survey

7. National Transfer Accounts Analysis for estimating the First Demographic Dividend in Bangladesh

7.1. Economic Lifecycle and Lifecycle Deficit

The Figure 6 shows the consumption profile by age. This is the combined profiles of per capita consumption of education, health care and other consumptions separated by public and private contribution. The consumption profile suggests a sharp rise in consumption alongside increasing the age, particularly for school-age consumers. Per capita yearly consumption increases sharply from about 4 years of age till it attains an early peak at about 19 years, indicating investment in education and it continues up to 25 years.

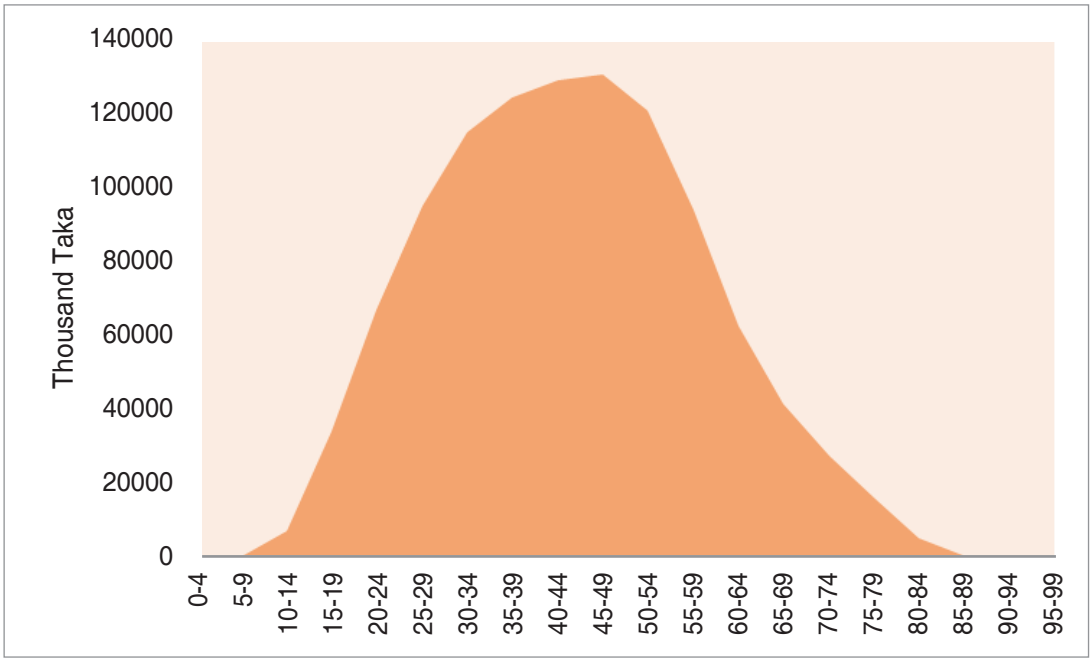
Figure 6: Per capita consumption profile, 2016



Source: Authors' Calculation, Bangladesh National Transfer Accounts (2016)

The Figure 7 shows distribution of the per capita labor income according to the age profile. This reflects a number of distinctive features. It is an inverse U-shaped curve suggesting low earning potential at early ages. The labor income increases steeply till about 34 years of age, and then steadily increases between 35 and 49 years of age. Thereafter, income starts declining, and after 54, it declines rapidly with advancing age. The presence of child labor is obvious with the early age of entry into the labor force with share of labor income of young persons. The tapering income profile of the elderly is indicative of their low wages as many are self-employed, or work in the informal sector.

Figure 7: Per capita labor income profile, 2016

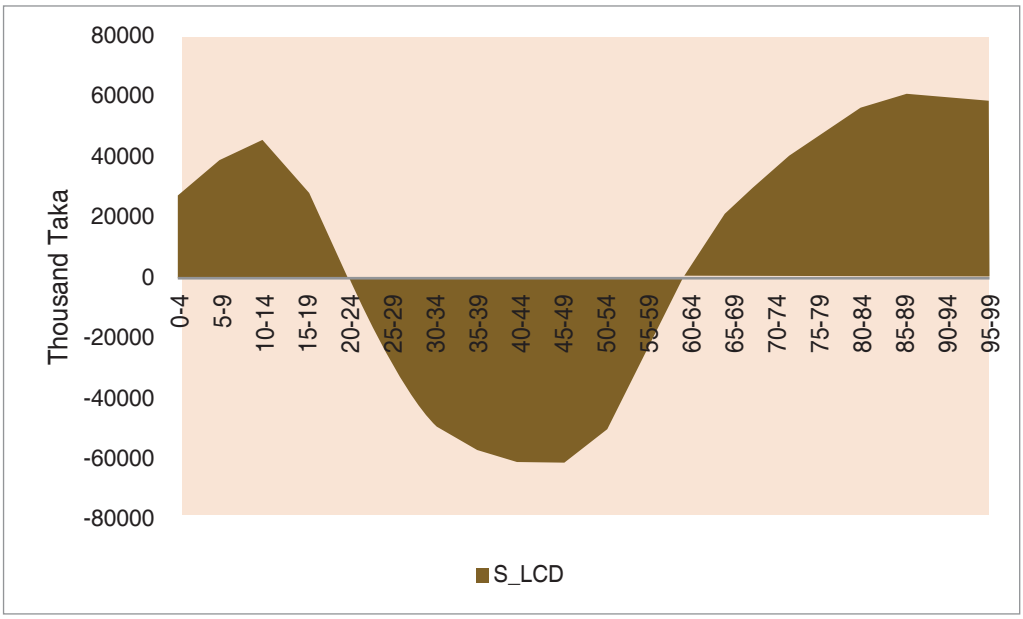


Source: Authors' Calculation, Bangladesh National Transfer Accounts (2016)

The Figure 8 shows the deficit for each age group. Three distinct age groups are found in terms of LCD. As expected, two deficit groups are children (age 0 to 19) and the elderly (65 +). However, the deficit for elderly group is higher than the children perhaps indicates that low levels of income as well as higher poverty among households with children compared to household with elderly[3]. The group encompassing age 20 and 64 is generating surplus in Bangladesh.

[3]According to HIES 2010, head count poverty rates among households with children (age 0-18) has found to be 1.7 percentage-points higher than the national average of 31.5 percent). On the other hand, head count poverty rate among households with elderly (age 60+) has found to be 3.3 percentage-points lower than the national average (Khondker, 2013).

Figure 8: Per capita lifecycle deficit profile, 2016

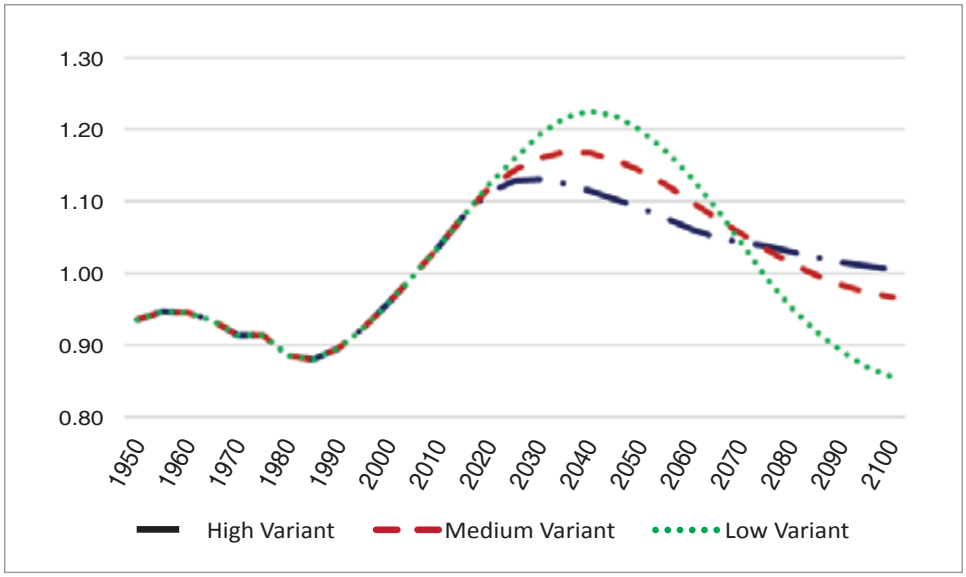


Source: Author's Calculation, Bangladesh National Transfer Accounts (2016)

7.2. The Economic Support Ratio (ESR)

According to the 2006 revision, several assumptions have been used by UN to project the population. Following that, eight variants underlying the fertility, mortality, constant fertility and mortality and also with international migration assumptions have been used in this paper to observe the first demographic dividend. These variants are used to observe the probable year of highest ESR with the range of the first demographic dividend. We also use it to estimate the maximum year left to harvest the benefits of the first demographic dividend.

Figure 9: Economic support ratio, based on NTA profile, 2016

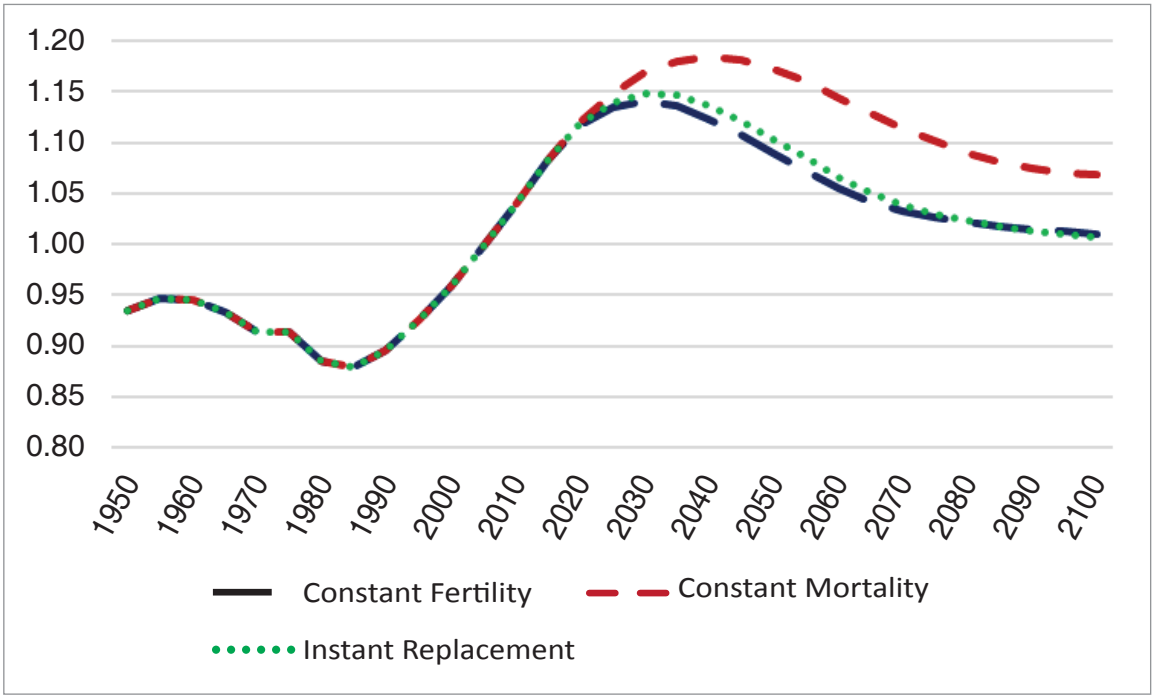


Source: Authors' Calculation, Bangladesh National Transfer Accounts (2016)

Figure 9 shows that ESR is varying according to the various variant of the population growth rate. In particular, with high variant population growth, ESR increases positively till 2030. On the other hand, with the medium variant population growth, it increases till 2035 and with low variant it increases positively up to 2040. Thus, according to these three variants of population growth-high, medium and low, the first demographic dividend in Bangladesh will likely to stay respectively till 2030, 2035 and 2040.

Figure 10 captures the ESR variations with respect to constant fertility, constant mortality and instant replacement rate. It is found that ESR will increase positively till 2030 with both the instant replacement and constant fertility. This suggests that the first demographic dividend will exist up to year 2030. On the other hand, with the constant mortality rate, the ESR will rise positively till 2040 and the first demographic dividend will exist up to year 2040.

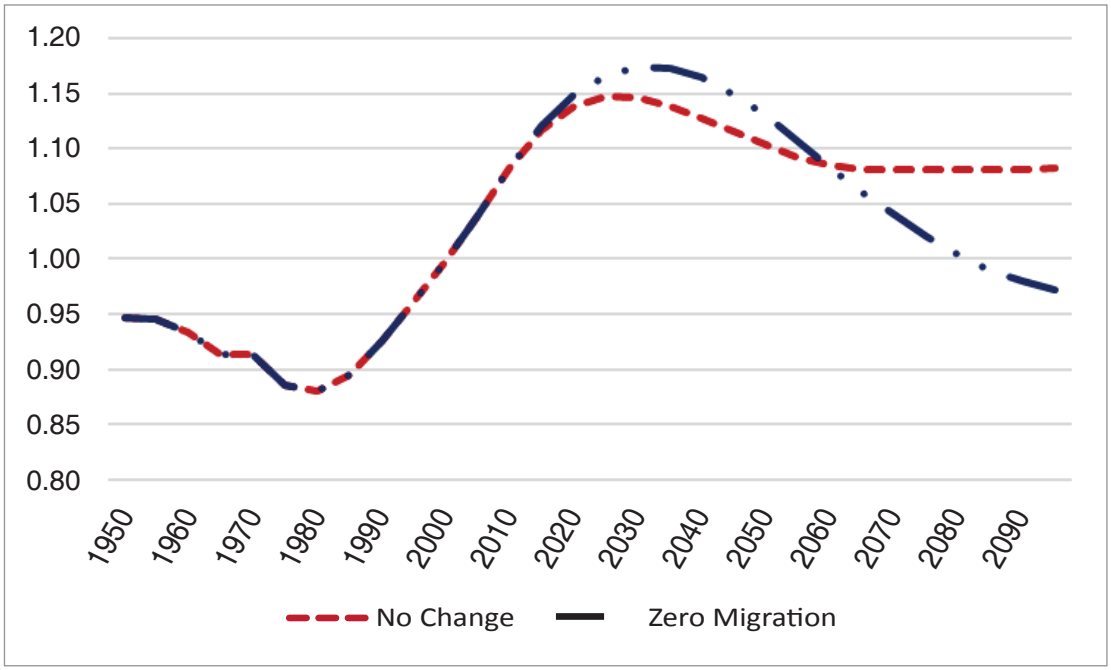
Figure 10: Economic support ratio, based NTA profile, 2016



Source: Authors' Calculation, Bangladesh National Transfer Accounts (2016)

Patterns of out migration may also affect the first demographic dividend. Figure 11 shows ESR patterns under zero migration. With no change in fertility-mortality, it will rise positively till 2030 suggesting that the first demographic dividend will exist up to year 2030. While with the zero migration rate, the ESR will increase positively till 2040 and the first demographic dividend will exist up to year 2040.

Figure 11: Economic support ratio, based on NTA profile, 2016



Source: Authors' Calculation, Bangladesh National Transfer Accounts (2016)

7.3 The First Demographic Dividend

Table 2 summarizes the estimates of first demographic dividends under various assumptions of population growth, fertility-morality rate and rate of migration. According to these estimates, it may be argued that the first demographic dividend in Bangladesh will continue to a point somewhere between 2030 and 2040. After that it will approach towards further change in the demographic situation.

Table 2: Estimated first demographic dividend under various assumption of population projection

Population with various Assumptions	Year of Highest ESR	Range of First Demographic	Years left from 2015
Fertility assumptions: convergence toward total fertility below replacement level			
High Variant	2030	1990-2030	15
Medium Variant	2035	1990-2035	20
Low Variant	2040	1990-2040	25
Constant Fertility	2030	1990-2030	15
Instant Replacement	2030	1990-2030	15
Mortality assumptions			
Constant Mortality	2040	1990-2040	25
Constant Fertility and Mortality assumption			
No Change	2035	1990-2035	20
International migration assumptions			
Zero Migration	2040	1990-2040	25

Source: Author's Calculation, Based on Bangladesh National Transfer Accounts (2016)

Global Monitoring report (2015) provides a list of policy priorities for leveraging demographic dividend at the country level (Table 3). The analysis in the previous sections suggests that Bangladesh is inching towards the phase of late dividend (i.e. phase 3).

Table 3: Generalized/ Global Policy priority for leveraging demographic change

Phase	Issues	Recommended Policies and Strategies
1. Pre dividend	*Sparking demographic transition* Improving human development outcomes to reduce fertility rates	• Improve maternal and child healt h by strengthening provision of basic health care services. • Expand education without letting girls fall behind. • Empower women, and give them access to comprehensive family planning services.
2. Early dividend	*Accelerating job creation* Creating productive jobs for the growing share of the population in working age to reap the first demographic dividend.	• Invest in human capital, including vocational and technical training. • Enhance labor market mobility. • Reduce barriers to female labor force participation. • Strengthen conditions conducive to savings and job creation (public services underpinning private sector activity, contract enforcement, financial inclusion, protection of labor rights).
3 .Late dividend	*Sustaining productivity growth* Creating conditions necessary to reap the second demographic dividend and beginning to prepare for aging	• Continue mobilization of savings for productive investment. • Ensure that public policies across the board encourage labor-force participation of both sexes. • Design cost-effective and sustainable systems for welfare and human development that address current needs (including health, child care, education, and support to vulnerable elderly) and that can be adapted to meet the needs that emerge as aging proceeds.
4. Post dividend	*Post-dividend Adapting to aging* Maintaining and improving welfare in the context of a declining working-age share and growing old-age share.	• Complete reforms of welfare systems—including pensions, health care, and long-term care—that ensure fiscal sustainability and, as part of integrated approaches, protection of the vulnerable, elderly and others, and encouragement of work among those who are able. • Raise labor force participation and productivity (including incentives forparticipation targeted at women and older cohorts; and lifelong. • Pursue policies that encourage a rebound of fertility, among other things by making it easier for men and women to combine child rearing and participation in the labor market

Source: Based on Table 6.1 Global Monitoring Report (2015)

8. Cross Country Investment Gap Analysis-Human Capital and Economic growth

Edward N. Wolf (2000) in a cross country analysis on OECD countries depicted the role of education in economic growth. The report found that the convergence in labor productivity levels among these nations appears to correspond to their convergence in schooling levels. There is the positive and significant effect of formal education on productivity growth among these countries. Sayema Haque (2016) in a cross country panel data analysis which includes Bangladesh suggested that in order to gain the maximum benefit from working age population, it is important to increase investment in productive and growth enhancing activities. Eric A. Hanushek (2013) also suggest that without improving school quality, developing countries will find it difficult to improve their long run economic performance because developing countries have been much less successful in closing the gaps with developed countries.

Among the South Asian nations, Sri Lanka has made great strides in the human development sector in the last few Decades by investing more in providing near universal access to primary and secondary education with a 91% completion rate for the basic education cycle (Grades 1–9). In order to accelerate growth, reduce youth unemployment rates, take advantage of the current demographic dividend with a low dependency ratio, and achieve its vision of becoming a knowledge economy, Sri Lanka is trying to invest substantially in providing a sound foundation for Science and Technical education at the school level.

Across Africa, the levels of investment in human capital vary significantly by regions. Northern and Southern Africa have made the greatest investments in human capital, as reflected by high educational achievement and low levels of infant and child mortality. Indicators of human capital in Central Africa are lagging, and suggest the need for greater investments in health and education. Western and Eastern Africa show some progress in human capital, but with significant room for improving health and educational outcomes (Source: African Union and Economic commission of Africa).

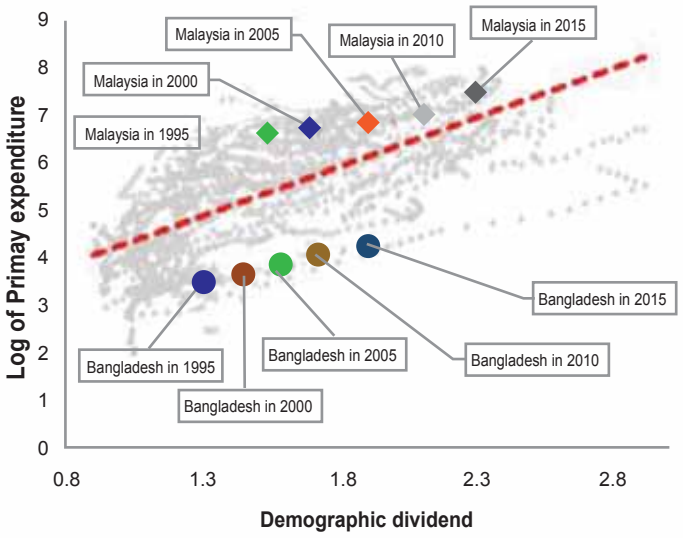
8.1. Investment GAP

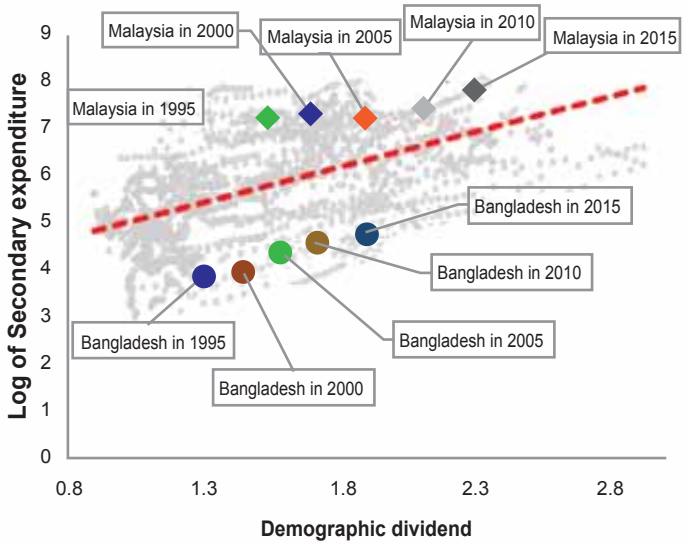
As Bangladesh is going through the window of opportunities from 1990, the investment in the development of human capital is not adequate to utilize the demographic dividend to reap maximum benefit. A simple association between the expenditure on per student at different level of education and demographic dividend, as is shown in the scatter-plot, can shed some light on this issue.

The scatter-plot in Figure 12 is generated with the data of 130 developing countries for the period from 1995 to 2015. The demographic dividend is defined as the ratio of working age population to the dependent population. The per student government expenditure on different education data are from the World Bank WDI. The trend line (red-dotted) shows a very strong positive association between the demographic dividend and per student government expenditure on primary and secondary education. There is no trend in case of tertiary education. Regardless of the way these direct, however evens these scatter-plot recounts to us an extremely intriguing story.

In case of primary and secondary education, Bangladesh is far behind the average trend line in terms of educational expenditure. Comparing an East Asian country (Malaysia) with a South Asian country (Bangladesh), it finds that both Malaysia and Bangladesh, during 1995 and 2015, were experiencing rising demographic dividends which contributed to the rise in their per capita incomes. At the same time, Bangladesh has always been much below the trend in investing in per student expenditure on primary and secondary education; whereas Malaysia was always on or above the trend line.

Figure 12: Demographic dividend and education expenditure per student





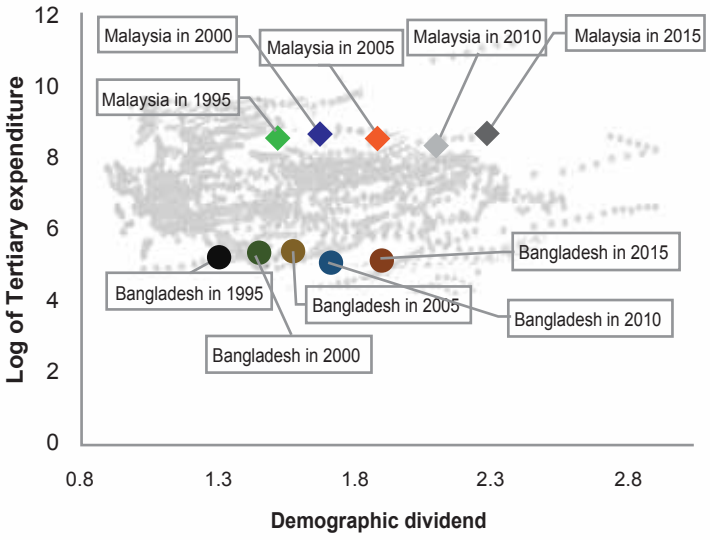
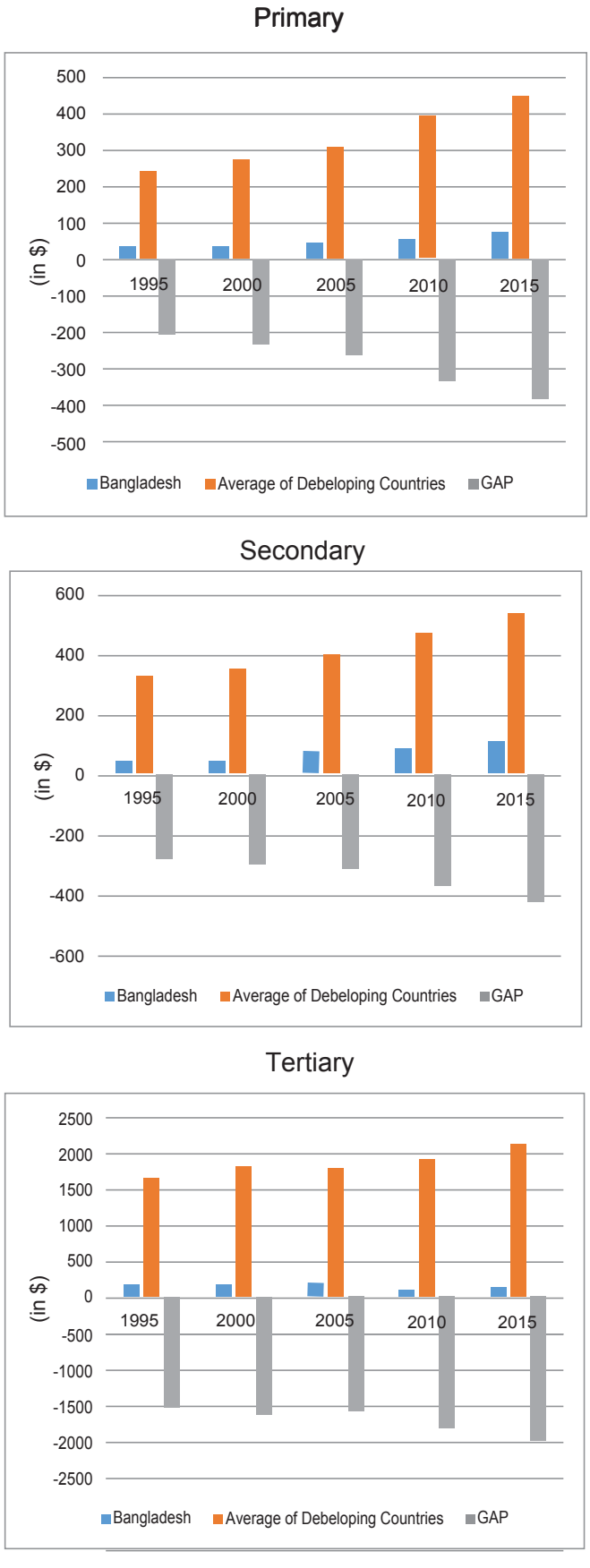


Figure 13: Government Expenditure per Student



The above trends suggest that compared to Bangladesh, Malaysia has invested much more in developing human capital and thus was in a much better position to utilize demographic dividend for economic growth. In case of tertiary education, although there is no trend, it is apparent that Malaysia has invested much more in developing their upper level of human capital.

For Bangladesh, the apprehension is that the nation is yet to achieve the demographic dividend it has, and after some time, the distance from the trend line has widened. Interestingly, in 2005, Bangladesh had the demographic dividend similar to that Malaysia had in 1995, but Bangladesh in 2005 had less than one-twentieth of the per student expenditure in different level of education of what Malaysia had in 1995. Moreover, Malaysia has invested a lot in the initial stage of their window of opportunities and had got its lag effect on the per capita GDP in the coming years.

According to Figure 13, comparing the investment on different education in Bangladesh with the average of developing countries reveals interesting scenarios. Average expenditure on primary, and secondary education is increasing over time for both developing countries and Bangladesh. In case of tertiary education, the average expenditure of developing countries is increasing but expenditure of Bangladesh remains practically stagnant. The figure also depicts that the gap between the average expenditure of developing countries and Bangladesh is widening over the time across all type of education.

Table 4: Estimated Expenditure Gap in 2015

Type of Education	Number of Students in 2015	Maximum Average Expenditure GAP Per Student ($)	Expenditure GAP as a percent of GDP
Primary	19067761	**373**	3.64
Secondary	13597848	**419**	2.92
tertiary	2068355	**1965**	2.08
All Education			8.65

For a better understanding of the gaps, the gap is measured in terms of percent of GDP to find out how much Bangladesh needs to invest (government expenditure on education) on different levels of education. In Table 4, the gap at primary, secondary and tertiary is 373, 419 and 1,965 dollars per student respectively, comparing with the average expenditure of developing countries in 2015. The total expenditure gaps as a percent of GDP at primary, secondary and tertiary education are respectively 3.64, 2.92 and 2.08. Finally, the estimated investment gap in overall education as a percent of GDP is 8.65.

Alternatively, for a better and deeper understanding, two types of gap estimation by expenditure and GDP quartile are provided in Table 5. The comparison is between the average expenditure of Bangladesh and the Developing countries. Bangladesh belongs to 2nd expenditure quartile (shaded

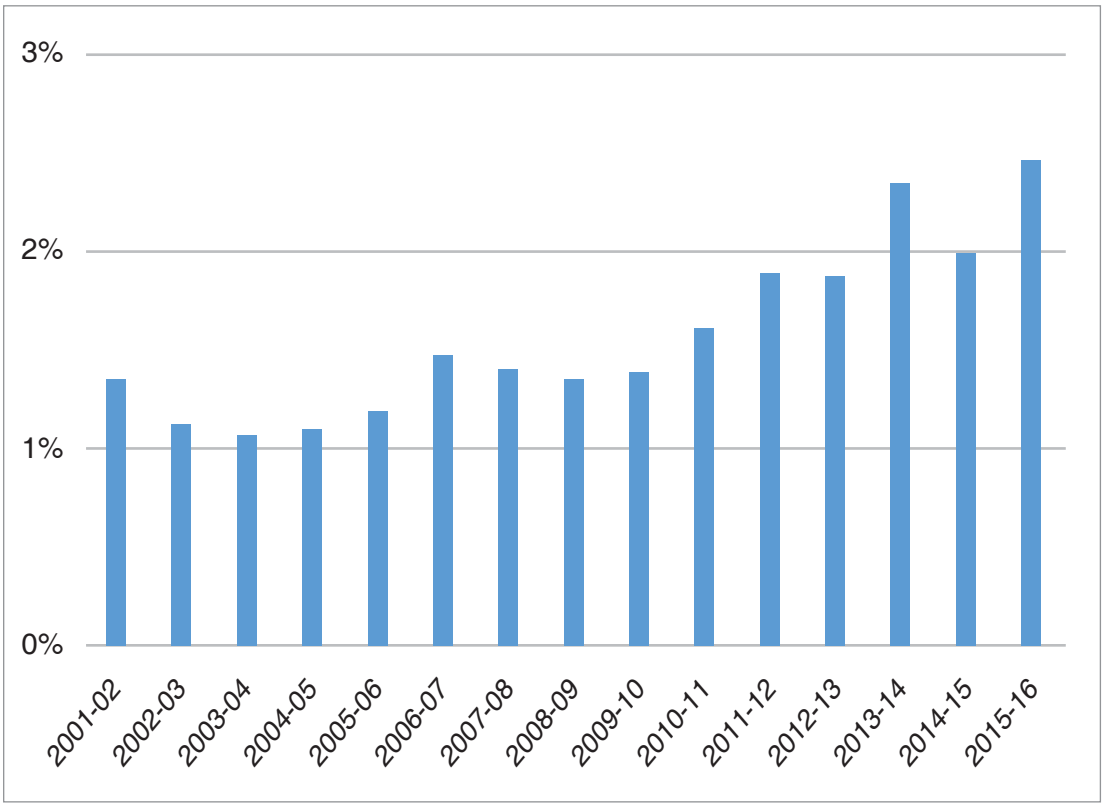
green). According to the 1st quartile, except the tertiary education, there is no expenditure gap on primary and secondary education for Bangladesh in 2015. In this quartile, tertiary expenditure gap is 0.25% of GDP which is also same for total gap in all level of education. In the second quartile, the per student expenditure gaps at primary, secondary and tertiary are USD 162.35, 189.60 and 734.81 respectively The total expenditure gap at primary, secondary and tertiary education is 2, 1 and 1 as a percent of GDP, respectively. The gap in the investment in overall education is 4 percent of GDP. Moreover, in the 3rd and 4th quartile the expenditure gap in overall education significantly higher at 11 and 35 percent of GDP respectively.

Table 5: Estimated Expenditure Gap 2015 by Quartile

	1		2		3		4	
Type of Education	Average GAP Per Student ($)	Total GAP as a % of GDP	Average GAP Per Student ($)	Total GAP as a % of GDP	Average GAP Per Student ($)	Total GAP as a % of GDP	Average GAP Per Student ($)	Total GAP as a % of GDP
Expenditure Quartile								
Primary	0	0	162.35	2	505.35	5	1480.35	14
Secondary	0	0	189.60	1	635.60	4	1736.60	12
Tertiary	234.81	0.25	734.81	1	1728.81	2	8303.81	9
All		0.25		4		11		35
GDP Quartile								
Primary		0	261.35	3	640.35	6	1480.35	13
Secondary	21.60	1	436.60	3	522.60	4	1736.60	11
tertiary	1142.81	1	2392.81	3	1616.81	2	8303.81	7
All		2		8		12		31

In case of quartile by GDP, Bangladesh belongs to the 1st quartile (green shaded) In Table 5. According to the 1st quartile, except the primary education, expenditure gaps have been reported for the secondary and tertiary education for Bangladesh in 2015. In this quartile, the per student expenditure gaps at secondary and tertiary are respectively USD 21.60 and 1,142.81. The total expenditure gaps at secondary and tertiary education are 1 and 1 as a percent of GDP, respectively. The expenditure gap in overall education is 2 percent of GDP. Again, in the 2nd, 3rd and 4th quartile the expenditure gaps in overall education are much higher respectively at 8, 12 and 31 percent of GDP.

Figure 14: Government Expenditure on TVET as a percent of total



Along with expenditures in primary, secondary and tertiary education, it would be very relevant if the above analysis were attempted for expenditure for vocational trainings. However, due to lack of cross country data such analysis could not be attempted. However, it has been suggested that expenditure in vocation training is low in Bangladesh such that it may have little influence in productivity. In the Figure 14, the government expenditure on TVET as a percent of total government education expenditure of only around 2 percent validates the concern.

8.2. Econometric Model and Investment Policy

Furthermore, an econometric model is developed to assess the impact of government expenditure on per capita GDP controlling the physical and social capital. The results are presented in Table below.

Table 6: Government Expenditure for Human Capital and Economic growth

Log of per capita GDP	Random Effect Model	Fixed Effect Model	Random Effect Model	Fixed Effect Model	Random Effect Model	Fixed Effect Model
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Demographic Dividend	0.422***	0.480***	0.475***	0.533***	0.591***	0.648***
	(0.047)	(0.047)	(0.045)	(0.045)	(0.049)	(0.049)
lag of government expenditure per student at primary level	0.00060***	0.00061***				
	(0.00003)	(0.00003)				
lag of government expenditure per student at secondary level			0.00056***	0.00056***		
			(0.00002)	(0.00002)		
lag of government expenditure per student at tertiary level					0.00002***	0.00002***
					(0.00000)	(0.00000)
Gross fixed capital formation (% of GDP)	0.003	0.004**	-0.000	0.001	-0.003	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Manufactures exports (% of merchandise exports)	-0.004***	-0.005***	-0.005***	-0.005***	-0.004***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Mortality rate, under-5 (per 1,000 live births)	-0.011***	-0.012***	-0.011***	-0.012***	-0.013***	-0.014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade (% of GDP)	0.001***	0.001***	0.001***	0.001***	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Note: p<0.01, ** p<0.05, * p<0.1

From the Table 6 shows two models across different level of education. It depicts that both random and fixed model have same impact on per capita GDP for demographic dividend. The demographic dividend variable has a positive and significant sign and the size of the coefficient suggests that 1% increase in the demographic dividend leads to 0.42% to 0.65% increase in the per capita income across the different econometric models.

The Table 6 also depicts that the expenditure on primary, secondary and tertiary education levels have positive and significant impact on per capita GDP. The coefficient of expenditure on primary education suggests that increase in 1 dollar leads to increase 0.06% in the per capita income in the next year. Similarly, the coefficient of expenditure on secondary education suggests that increase in 1 dollar leads to increase 0.056% in the per capita income in the next year. However, the coefficient of expenditure on tertiary education suggests that increase in 1 dollar leads to increase 0.002% in the per capita income in the next year. It suggests that comparing to the different type of expenditures, in the short term primary and secondary education would likely to more return than the tertiary education. Contemporarily, in the long run in term of demographic dividend tertiary education attached more return.

9. Conclusion

The above analysis in the previous sections suggests that Bangladesh is inching towards the phase of late dividend (i.e. phase 3). Accordingly, Bangladesh should have implemented policies those were relevant for the early phase of demographic dividend during 1990s. However, review of policies in Bangladesh suggests that country could not make adequate investment for creating employment (i.e. investment as percent of GDP has remained short by about 3 to 4 percentage points) and in human capital including vocational and technical training (Bangladesh could manage only 2 percent investment of her GDP in education - the figure seems inadequate given much higher levels of educational investment found in other countries). Very low female labor force participation (i.e. 35.6 percent for female in 2015-16 compared to 81.9 percent for male) envisaged existence of barriers to female labor force participation.

Moreover, efforts to strengthen conditions conducive to savings and job creation are found to be insufficient considering a national saving rate in the vicinity of 30 percent and underemployment rate of more than 20 percent. Thus, Bangladesh needs to adopt appropriate investment policies leading to inclusive growth and employment generation.

Despite that there is strong association between education expenditure and demographic dividends, it is found Bangladesh's expenditure gaps are high compared to the developing countries and even with her won cohorts (i.e. according to expenditure and GDP quartiles). Thus, significantly higher resources need to be allocated to all types of education in the coming years.

Against these backdrops, the Seventh Five Year Plan proposes some ambitious goals with respect to investment, employment generation and skill creation. More specifically, the plan aims to increase investment by about 3 to 4 percent of GDP from the current level of 2 percent over the next five years and to increase investment in education, training and human development. Along with these, vocational training and skills development should get priority and adequate allocation.

In the case of female labor force participation, Seventh Five Year Plan raised the importance of increasing female labor participation; though the plan did not elaborate the strategies. In depth assessment is needed to buttress this issue in Bangladesh.

References

A. Hansamali & R.Piyadasa (2014) *"Role of Education in Economic Development: The Experience of Sri Lanka"* Sri Lanka World Bank

A. Kelley, & D.Schmidt, (1996) "Saving, Dependency, and Development" *Journal of Population Economic,* Vol. 9.

A. Mason, & R. Lee, (2006) "Reform and Support Systems for the Elderly in Developing Countries: Capturing the Second Demographic Dividend" *GENUS LXII(2)*11-35

ADB "*ECONOMIC ANALYSIS*" Education Sector Development Program (RRP SRI 39293)

Bidisha, Sayema Haque; Abdullah, S.M.; Siddiqua, Salina; (2016) "*The Long Run Impact of Demographic Transition on Economic Growth: Evidences from a Cross-Country Panel Data"*

D. Bloom, & D.Canning (2004) "*Global Demographic Change: Dimensions and Economic Significance*" Working Paper 10817, NBER

D.Bloom, D.Canning, & P. Malaney, (2000) "Demographic Change and Economic Growth in Asia" *Population and Development Review* Vol. 26.

Edward N. Wolf (2000) "*Human capital investment and economic growth: exploring the cross-country evidence*" New YorkNew York University

Eric A. Hanushek (2013) "Economic growth in developing countries: The role of human capital" *Economics of Education Review*

R. G. Rajan, and Subramanian A.(2008) "Aid and Growth: What Does the Cross-Country Evidence Really Show??" *Review of Economics and Statistics 90(4)*643-65

United Nations (2013) "*National Transfer Accounts Manual: Measuring and Analysing the Generational Economy"* New York Population Division, Department of Economic and Social Affairs

World Bank and IMF (2015) "*Development Goals in an Era of Demographic Change*" Global Monitoring Report 2015/2016, Advance Edition, A joint publication of the World Bank Group and the International Monetary Fund

Report on Policy Dialogue on "Effective Use of Human Resource for Inclusive Economic Growth and Income Distribution—an Application of National Transfer Accounts"

Introduction

1. Background of the workshop

Under the auspices of 'Strengthening Capacity of the General Economics Division (GED) to Integrate Population Issues into Development Plans' a Policy Dialogue on"Effective Use of Human Resource in Bangladesh for Inclusive Economic Growth and Income Distribution—an Application of National Transfer Accounts" was held on December 11, 2016. The workshop was organized by the General Economics Division of Planning Commissionin collaboration with UNFPA Bangladesh at the NEC Auditorium, Sher-e-Bangla Nagar, Dhaka. Member (Senior Secretary), GED, Dr. ShamsulAlam graced the occasion as the Chief Guest and Md. Ziaul Islam,Member, Socio-economic Infrastructure Division adorned the seat of Special Guest. Mr. Naquib Bin Mahbub,Chief, GED chaired the programme.

2. Objective(s) of the workshop

The overall objective of the workshop was to exchange knowledge and views among various stakeholders in integrating population issues into national development plans of Bangladesh. This policy dialogue had a specific purpose of sharing the results and contents of the study titled Effective Use of Human Resource in Bangladesh for Inclusive Economic Growth and Income Distribution—an Application of National Transfer Accounts with a broader stakeholder to have their recommendations to further enrich the study.

3. Participants

The workshop was attended by around 100 participants comprising representatives from relevant organs of the government including Planning Commission, civil society organizations (CSOs), community-based organizations (CBOs), and academia. In addition, delegates of the United Nations Population Fund (UNFPA) also attended. A list of attendees is attached in Annex-1.

Inaugural session

4. Welcome Address

The session was commenced with a welcome address from Mr. Khandker Ahsan Hossain, Project Director & Joint Chief, General Economics Division. In his address, he briefed the participants about the project. He informed that the project focused on building the capacity of government personnel, particularly the in-house capacity of GED officials to integrate population issues and gender concerns into national plans and policies. He then explained the context and the rationale of the policy dialogue.

He informed that the dialogue was on the application of National Transfer Accounts in Bangladesh. According to him, the study would help the policy makers sort out the investment priority in the context of demographic dividend presently prevailing in Bangladesh. He requested the participants for their active participation in enriching the paper and thanked them for their valuable presence. He gave special thanks to the Chief Guest, Special Guest and the Chair for sparing their valuable time. He thanked all other guests and participants especially the key paper presenter and the designated discussants. His thanks were also conveyed to UNFPA Bangladesh and the project team for their effort to make the workshop a successful one.

5. Address by the Special Guest

The Special Guest drew the attention of the audience to the prevailing population trend in Bangladesh and informed that even after reaching the replacement level, due to population momentum the growth trend would carry over. He also added that recognizing the significance of population issues in the development arena, the government had been updating the population policy to reflect recent realities; in the core of this stood out the phenomenon of the demographic dividend. He expected that NTA would contribute to the understanding of the nexus between population dynamics and development.

6. Address by the Chief Guest

The Chief Guest began his speech reminding that the country had a goal to attain by the year 2021—the status of upper-middle income economy. He opined that human resource development would be a crucial factor to achieve this object. He presented a comparative picture of Bangladesh and the Philippines—from half the overseas employees than Bangladesh this country earned double. The difference rooted in the skill level of the labor force. He also added that for the same reason that is the effective use of human resources, the East Asian miracle economies that once learned from Bangladesh had surpassed her by a great margin. To reverse the situation he emphasized on investing in human resource. He expressed his concern about the low rate of literacy and lack of quality in the education system. To convert the large pool of unskilled labor, investment in quality education is the key.

7. Address by the Chair

The Chair, in his address, delineated the broader development context of Bangladesh highlighting the economic and the demographic transition. He marked the coming quinquennium as a crucial one for taking effective policy measures so that highest dividend from the demographic window of opportunity can be attained. Therefore, NTA emerged as a precision tool for the policy planners of the country and the study under discussion would ease the process. He expected that the dialogue not only would sensitize the participants about the new concept of NTA but also would be supplemented by their comments and suggestions.

Business Session

8. Dr. Shamsul Alam, Member (Senior Secretary), GED, Planning Commission chaired the business session.

9. The Key Note Paper was presented by Dr. Bazlul Haque Khondker. He set the tone by informing the audience that the economic progress, in the coming days, will depend, to a considerable degree, on the generational economy as the meaning of age is changing gradually. The critical nature of human capital spending—investment in the health and education of children is changing according to this change. This may affect saving, the accumulation of capital (both human and physical) and the productivity of the work force. Another important event happened in the meantime in terms of age structure: the demographic window of opportunities opened for Bangladesh in 1990 and the country recently experiencing the early phase of demographic dividend. In this context, comes a new concept: National Transfer Accounts (NTA).

The National Transfer Accounts constitute a complete, systematic and coherent accounting of economic flows from one age group or generation to another, typically for a national population in a given calendar year. These accounts provide very rich and useful information for analysis and have a wide range of policy implications.NTA consists of three accounts

- Life cycle account
- Public age reallocation accounts
- Private age reallocation accounts

The study under discussion attempts to develop and/or update the National Transfer Account for Bangladesh to find out the stages of demographic dividend for suitable investment policy. It analyzes cross country investment gap to validate the investment policy linking appropriate human capital investments with optimal demographic dividend. It also tries to find out the relation of

- The time period of demographic dividend
- Human capital investment
- Investment policy for optimal achievement of demographic dividend to the economic growth implication.

Based on the analysis the study provides the policy recommendations for different stages of demographic dividend:

Pre-dividend:

- Improve maternal and child health by strengthening the provision of basic health care services.
- Expand education without letting girls fall behind.

- Empower women, and give them access to comprehensive family planning services.

Early-dividend:

- Invest in human capital, including vocational and technical training.
- Enhance labor market mobility.
- Reduce barriers to female labor force participation.
- Strengthen conditions conducive to savings and job creation (public services underpinning private sector

  activity, contract enforcement, financial inclusion, protection of labor rights).

Late-dividend:

- Continue mobilization of savings for productive investment.
- Ensure that public policies across the board encourage labor-force participation of both sexes.
- Design cost-effective and sustainable systems for welfare and human development that address current

  needs (including health, child care, education, and support to vulnerable elderly) and that can be adapted to meet the needs that emerge as aging proceeds.

Post-dividend:

- Complete reforms of welfare systems—including pensions, health care, and long-term care—that ensure fiscal sustainability and, as part of integrated approaches, protection of the vulnerable, elderly and others, and encouragement of work among those who are able.
- Raise labor force participation and productivity (including incentives for participation targeted at women and older cohorts and lifelong).
- Pursue policies that encourage a rebound of fertility, among other things by making it easier for men and women to combine child rearing and participation in the labor market

10. After the presentation by Dr. Khondker, Professor Ahmad A N Neaz passed his comments as a designated discussant. Dr. Neaz recognized the paper as a commendable one. He started his commentary citing the opposing view of Malthus and Keynes about population and development and related the issue with present Bangladesh in the context of the demographic dividend. Next, he gave some specific suggestions to improve the paper:

- The paper lacks an abstract or an executive summary. Policy makers, the prime user of the paper, being busy persons might find it helpful if a summary would have been added.
- Although during the presentation the methodology was detailed out, the original paper designates very little space for it. A detailed methodology will help the reader grasp the new issue of NTA. There is also scope to further elucidate some parts of the methodology specifically

Section 5.1 (National Transfer Account and Generational Economy). Further, the model concerning human capital does theorize but does not clarify the relationship between dependent and independent variables.

- As NTA is a pretty new concept, in addition to methodology, literature review part of the paper demands some more elaboration. It will support the analysis as well as provide the reader with an easy read.
- Demographic dividend is not a mere phenomenon of only age structure, it is about skill, and it is about the quality of labor. Most importantly, it does not come automatically, it needs reaping of benefit. It is about playing the strength. During the 1970s in Bangladesh, for instance, there were enough people to enter the workforce but they lacked skill and quality and failed to be the effective actors of growth. On the other hand, after the World War II, instead of labor intensive technology, Japan adopted capital intensive development that helped them exploit the benefits of the demographic dividend.
- When it comes to gross fixed capital formation, trade, and manufacturing exports, there is a possibility of multiple linearity problem. It needs proper attention.
- In the paper, there is also need for classification and demarcation of formal and informal sectors.
- The world inclusive used in the general objective needs cautious assessment as it has a broader and deeper meaning in the field of economics.
- Finally, labor force data used in the study needs rechecking. Data related to women participation seems doubtful.

During the reflection to the commentary the author thanked Dr. Neaz and assured that his suggestions will be taken care of. As of the data, he informed that Labor Force Survey data of BBS has been used and it is the only source available for these types of data. Dr. Shamsul Alam added to clarify the term 'inclusive' that it has become a household world in development arena and everybody gets the notion.

11. The second discussant of the day was Dr. Rumana Huque. She also congratulated the author and presenter of the paper for his laudable work. At the outset she shared some statistics of some developed and developing countries regarding the expenditure for children and senior citizens. She showed that the expenditure vary country to country depending on the actual needs. She, then, made the following suggestions to improve the paper:

- Some of the policy recommendations are not derived from the analysis done rather get their roots in general conception. For better acceptance of the paper all the suggestions might be based on the findings of the study. The paper has scope to suggest some good policy directions.
- The methodology might be more user-friendly and the assumptions should be eloquent.

- As far as the literature review is concerned, some more recent endeavors might be delved into.
- The paper focused entirely on the education sector. Health as an important indicator of human development might get some space here.
- The paper discusses the workforce as a whole. It would add value if gender dimension was added focusing male and female workforce separately.
- Source disaggregated expenditure on education that is showing the private and public expenditure discretely will present a better picture of the sector.
- In the comparative analysis, Bangladesh has been compared with Malaysia only. Comparing with some more countries like India, Sri Lanka would present a better picture in terms of Bangladesh's relative position.
- In addition to formal sector, informal sector workforce along with the savings thereof might be included.
- Other social dimensions like women empowerment, child marriage etc. could be included in the study.

The author and presenter thanked Dr. Rumana for her inputs. He added that most of the suggestions will be reflected in the revised paper. However, some of the issues like including health sector in the analysis might not be possible to address due to time and other constraints.

12. Open Discussion

Finally, there was open discussion session at the end of the programme. Following suggestions and comments were made by the participants:

- Gender dimension, unpaid work, remittance might be added in the analysis. Future labor market trend and scenario should be included in the recommendation.
- In addition to education expenditure, quality of education might come as a variable in the model.
- More analysis on technical and vocational education (TVET) is necessary in reality of the contemporary needs.
- The study might suggest that best ways of utilizing manpower to reap the benefits of demographic dividend.
- Gender sensitive budget data segregated in terms of age and sector might be added.

13. Closing Remarks by the Session Chair

Dr. Shamsul Alam, Member, General Economics Division, Planning Commission thanked the speakers, presenter, discussants and all other participants for their valuable input. He said that after the end of dividend period there would be a time when the number of dependent people, number of senior citizens to be specific would be more than that of the working age people. Advanced planning is needed to address those issues; most importantly the proper utilization of demographic dividend and the savings that will ensue. He also clarified some of the queries of the participants: the rationale behind using Malaysia as a comparator country, development implication of the term 'inclusive' among other things. Finally, he informed the audience that a number of activities have been included in the Seventh Five Year Plan to exploit the demographic dividend.

The workshop was officially called off by the Chair.

List of Notable Publications by General Economics Division (GED) Bangladesh Planning Commission Since 2009

1. Policy Study on Financing Growth and Poverty Reduction: Policy Challenges and Options in Bangladesh (May 2009)
2. Policy Study on Responding to the Millennium Development Challenge Through Private Sectors Involvement in Bangladesh (May 2009)
3. Policy Study on The Probable Impacts of Climate Change on Poverty and Economic Growth and the Options of Coping with Adverse Effect of Climate Change in Bangladesh (May 2009)
4. Steps Towards Change: National Strategy for Accelerated Poverty Reduction II (Revised) FY 2009-11 (December 2009)
5. Millennium Development Goals: Bangladesh Progress Report-2009 (2009)
6. Millennium Development Goals: Needs Assessment and Costing 2009-2015 Bangladesh (July 2009)
7. এমডিজি কর্ম-পরিকল্পনা (৫১ টি উপজেলা) (জানুয়ারি-জুন-২০১০)
8. MDG Action Plan (51 Upazillas) (January 2011)
9. MDG Financing Strategy for Bangladesh (April 2011)
10. SAARC Development Goals: Bangladesh Progress Report-2011 (August 2011)
11. Background Papers of the Sixth Five Year Plan (Volume 1-4) (September 2011)
12. 6th Five Year Plan (FY 2011-FY 2015) (December 2011)
13. Millennium Development Goals: Bangladesh Progress Report-2011 (February 2012)
14. Perspective Plan of Bangladesh 2010-2021: Making Vision 2021 a Reality (April 2012)
15. Public Expenditure for Climate Change: Bangladesh Climate Public Expenditure and Institutional Review (October 2012)
16. Development of Results Framework for Private Sectors Development in Bangladesh (2012)
17. ষষ্ঠ পঞ্চবার্ষিক পরিকল্পনা (২০১১-১৫) বাংলা অনুবাদ (অক্টোবর ২০১২)
18. Climate Fiscal Framework (October 2012)
19. Public Expenditure for Climate Change: Bangladesh CPEIR 2012

20. First Implementation Review of the Sixth Five year Plan -2012 (January 2013)
21. বাংলাদেশের প্রথম প্রেক্ষিত পরিকল্পনা ২০১০-২০২১ রূপকল্প ২০২১ বাস্তবে রূপায়ণ (ফেব্রুয়ারি ২০১৩)
22. National Sustainable Development Strategy (2010-2021) (May 2013)
23. জাতীয় টেকসই উন্নয়ন কৌশলপত্র (২০১০-২০২১) [মূল ইংরেজি থেকে বাংলায় আনুদিত] (মে ২০১৩)
24. Millennium Development Goals: Bangladesh Progress Report-2012 (June 2013)
25. Post 2015 Development Agenda: Bangladesh Proposal to UN (June 2013)
26. National Policy Dialogue on Population Dynamics, Demographic Dividend, Ageing Population & Capacity Building of GED [UNFPA Supported GED Project Output1] (December 2013)
27. Capacity Building Strategy for Climate Mainstreaming: A Strategy for Public Sector Planning Professionals (2013)
28. Revealing Changes: An Impact Assessment of Training on Poverty-Environment Climate-Disaster Nexus (January 2014)
29. Towards Resilient Development: Scope for Mainstreaming Poverty, Environment, Cliamte Change and Disaster in Development Projects (January 2014)
30. An Indicator Framework for Inclusive and Resilient Development (January 2014)
31. Manual of Instructions for Preparation of Development Project Proposal/Proforma Part-1 & Part-2 (March 2014)
32. SAARC Development Goals: Bangladesh Progress Report-2013 (June 2014)
33. The Mid Term-Implementation Review of the Sixth Five Year Plan 2014 (July 2014)
34. Millennium Development Goals: Bangladesh Progress Report-2013 (August 2014)
35. Population Management Issues: Monograph-2 (March 2015)
36. GED Policy Papers and Manuals (Volume 1-4) (June 2015)
37. National Social Security Strategy (NSSS) of Bangladesh (July 2015)
38. MDGs to Sustainable Development Transforming our World: SDG Agenda for Global Action (2015-2030)- A Brief for Bangladesh Delegation UNGA 70th Session, 2015 (Septermber 2015)
39. 7th Five Year Plan (2015/16-2019/20) (December 2015);
40. সপ্তম পঞ্চবার্ষিক পরিকল্পনা ২০১৫/১৬-২০১৯/২০ (জুন ইংরেজি থেকে বাংলা অনুদিত) অক্টোবর ২০১৬
41. জাতীয় সামাজিক নিরাপত্তা কৌশলপত্র (অক্টোবর ২০১৬)

42. Population Management Issues: Monograph-3 (March 2016)

43. Bangladesh ICPD 1994-2014 Country Report (March 2016)

44. Policy Coherence: Mainstreaming SDGs into National Plan and Implementation (Prepared for Bangladesh Delegation to 71st UNGA session, 2016) (September 2016)

45. Millennium Development Goals: End-period Stocktaking and Final Evaluation Report (2000-2015) (September 2016)

46. A Handbook on Mapping of Ministries by Targets in the implementation of SDGs aligning with 7th Five Year Plan (2016-20) (September 2016)

47. Data Gap Analysis for Sustainable Development Goals (SDGs): Bangladesh Perspective (January 2017)

48. Environment and Climate Change Policy Gap Analysis in Haor Areas (February 2017)

49. Integration of Sustainable Development Goals into the 7th Five Year Plan (February 2017)

50. Banking ATLAS (February 2017)

51. টেকসই উন্নয়ন অভীষ্ট, লক্ষ্যমাত্রা ও সূচকসমূহ (মূল ইংরেজি থেকে বাংলায় অনুদিত) (এপ্রিল ২০১৭)

52. Exploring The Evidence: Background Research Papers for Preparing the National Social Security Strategy of Bangladesh (June 2017)

53. Bangladesh Voluntary National Review (VNR) 2017: Eradicating poverty and promoting prosperity in a changing world, (June 2017)

54. SDGs Financing Strategy: Bangladesh Perspective (June 2017)

55. A Training Handbook on Implementation of the 7th Five Year Plan (June 2017)

56. 7th Five Year Plan (FY 2015/16- FY 2019/20): Background Papers Volume 01: Macro Economic Management & Poverty Issues (June 2017)

57. 7th Five Year Plan (FY 2015/16- FY 2019/20): Background Papers Volume 02: Socio- Economic Issues (June 2017)

58. 7th Five Year Plan (FY 2015/16- FY 2019/20): Background Papers Volume 03: Infrastructure, Manufacturing & Service Sector (June 2017)

59. 7th Five Year Plan (FY 2015/16- FY 2019/20): Background Papers Volume 04: Agriculture, Water & Climate Change (June 2017)

60. 7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 05: Governance, Gender & Urban Development (June 2017)

61. Education Sector Strategy and Actions for Implementation of the 7th Five Year Plan (FY2016-20)

62. Monitoring and Evaluation Framework of Sustainable Development Goals (SDGs): Bangladesh Perspective (March 2018)

63. Effective Use of Human Resource for Inclusive Economic Growth and Income Distribution—an Application of National Transfer Accounts (February 2018)

Strengthening Capacity of the General Economics Division (GED) to Integrate Population and Development Issues into Plans and Policies Project