Asia-Pacific Population Journal

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Lowest-low fertility in the Republic of Korea: Variations by locality, 2000-2010

Minja Choe and Hyung-Seog Kim

Fertility rates in the Republic of Korea have been at the lowest-low level since 1998. The present paper examines variations in fertility measured by total fertility rate based on period parity progression ratios and their components, estimated from censuses of 2000, 2005 and 2010. It also examines how fertility variations by locality are related to key socioeconomic conditions and implementation of family policies and programmes in the locality. The paper finds that the total fertility rate did not change much during the period 2000-2010, but some components of it, especially period progression parity ratios to first marriage and from first to second births, fluctuated substantially. There are substantial variations in fertility by locality, and those variations increased after 2000. This was especially seen in the progression from marriage and from the first to second birth increased. The paper also finds that in localities where the residents have attained higher education levels, women take longer to get married. In addition, in localities with higher use of childcare facilities for children under the age of 5 years, women tend to progress faster from first to second birth. The results imply that the family policies and programmes that are included in the government’s policy seem to have positive results in raising fertility.

The paper recommends that policies to increase the availability of childcare facilities should be continued if further increases in fertility are envisaged. It suggests that a possible topic for further study is why many highly-educated women prefer not to marry and notes that the provision of stable employment for young people may encourage the progression from marriage to first birth.

Internal Migration in the Upper Mekong Delta, Viet Nam: What is the role of climate-related stressors?

Kees van der Geest, Nguyen Viet Khoa, and Nguyen Cong Thao

This present paper reports on a case study that investigated under what circumstances households use migration to cope with climate variability and food insecurity. It is a result of a field study conducted in three communities in Dong Thap Province in the Upper Mekong Delta in Viet Nam. Methods used included a household survey (N=150), participatory research tools and key informant interviews. Ninety per cent of the survey respondents reported adverse effects of climate-related stressors, such as floods, storms and changes in rainfall patterns, on their livelihoods. Those effects, however, were more often qualified
as “moderate” than “severe”, and for the survey population as a whole, no evidence was found that climatic stressors were principal drivers of migration from the area. The Upper Mekong Delta in Viet Nam is undergoing rapid economic development and increasing migration from the area to urban centres in Viet Nam, mostly driven by demand for labour in industrial centres, is taking place. However, an analysis differentiated by income group reveals that poorer households with little or no land are much more likely to experience severe impacts from climatic stressors than non-poor households. Their ability to cope and adapt locally is limited, and migration, in most cases internal migration, is a common alternative. The paper concludes many people, especially the poor, migrate due to severe pressures on their livelihood and food security as a result of climate change. It also concludes that increased migration from the study area is largely related to greater demand for industrial labour and a desire of younger people to adopt a more urban lifestyle and move away from their rural homes and tedious work in agriculture.

The paper stresses that people willing to migrate should be prepared in way that they can find adequate jobs in the areas of destination and thus be able to continuously support their family members staying behind. If migrants are well prepared, internal migration can help make societies become less vulnerable to climate change.

**Policy note**

**Will Bangladesh seize or squander the economic opportunity offered by the Demographic Dividend?**

Rafiqul Huda Chaudhury

Bangladesh experienced a significant reduction in fertility and mortality during the last three decades of the twentieth century, leading to a drastic change in the age structure of the population: there are now more people in productive ages (15-64 years) than in the dependent (0-14 and 64+) ages. The declining child dependency ratio coupled with a considerable time lag for the old age dependency ratio to rise creates a one-time opportunity for approximately two or three decades to boost economic growth. The present paper examines the extent to which Bangladesh has taken advantage of this window of opportunity that the demographic transition has offered. It also identifies challenges in exploiting this opportunity to boost economic growth. Similar to many other countries, Bangladesh has benefited from this demographic transition. An increase in the country’s working age population has contributed to a rise in per capita income, national and domestic savings and capital per worker and a reduction in poverty. The demographic “bonus” will be available for Bangladesh for the next 2-3 decades with the working age
population projected to continue to grow more rapidly than the young and old population. During this period, Bangladesh is poised to take advantage of the potential boost in economic growth provided it can (i) strengthen the human resource base both in terms of numbers and quality, (ii) create more jobs in the manufacturing sectors, (iii) create an appropriate climate for more public and private investment, (iv) attract more foreign development investment, (v) improve infrastructure and (vi) ensure good governance. The paper concludes with the concern that the demographic dividend could turn into a “youth quake” if the large number of young people entering into the labour force are not productively employed.

Abstract

Fertility in the Republic of Korea has been at the lowest-low level since 2001. The present paper examines variations in fertility measured by total fertility rate based on period parity progression ratios and their components, estimated from censuses of 2000, 2005, and 2010. Total fertility rate changed minimally during the period 2000-2010, but some components of it, especially the period parity progression ratios to first marriage and from first to second births, fluctuated substantially. Variations by locality in fertility have been substantial and increased after 2000, especially for progressions to marriage and to second birth. Localities with a large proportion of women with higher education have lower progression to first marriage. Localities with a large proportion of children under age 5 using childcare facilities have higher progression to second birth in the most recent year (2010). The authors conclude that family policies and programmes that began in 2006 are having some positive impacts on raising fertility.

By Minja Kim Choe and Hyung-Seog Kim

Keywords: lowest-low fertility, fertility decline, family policies

Introduction

A total fertility rate (TFR) of below 1.5 children per woman is considered to be critically low by demographers because of its implications on future age structure (Kohler, Billari, and Ortega, 2002; McDonald, 2006; Lutz, Skirbekk, and Testa, 2006). The total fertility rate of the Republic of Korea declined from 6.0 in 1960 to a replacement level of 2.1 in 1983 and then to the critically low level of 1.45 in 1998. Since then, TFR continued to fall with small fluctuations, reaching the lowest low level (TFR<1.3) in 2001, and a record low level of 1.08 in 2005. The total fertility rate has been fluctuating at lowest-low levels since 2000 (Statistics Korea, 2013a).
In response to the county’s recording of a TFR below 1.5 for a number of years with the prospect of rapid population ageing, the Government of the Republic of Korea began in 2003 to put forth policies and programmes designed to stop and reverse the trend of declining fertility. The first comprehensive five-year basic plan (2006-2010), *Saeromaji* Plan I and the second comprehensive plan, *Saeromaji* Plan II (2011-2015) include policies and programmes aimed at raising TFR to 1.6 by 2020 and promoting a social environment that ensures continuing economic development and a high quality of life for people of all ages and gender in an ageing society. The policies and programmes include extending economic and social support for improving the compatibility of work and family life, providing economic incentives for childbearing, improving reproductive health services, fostering family friendly social conditions, and promoting gender equity (Cho, 2006; Government of the Republic of Korea, 2010). We use the term family policies and programmes for the set of government programmes included in those plans.

Although the Republic of Korea is a densely populated and homogeneous country, the level of fertility in the country varies substantially by locality (Eun, 1997). In 2010, the province-level TFR ranged from 1.02 in the capital city of Seoul to 1.54 in the rural south-western province of Jeonnam (Statistics Korea, 2013a). The variations are likely associated with differentials in socioeconomic conditions, as well as the implementation of family policies and programmes. In the Republic of Korea, the central government provides guidelines in family policies and programmes, but the implementation of them is the responsibility of local governments and therefore, varies across locality.

In the present paper, we examine fertility variations by locality in the Republic of Korea for the period 2000-2010, the period when TFR fluctuated between 1.08 and 1.47. We also examine how fertility variations by locality are related to key socioeconomic conditions and implementation of family policies and programmes in the locality. The findings contribute to the evaluation of the effectiveness of current family policies in raising fertility, controlling for the effects of socioeconomic conditions of the localities. Furthermore it is hoped that the results can be used to formulate the future direction of fertility enhancing family policies in the context of continuing social and economic development.

**An overview of the fertility trend in the Republic of Korea: 1960 – 2010**

The present paper begins with a brief overview of the fertility trend in the Republic of Korea since 1960, using two measures of TFR: the traditional period total fertility rate based on age-specific fertility rates from vital statistics, indicated by TFR(asfr), and the total fertility rate based on period parity progression ratios, indicated by TFR(pppr) computed from individual records of censuses. Parity, which is a characteristic of a
woman, refers to the number of children that the woman has ever borne. A parity progression ratio is the proportion of women of a given parity who go on to give birth again. In the present paper, parity progression ratios are calculated for periods rather than cohorts. Parity transitions from women’s own birth to first birth (PPPR1), from first birth to second birth (PPPR2), and so on up to the highest parity observed in the year are considered. In the Republic of Korea, as childbearing before marriage has been at a negligible level (Statistics Korea, 2013a), it is reasonable to consider the progression to first birth to follow progression to first marriage. Thus, PPPR1 can be broken into two components: progression from women’s own birth to first marriage (PPPRM) and progression from first marriage to first birth (PPPRM1). Period parity progression ratios are put together to give an estimate of a period total fertility rate, TFR(pppr). In general, TFR(asfr) and TFR(pppr) are not precisely the same; TFR(asfr) is based on a life table that takes age into account but not parity and duration in parity, while TFR(pppr) is based on life tables that take parity and duration in parity into account but not age. The difference between TFR(asfr) and TFR(pppr) can be large when the age pattern of fertility is changing rapidly.

Figure 1 shows the trends in period TFR(asfr) from vital statistics and TFR(pppr) estimated from censuses in the Republic of Korea for the period 1960-2010. From the censuses of 1970, 1980, 1990, and 2000, TFR(pppr) is estimated for each of the 10 years preceding the census, while from the censuses of 2005 and 2010, TFR(pppr) is estimated for each of the five years preceding the census (computational procedures for the estimation are provided later in the paper). The fertility trend in the Republic of Korea since 1960 can be divided into three broad phases as shown in figure 1. The first phase, from 1960 to 1983, is characterized as the period of rapid fertility decline from a very high level to the replacement level fertility. The fertility decline in the Republic of Korea during this period is considered to be the result of rapid economic development and social change combined with effective national family planning programmes (Cho, Arnold, and Kwon, 1982; Choe and Park, 2006; Kim, 1987; Kwon, 1993). The second phase, from 1983 to 2005, is characterized by a continuing decline of TFR to the lowest level observed in the Republic of Korea, TFR(asfr) of 1.08. During this period, the objective of the national family planning programme was changed from promoting small family size and reducing unwanted childbearing to improving the quality of reproductive health services and promoting healthy families. The third phase, the period after 2005, is characterized by a slight increase in fertility measured either by TFR(asfr) or TFR(pppr). Saeronaji plans aimed at providing economic and social support for women to achieve desired family size were implemented during this period, in 2006 (Cho 2006).
Figure 1. Trends in TFR(asfr) and TFR(pppr) in the Republic of Korea, 1960-2010

Sources: Statistics Korea (2013a); computations by authors

Figure 2 shows trends of period parity progression ratios from 1960 to 2010 in three phases. Distinctive patterns of period parity progression ratios in these three phases of fertility transition are evident. During the first phase of fertility transition, PPPR3 and PPPR4 declined rapidly: from 92 per cent to 41 per cent and from 87 per cent to 27 per cent, respectively, but PPPR1 and PPPR2 showed little change. PPR1 was 95 per cent or above during the whole period and PPPR2 declined slightly from 95 per cent to 92 per cent.

Figure 2. Trends in period parity progression ratios in the Republic of Korea, three phases of fertility change

Source: computations by authors
During the second phase of fertility decline, PPPR3 and PPPR4 continued to decline to very low levels, reaching 18 per cent and 12 per cent, respectively. In addition, PPPR2 declined with some fluctuations, and PPPR1 began to decline substantially. The progression to second births, PPPR2, fluctuated at levels that exceeded 85 per cent most of the time but was below 85 per cent during the period 1987 to 1990. These fluctuations correspond to changes in the national family planning programme, which had a short period of intensification and then was toned down (Choe and Park 2006). A notable change began to appear in the progression to first birth during this phase. PPPR1 was 0.95 in 1983, implying that 95 per cent of women would have at least one child in a lifetime. It declined to 0.75 in 2003 and 0.76 in 2004. If these ratios continue, about one quarter of women would remain childless throughout their lives. In other words, fertility patterns associated with substantial increase in childlessness began to emerge during this phase.

The third phase, the period after 2005, is characterized by a slight increase in the total fertility rate, stabilization of the progression to the second birth and a slight rise in the progression to first birth. The proportion of childless women implied by PPPR1 declined from 25 per cent in 2003 to 17 per cent in 2010.

An overview of socioeconomic changes in the Republic of Korea: 1980 – 2010

The Republic of Korea has experienced rapid economic development and social change since 1960. The social changes have been particularly rapid since 1980. Table 1 shows trends in selected economic and social conditions in the Republic of Korea for the period 1980-2010, corresponding to the second and third phases of fertility change. Income level measured by per-capita GDP increased from $1,660 in 1980 to $20,562 in 2010 (in 2010 value in US dollars) and the percentage of the population living in urban areas increased from 57 per cent in 1980 to 83 per cent in 2010. The most notable change took place in women’s education. The senior high school enrollment rate increased from less than 44 per cent to 92 per cent in one generation (30 years) and the proportion of women senior high school graduates advancing to higher education increased from 32 per cent in 1990 to 81 per cent in 2010. However, the proportion of women (ages 15-59) participating in the labour force increased by six percentage points, from 43 per cent in 1980 to 49 per cent, in 2010. This rise was not commensurate with the remarkable changes in economic conditions and education. Also during that period, the number of private cars and mobile phones multiplied.
Table 1. Changes in selected socioeconomic conditions in the Republic of Korea, 1980-2010

<table>
<thead>
<tr>
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<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per-capita GDP (2010 value in US dollars)</td>
<td>1,660</td>
<td>6,305</td>
<td>11,349</td>
<td>20,536</td>
</tr>
<tr>
<td>Percent of population living in urban areas</td>
<td>57</td>
<td>74</td>
<td>80</td>
<td>83</td>
</tr>
<tr>
<td>Senior high school enrolment ratio for women (per cent)</td>
<td>44</td>
<td>77</td>
<td>89</td>
<td>92</td>
</tr>
<tr>
<td>Senior high school graduates advancing to higher education, women (per cent)</td>
<td>--</td>
<td>32</td>
<td>68</td>
<td>81</td>
</tr>
<tr>
<td>Female labor force participation rate (per cent)</td>
<td>43</td>
<td>47</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Number of private cars per 100 households</td>
<td>--</td>
<td>17</td>
<td>54</td>
<td>76</td>
</tr>
<tr>
<td>Mobile phones per 1,000 persons</td>
<td>--</td>
<td>2</td>
<td>570</td>
<td>1,027</td>
</tr>
</tbody>
</table>

Although the overall level of women’s labour force participation changed only slightly during the 30-year period, the age pattern of women’s labour force participation changed substantially, reflecting increasing levels of education and later marriage and childbearing. Figure 3 shows the patterns of age-specific labour-force participation rates of women for the years 1990 to 2010. The labour force participation rate among women of ages 20-24 declined sharply after 1990 due to increasing proportions of women pursuing higher education. The labour force participation rate among women of ages 25-29 increased substantially and consistently during the period 1990 to 2010. This was most likely due to increasing opportunities of employment for young, unmarried and highly educated women resulting from steady economic growth, combined with increasing ages of first marriage and first birth. The ages with lowest levels of labour force participation moved from 25-29 in 1990 to 30-34 in 2000 and to 35-39 in 2010. These changes are due to increasing ages of first marriage and first birth. It is notable that in the context of rapid changes in socioeconomic conditions, the labour force participation rate of women in the Republic of Korea maintained the “M” shape, which is characterized by a departure from labour force participation at peak childbearing ages, although the ages at the lowest and highest levels of participation shifted.
Data and methods

For the analyses of the variations in fertility by locality, the following is applied: the period parity progression ratios from woman’s own birth to first marriage (PPPRM); from first marriage to first birth (PPPRM1); from first to second birth (PPPR2); from second to third birth (PPPR3); and total fertility rates estimated from all parity progressions (TFR(pppr)) as the primary measures of marriage and fertility behavior. The computation of TFR(PPPR) includes all parity progressions of women up to the highest parity observed. These fertility measures are estimated from individual records of 2000, 2005 and 2010 censuses. From census records of individuals organized by households, we first reconstruct birth histories of each woman of ages 15 to 60 by using the birth history reconstruction method (BHR) developed by Luther (Luther and Cho, 1988; Luther and others, 1990; Retherford and Luther, 1996), and from birth histories, we compute period parity progression ratios.

The following describes an outline of the computational procedure (for a more detailed description of the method, see Choe and Retherford, 2009). For each woman of age 15 to 60, the records of members of her household are scanned to identify her own children. Information on age, sex, and the relationship to the head of household of each person are the key variables used for matching children to their mothers. This process creates a birth history of the woman, which may be incomplete. The next step entails determining if the woman’s reported total number of children-ever-born is greater than the number of children matched to the woman. If so, the incomplete birth history is complemented to form complete birth history using information of a woman on her total number of children-ever-born and age-specific probabilities of giving birth (adjusted for the children already matched) derived from a model age pattern of fertility in recent years.
After reconstruction of birth history, using the information on the year of birth of women, year of their first marriage, and years of births of each child, we estimate period parity progression ratios (PPPR) from woman’s birth to first marriage (PPPRBM), from first marriage to first birth (PPPRM1), from first birth to second birth (PPPR2), from second birth to third birth (PPPR3), and so on, by the synthetic period life table method for each locality and each of the five years preceding each census. The life table for the PPPRBM transition is truncated at age 40, and the life tables for higher-order transitions are truncated at ten years of duration in parity. Putting the period parity progression ratios together, the period total fertility rate, TFR(pppr) is estimated for each locality and each year. The computation of TFR(pppr) does not involve ages of women, and therefore TFR(pppr) is distorted less by increasing age of first birth than TFR(asfr). Thus, for a given year TFR(pppr) tends to be somewhat higher than TFR(asfr) if the age at first birth is increasing as in the case of the Republic of Korea shown in figure 1 for the second and third phases of fertility decline.

The major administrative division of the Republic of Korea consists of one special metropolitan city (Seoul, all urban), two additional all-urban metropolitan cities, four extended metropolitan cities with urban and rural parts, and nine provinces with urban and rural parts. These 29 local administrative areas are used as units of analysis, weighted by percentage distributions of the women of ages 15-49 by local areas according to the 2005 census enumeration.

**Period parity progression ratios to first and second births: 1995 to 2010**

In figure 2, it is evident that PPPR1 and PPPR2 constitute the major components of TFR(pppr) for the period 1995 – 2010. This analysis takes a closer look at the trends of these ratios. PPPR1 and PPPR2 declined substantially between 1995 and 2005, followed by a small recovery of PPPR1 and no change in PPPR2. The decline in PPPR1 implies that the proportion of women who remain childless throughout life would increase from 9 per cent according to the fertility pattern of 1995 to 24 per cent according to the fertility pattern of 2005. Because non-marital births in the Republic of Korea have been at a negligible level of less than 2 per cent of all births (Statistics Korea 2013a), PPPR1 can be decomposed into PPPRM (proportion ever marrying) and PPPRM1 (proportion ever having children among those who ever marry). Figure 4 shows the trend of PPPRM, indicating that the proportion of women ever marrying has declined dramatically, resulting in an increase in the proportion never marrying from 7 per cent in 1995 to 18 per cent in 2005. In contrast, the proportion of women remaining childless among those who would ever marry increased only slightly from 2 per cent in 1995 to 6 per cent in 2005. There is a small bump in PPPRM in 2006, the year considered to be especially auspicious for marriage. The lunar calendar
year corresponding to most of 2006 had two days marking “Beginning of Spring” (early February in the Western calendar year), one at the beginning of the lunar year and one at the end of the lunar year, because it was a lunar leap year consisting of 13 lunar months.

**Figure 4. Trends in proportion ever marrying among women in the Republic of Korea, 1995-2010**

![Graph showing trends in proportion ever marrying among women in the Republic of Korea, 1995-2010](image)

*Source: computations by authors*

The slight increase in PPPR1 between 2005 and 2010 is due mainly to the slight increase in PPPRM1, or a slight decrease in the proportion remaining childless among ever married women from 6 per cent to 1 per cent. The combination of changes in PPPR1 and PPPR2 implies the decline of the proportion of women having two or more children from 79 per cent in 1995 to 55 per cent in 2005 followed by a small increase to 61 per cent in 2010.

In addition to the changes in the proportion ever marrying, the mean age at first birth also changed during the period 1995 – 2010. Figure 5 shows trends in mean age at first marriage and mean age at first birth. The mean age at first marriage shown here is calculated as a part of a period life table computation leading to the period progression ratio to the first marriage. These measures are synthetic period measures and are quite different from SMAM (singulate mean age at marriage), a frequently used measure of the mean age at first marriage based on proportions who are single at the time of census. We see that the trend in age at first marriage and the trend in age at first birth have been parallel, indicating more or less constant duration between first marriage and first birth, except for the latest year, when the mean age at first birth declined slightly with no change in the mean age at first marriage. Continuing delay of first marriage resulted in continuing postponement of fertility and depression of TFR(asfr) as shown in figure 1.
Variations in fertility by locality

Although the Republic of Korea is a densely populated and homogeneous country, the level of fertility and socioeconomic conditions vary substantially by locality. Studies have documented variations in total fertility rate measured by TFR(asfr) by locality (see Eun, 1997, for example). The variations in TFR(pppr) and its components began to show diverging patterns beginning in 2000 (data not shown). This study has focused on the variations since 2000. Tables 2 and 3 show variations in TFR(pppr) and their main components: PPPRBM, PPPRM1, PPPR2, and PPPR3. These tables show the minimum and maximum values of various measures of fertility among 29 areas estimated from censuses of 2000, 2005, and 2010. Table 2 shows that in each of the three years that are examined, the difference between the highest TFR(pppr) and the lowest TFR(pppr) has been more than 0.6 children per woman. This is a substantial difference, consistent with findings for the earlier period using TFR(asfr). The range had become narrower by a small amount, mainly due to a decline in the maximum value.

Table 2. Variations in TFR(pppr) by locality in selected years

<table>
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<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1.57</td>
<td>2.21</td>
<td>0.64</td>
</tr>
<tr>
<td>2005</td>
<td>1.22</td>
<td>1.84</td>
<td>0.62</td>
</tr>
<tr>
<td>2010</td>
<td>1.44</td>
<td>2.05</td>
<td>0.61</td>
</tr>
</tbody>
</table>
Table 3, on the other hand, shows very complex patterns of variations and their trends in the components of TFR(pppr). The component that shows the most changes in variations is the progression to first marriage, or the estimated percentage ever-marrying. Notably, the maximum values are close to 100 per cent in all three years, indicating that in some areas most women do get married eventually. The minimum value, on the other hand, decreased substantially from 83 per cent in 2000 to 75 per cent in 2010. In each year, the lowest value was observed in Seoul Special city. Taking into account the little change in the maximum value and the large change in the minimum value, the range increased from 13 per cent in 2000 to 23 per cent in 2010. It can be observed that the variation in the progression to first marriage and consequently to first birth is contributing towards the variation in TFR(pppr) to a large extent.

**Table 3. Variations in period parity progression ratios by locality in selected years**

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percent ever marrying (PPPRBM)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>83</td>
<td>96</td>
</tr>
<tr>
<td>2005</td>
<td>73</td>
<td>95</td>
</tr>
<tr>
<td>2010</td>
<td>75</td>
<td>98</td>
</tr>
<tr>
<td><strong>Percent ever marrying (PPPRBM)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>95</td>
<td>99</td>
</tr>
<tr>
<td>2005</td>
<td>89</td>
<td>97</td>
</tr>
<tr>
<td>2010</td>
<td>94</td>
<td>100</td>
</tr>
<tr>
<td><strong>Percent progressing to second birth (PPPR2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>70</td>
<td>93</td>
</tr>
<tr>
<td>2005</td>
<td>64</td>
<td>84</td>
</tr>
<tr>
<td>2010</td>
<td>69</td>
<td>88</td>
</tr>
<tr>
<td><strong>Percent progressing to third birth (PPPR3)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>14</td>
<td>44</td>
</tr>
<tr>
<td>2005</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>2010</td>
<td>13</td>
<td>52</td>
</tr>
</tbody>
</table>

The progression to first birth among married women was high in all three years with only small variations across locality. In other words, nearly all women who did get married had given birth to at least one child. This pattern did not change much until 2010. The progression from first to second births shows an interesting pattern. The minimum values were very low, 70 per cent or lower in all three years, and the maximum values...
were high, but far from being universal. The range is substantial and shows a small decrease over time. It is interesting to note that the range in proportions ever marrying increased while the range in progression ratios to the second birth decreased during the period 2000-2010. The limited change in TFR(pppr) by locality can most likely be attributed to the different direction of the trends for those two components. The progression from the second to third births shows fluctuations in the range, but as the progression ratios are small, they do not contribute significantly towards TFR(pppr).

We now proceed to explore how TFR(pppr) and selected period parity progression ratios estimated for each of the 29 administrative units are related to selected characteristics of the locality.

**Explaining variations in fertility by locality**

Recent research on family-building behavior in East Asian countries with very low levels of fertility have identified women’s employment in non-agricultural occupations, difficulty in combining work and family duties, and women’s attitudes on gender roles as key determinants of fertility (Bumpass and others, 2009; Choe, 2006; Choe and Park, 2006; Jones, 2007). These factors are likely to affect various stages of the family building process in different ways. For example, women’s attitudes on gender roles are likely to have a larger impact on marriage and first birth than on higher order births, and difficulty in combining work and family duties is likely to have a larger impact on second and higher order births than on marriage and first birth. Women’s employment in non-agricultural occupation is likely to affect all stages of family building.

In our effort to explain variations in fertility by locality, we examine the effects residence has on women’s occupation structure, women’s level of education, and prevalence of use of child-care facilities on various measure of fertility in 2000, 2005 and 2010. Only four explanatory variables are chosen because we have only a small number of observations (number of localities). The four variables are considered to be adequate indicators of major determinants of fertility behavior in a low fertility environment. For each year, we use estimated PPPRM, PPPRM1, PPPR2, PPPR3, and TFR(pppr) as dependent variables for regression analyses. As local areas are quite different in population sizes, the number of women of ages 15-49 is used as weights in the regression analyses.

Urbanization and women’s level of education are viewed as being closely related to women’s attitudes on gender roles. We classify residence in three categories: metropolitan cities; other urban areas; and rural areas. As an indicator of women’s level of education in each locality, we use the proportion of women aged 30-34 with more than a senior high school education. We use proportion of women aged 40-44 in non-agricultural occupations as an indicator of women’s occupational structure of
the locality. It is likely that when women are considering marriage and childbearing, the employment opportunities after childbearing plays an important role. In areas where a large proportion of women hold non-agricultural occupations, women are likely to hold a more positive view towards returning to the labour force if they quit working temporarily for marriage and childbearing. This positive view is likely to be associated with higher fertility. We do not use occupation of women under age 40 because their participation in the labour force is heavily influenced by their fertility behavior. As an indicator of the difficulty in combining work and family duties, we try to use the availability of childcare facilities in the locality. We use the proportion of children under age 5 who were using childcare facilities at the time of census. Providing adequate childcare facilities has been one of the key family policy goals. We use the information on actual use as an indicator of effective implementation of the family policy. This variable is not likely to affect marriage but may affect the progressions to higher order births.

Table 4 shows the weighted mean values of the dependent variables and explanatory variables used in the regression analyses. Dependent variables in the upper panel of table 4 show fluctuating trends. Between the period 2000 and 2005 all measures of fertility declined, while between the period 2005 and 2010, PPPR1 and PPPR3 moved higher and PPPRM and PPPR2 remained unchanged. As a consequence, TFR(pppr) increased slightly between the period 2005 and 2010. The substantive explanatory variables in the lower panel show increasing trends. The average proportion of women aged 30-34 with more than a senior high school education nearly doubled in 10 years, from 36 per cent in 2000 to 68 per cent in 2010. The average proportion of women aged 40-44 working in non-agricultural occupations increased from 44 per cent to 60 per cent during that period. The average use of childcare facilities among children under age 5 did not change much between 2000 and 2005 but increased by more than 2.6 times between 2005 and 2010. The large increase is likely due to the implementation of the Saeromaji plan, which began in 2006.
Table 4. Weighted means of variables used for regression analyses

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2005</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Period progression ratio from own birth to first marriage, PPPRBM</td>
<td>0.90</td>
<td>0.84</td>
<td>0.85</td>
</tr>
<tr>
<td>Period progression ratio from marriage to first birth, PPPRM1</td>
<td>0.98</td>
<td>0.95</td>
<td>0.99</td>
</tr>
<tr>
<td>Period progression ratio from first to second birth, PPPR2</td>
<td>0.83</td>
<td>0.73</td>
<td>0.74</td>
</tr>
<tr>
<td>Period progression ratio from second to third birth, PPPR3</td>
<td>0.20</td>
<td>0.17</td>
<td>0.22</td>
</tr>
<tr>
<td>Total fertility rate based on period parity progression ratios, TFR(pppr)</td>
<td>1.77</td>
<td>1.45</td>
<td>1.65</td>
</tr>
<tr>
<td><strong>Explanatory variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of urbanization in the area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan city</td>
<td>0.68</td>
<td>0.68</td>
<td>0.68</td>
</tr>
<tr>
<td>Other urban areas</td>
<td>0.18</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>Rural areas (reference category)</td>
<td>0.14</td>
<td>0.14</td>
<td>0.14</td>
</tr>
<tr>
<td>Proportion of women 30-34 with more than senior high school education</td>
<td>0.36</td>
<td>0.50</td>
<td>0.68</td>
</tr>
<tr>
<td>Proportion of women age 40-44 in non-agricultural occupation</td>
<td>0.44</td>
<td>0.47</td>
<td>0.60</td>
</tr>
<tr>
<td>Proportion of children under five who were using childcare facilities</td>
<td>0.12</td>
<td>0.11</td>
<td>0.29</td>
</tr>
</tbody>
</table>

**Results of regression analyses**

Results of the regression analyses are shown in table 5. Residence has had limited effects on some components of fertility, but no effect on the overall level of fertility. Higher education among women is strongly associated with lower progression to first marriage in all three years, and the magnitude of association is larger in later years. Higher education of women is also associated with lower progression to second births in 2000 and 2010. It is interesting to note that the effect of higher education in 2005 was not significant for progression to first birth, and to second birth, but was strongly positive for the progression to third births. At the time when the fertility rate was at the lowest level, women were more likely to have more than two children in areas where a large proportion of women had higher education, although the overall proportion was small. The occupational structure of women had some effects in 2000
and 2005, but they were only on the progression to a third birth. The higher proportion of non-farming occupations was related to the lower probability of having a third child but the relationship was weaker in 2005 than in 2000, and in 2010 it was not statistically significant. In 2010, higher proportion of women in non-farming occupations was related to lower probability of having the second child.

Use of childcare facilities had a strong positive effect on fertility in 2010 for the progressions to second and third births, but weak or mixed effects in 2000 and 2005 and only for third births. In 2010, the positive association between use of childcare and TFR(pppr) became strong and statistically highly significant. Note, however, that the overall use rate of a child facility is still low in the Republic of Korea. Since the implementation of family policies and programmes in 2006, childcare facilities have increased, with the greater use associated with the higher proportion of women having second and third children.

Table 5. Effects of residence, women’s employment, level of education, and childcare use of children under five on selected period parity progression ratios and TFR(pppr)

<table>
<thead>
<tr>
<th></th>
<th>Progression to first marriage (PPPRBM)</th>
<th>Progression from first marriage to first birth (PPPRM1)</th>
<th>Progression to second birth (PPPR2)</th>
<th>Progression to third birth (PPPR3)</th>
<th>TFR (pppr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan city (vs. rural)</td>
<td>0.02</td>
<td>-0.01</td>
<td>0.02</td>
<td>-0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>Other urban areas (vs. rural)</td>
<td>0.05**</td>
<td>0.01</td>
<td>0.03</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Higher education among women</td>
<td>-0.39**</td>
<td>0.01</td>
<td>-0.28*</td>
<td>-0.24</td>
<td>-1.40**</td>
</tr>
<tr>
<td>Women’s occupation</td>
<td>-0.12</td>
<td>-0.01</td>
<td>-0.15</td>
<td>-0.83**</td>
<td>-1.07</td>
</tr>
<tr>
<td>Use of childcare</td>
<td>-0.40</td>
<td>-0.10</td>
<td>-0.11</td>
<td>0.82*</td>
<td>0.62</td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.63</td>
<td>0.24</td>
<td>0.20</td>
<td>0.64</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>Progression to first marriage (PPPRBM)</td>
<td>Progression from first marriage to first birth (PPPRM1)</td>
<td>Progression to second birth (PPPR2)</td>
<td>Progression to third birth (PPPR3)</td>
<td>TFR (pppr)</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Year 2005</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan city (vs. rural)</td>
<td>0.02</td>
<td>-0.01**</td>
<td>-0.01</td>
<td>-0.12**</td>
<td>-0.10</td>
</tr>
<tr>
<td>Other urban areas (vs. rural)</td>
<td>0.04</td>
<td>-0.00</td>
<td>0.01</td>
<td>-0.08**</td>
<td>0.02</td>
</tr>
<tr>
<td>Higher education among women</td>
<td>-0.65**</td>
<td>0.02</td>
<td>-0.13</td>
<td>0.29**</td>
<td>-0.95**</td>
</tr>
<tr>
<td>Women’s occupation</td>
<td>0.02</td>
<td>0.03</td>
<td>-0.06</td>
<td>-0.47**</td>
<td>-0.52</td>
</tr>
<tr>
<td>Use of childcare</td>
<td>-0.10</td>
<td>-0.09*</td>
<td>0.34</td>
<td>0.66**</td>
<td>0.17</td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.61</td>
<td>0.27</td>
<td>0.33</td>
<td>0.65</td>
<td>0.57</td>
</tr>
<tr>
<td><strong>Year 2010</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan city (vs. rural)</td>
<td>0.06*</td>
<td>-0.00</td>
<td>0.02</td>
<td>-0.03*</td>
<td>0.02</td>
</tr>
<tr>
<td>Other urban areas (vs. rural)</td>
<td>0.07**</td>
<td>-0.00</td>
<td>0.03*</td>
<td>-0.05**</td>
<td>0.06</td>
</tr>
<tr>
<td>Higher education among women</td>
<td>-0.77**</td>
<td>0.02</td>
<td>-0.23**</td>
<td>-0.13</td>
<td>-1.47**</td>
</tr>
<tr>
<td>Women’s occupation</td>
<td>-0.20</td>
<td>-0.01</td>
<td>-0.33*</td>
<td>0.07</td>
<td>-0.80</td>
</tr>
<tr>
<td>Use of childcare</td>
<td>0.50*</td>
<td>-0.03</td>
<td>0.52**</td>
<td>0.61**</td>
<td>1.46**</td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.69</td>
<td>0.06</td>
<td>0.67</td>
<td>0.70</td>
<td>0.78</td>
</tr>
</tbody>
</table>

**Notes:**
1. Effects are estimated by ordinary least squares regression, using urban and rural parts of metropolitan areas (N=29) and provinces as unit of analysis and using number of women of ages 15-49 in the area as weights.
2. * Indicates that the estimated coefficient is statistically significant at 10% level.
   ** Indicates that the estimated coefficient is statistically significant at 5% level.
3. TFR(pppr) is based on period parity progression ratios from women’s birth to marriage, from marriage to first birth, from first to second births, from second to third births, and from fourth and higher births to the next parity.
The patterns of adjusted R-square indicate that the explanatory variables included in the model explain the variations in the progression to first marriage, progression to second birth, progression to third birth, and the overall fertility quite well in all the years, but do not explain the variations in the progression to the first birth very well. In addition, the variations in the progression to second and third births as well as the overall fertility are explained much better in 2010 than in 2005 by these variables.

Summary and Discussion

Fertility in the Republic of Korea has declined rapidly and stayed at the lowest-low level since 2001. The period total fertility rate, measured by TFR(pppr), changed only slightly during the period 2000-2010, but some components of it, especially period parity progression ratio to first birth and second births fluctuated substantially. Local variation in the fertility has been substantial. It remained stable until 2000 and since then has been increasing. Local variations are large for progression to marriage, to second birth, and to third birth but small for progression to first birth among married.

Although some components of TFR(pppr) have a weak but statistically significant association with the residence, the overall association between TFR(pppr) and residence is not statistically significant. The proportion of women with higher education has a statistically significant association with the progression to marriage for all three years (2000, 2005, and 2010), with the association being stronger in the later years. The high proportion of women with higher education is associated with lower progression to second births in 2000 and 2010, but not in 2005. Overall, the association between the high proportion of women with higher education and TFR(pppr) is statistically significant in all of the years.

As young women with an increasingly high level of education begin family formation, the low progression rate to marriage may spread mainly by the low proportions of them ever marrying. In order to predict the likely course of fertility, it is important to understand why highly educated women are not marrying. Is low progression to marriage among highly educated women the result of women’s preference or is it the result of women not succeeding in finding the right partner to marry? Or, is it the case that when the highly educated women want to marry, the potential partners do not choose them? More research is needed to find answers to these questions. If the low progression to marriage among highly educated women is the result of women’s preference, what are the determinants of the preference?

A recent national survey of never married men and women of ages 20-44 reports that less than 5 per cent of never-married men and women preferred never to marry. The percentage was slightly higher for
respondents who had non-regular employments and very low income (Kim and others, 2012). When asked about the main reason for not marrying or marrying late, more than 80 per cent of men and women reported “not having a stable employment” as one of the reasons (Kim and others, 2012, p. 266). In addition, 58 per cent of men and 78 per cent of women also chose “not ready to assume additional responsibilities that would follow marriage” as one of the reasons. These patterns suggest that the progression to first marriage and total fertility rate can increase if the opportunities for stable employment among young men and women increase and if they perceive the “additional responsibilities” that come with marriage can be managed well. Future family policies need to consider these factors seriously.

A series of recent national surveys asked ever-married women of ages 20-44 their preferred combination of the number of children and employment status (Kim and others, 2012). In the three surveys conducted in 2005, 2009, and 2012, the most frequently cited preference was having two children and working part-time, followed by having two children and working full time. In 2012, 59 per cent of women chose the combination of two children and part-time or full-time employment (Kim and others, 2012, p. 176). Not working was preferred by 18 per cent of women and having fewer than two children was preferred by 23 per cent of women. The survey reports a similar pattern among never-married men and women of ages 20-44.

Our analysis found that the progression to second birth is higher in the areas where more mothers use childcare facilities for their children, and the association is very strong only in 2010. This result implies that the family policies and programmes included in the Saeromaji Plan that began in 2006 are having some positive results in raising fertility. When more childcare facilities become available, the progression ratio to second and higher order births are likely to increase and the total fertility is likely to increase, but much more needs to be done to help married women realize their preferred life of having two children and working. Making well-paid part-time employment available for married women, and ensuring family-friendly employment conditions for women and men should be important components of future family policies.

Our analysis is quite limited in examining many of the potential determinants of fertility. Factors such as cost of housing and children’s education and employment conditions of young men and women are known to have a large impact on marriage and childbearing behavior in the Republic of Korea. Whether these factors vary by the level of urbanization, and whether their effects on marriage and childbearing vary by locality are some of the topics for further analysis. The collection of data necessary for such analyses is urgently needed.
References


Internal migration in the Upper Mekong Delta, Viet Nam: What is the role of climate-related stressors?

Abstract

The present paper reports on a case study that investigated under what circumstances households use migration to cope with climate variability and food insecurity. Fieldwork was conducted in three communities in Dong Thap Province in the Upper Mekong Delta in Viet Nam. Methods used included a household survey (N=150), participatory research tools and key informant interviews. Ninety per cent of the survey respondents reported that climate-related stressors, such as floods, storms and changes in rainfall patterns, had adversely affected their livelihoods. Those effects, however, were more often qualified as being “moderate” rather than being “severe”, and for the survey population as a whole, no evidence was found that climatic stressors were principal drivers of migration from the area. The Upper Mekong Delta in Viet Nam is undergoing rapid economic development, with increasing migration mostly being driven by demand for labour in industrial centres. However, an analysis differentiated by income groups reveals that poorer households with little or no land are much more likely to be severely affected by climatic stressors than non-poor households. Their ability to cope and adapt locally is limited, and migration, which in most cases tends to be internal, is a common alternative. The present paper shows the importance of disaggregating climate impacts and migration causes for different socioeconomic groups.

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Keywords: Migration, livelihood, food security, climate change, climate variability, floods, poverty, landlessness, Mekong Delta, Viet Nam

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1. Introduction

Viet Nam is one of the world’s most vulnerable countries in terms of climate change impacts and extreme weather events due to the following characteristics: a lengthy coastline; frequent occurrence of typhoons; strong dependency on agriculture; and some of the country’s most exposed areas are also the most densely populated. A one metre sea-level rise would, without accounting for current and future adaptation measures, affect 10.8 per cent of the population (Dasgupta and others, 2007). It would inundate 9.3 per cent of the country’s surface and 37.8 per cent of the Mekong Delta region (UN Viet Nam, 2009). According to the Intergovernmental Panel on Climate Change (IPCC), more than one million people may need to relocate from or within the Mekong Delta because of sea-level rise by the year 2050 (Parry and others, 2007). As such, it is one of the world’s three extreme hotspots in terms of population vulnerability to sea-level rise. Viet Nam has further been identified as one of the top 15 countries in the world in terms of vulnerability to natural hazards, such as floods and storms (Dilley and others, 2005). Similarly, Germanwatch ranked Viet Nam sixth in its Climate Risk Index for the period 1991-2010 (Harmeling, 2011).

Large parts of Viet Nam, especially in the Red River and Mekong deltas, are flooded every year. During the months of heavy rainfall, water from the upstream sections of major rivers is added to local precipitation and saturates the earth. Rivers overflow and flood the broad plains of the river deltas. Floods in the Mekong Delta have a low discharge capacity, especially during high tide, and cause prolonged, deep inundation, riverbank erosion, salt intrusion and transportation problems. In the previous 20 years, the Mekong Delta has endured several “very high” floods, particularly in 1994, 1996, 2000 and 2011 (for a regional definition of “very high” floods, see Tuan and others (2008, p. 30)). Those high floods inflict casualties and severe damage to houses and rice fields (Tuan and others, 2008). Moderate floods, locally referred to as ngập nông (nice floods) tend to have more beneficial effects; they cause less widespread damage and contribute to soil fertility and prosperity in the area (Dun, 2011).

As early as 1990, IPCC predicted that impacts of climate change, such as coastal erosion, flooding and droughts, would displace large populations worldwide (Warner and Laczko, 2008). It took more than a decade for the scientific community to start examining more thoroughly whether climatic changes and extreme weather events alter migration patterns. In the past five to ten years, the debate has moved from the question of whether environmental changes influence migration patterns (Jäger and others, 2009; Warner, 2010) to how (Foresight, 2011) and under which circumstances (Warner and Afifi, 2014) this is the case.

Some key insights about the link between climate and migration are that: (1) climate-induced migrants usually move within national borders
(Gemenne, 2011; van der Geest, 2011); (2) climate factors are rarely
the sole cause of population movements (multi-causality) (Kniveton
and others, 2011); (3) climate factors usually do not influence mobility
patterns directly, but, instead, through their effect on other drivers of
migration (Foresight, 2011); and (4) in situations of climate stress, not all
people can respond by migrating; some have to stay put involuntarily
because they lack the possibilities to migrate; in other words, they are
trapped (Black and others, 2013).

The present paper attempts to contribute to the emerging body of
knowledge on the use of migration as a risk management strategy vis-à-
vis climatic stressors. It does this through an income-group-differentiated
analysis of climate impacts and reasons for migration in the Upper
Mekong Delta in Viet Nam. The aim of this analysis is to enhance
understanding of the circumstances under which climate threats, in
conjunction with other causal factors, influence migration decisions.

2. Migration trends in Viet Nam

Migration is not a new phenomenon in Viet Nam. During the French
colonial period (1858–1954), circular movement of agricultural workers
between rural areas was common. Rural–urban migration increased
sharply in the 1930s, 1940s and early 1950s. Migration from lowland
to upland areas also became more popular during this colonial period
because large numbers of labourers were needed for the upland
plantations (Anh, 2008; Hardy, 2005). In 1954, the French colonial period
ended and Viet Nam was divided into two zones, North and South.
Following the partition, approximately 900,000 people moved from
the north to the south, and 100,000 from the south to the north (Duiker, 1983).

During hostilities between the northern and southern parts of the
country in the period 1955–1975, population movement differed greatly
between regions. In the north, people were moved from cities to the
countryside to escape bombing, while in the south, people in the rural
areas were moved to urban areas to prevent them from potential contact
with Communist forces. Following reunification in 1975, there was
large-scale movement of people in the south, to their home villages.
In the same period, a large number of people (were) moved from
overcrowded metropolitan areas to virgin lands with the establishment
of new economic zones (Hardy, 2005). Migration to large cities was
discouraged in this period. Until the Doi Moi reform process, which
began in 1986, migration flows were to a large extent State-managed.
Even though individuals and their families had some manoeuvring
space before Doi Moi, and current migration policy has been shaped to
a large extent by the history of State management of migration (Djamba
and others, 1999; Zhang and others, 2006), the general trend is that
“spontaneous migration” has gradually increased in importance, and
rural–urban migration has become more prominent. Since 1986, millions
of Vietnamese have left their villages and settled in cities and industrial zones (Anh, 2008). While living conditions in the villages have not necessarily worsened, a feeling of poverty compared to people living in cities (relative deprivation) lays at the root of increasing migration towards urban areas (Skeldon, 2002). Many have also moved to other rural areas where aquaculture is practised and agricultural commodities for the international market are produced (Winkels, 2012). In the 2000s, rural–urban migration within provinces has increased sharply. This is related to the establishment of new industrial parks in smaller towns that attract labourers from surrounding rural areas (Central Population and Housing Census Steering Committee, 1999; 2010). Another recent trend is that more women and young people are migrating. According to Tacoli and Mabala (2010), this is not only because women and young people are better suited for the employment opportunities in destination areas, but also due to dwindling opportunities at home and changing intra-household power relations, with women and youth gaining more autonomy over migration decisions.

As indicated in the 2009 Population and Housing Census, the Mekong Delta region had the highest domestic outmigration rate in Viet Nam. In the period 1994-1999, the domestic five-year outmigration rate for the region was 24.59 per 1,000 inhabitants. In the period 2004-2009, the figure had more than doubled, to 56.7 out-migrants per 1,000 inhabitants (UN Viet Nam, 2010: 27). These data comprise people who had officially settled and registered in a different region in the preceding five years. The population census in Viet Nam excludes temporary and non-registered migrants (UN Viet Nam, 2010).

Literature on migration trends in Viet Nam fails to cover the role of climate variability as a cause of migration. With the exception of recent work by Dun (2011; 2012), no articles about the climate–migration nexus in Viet Nam have appeared in peer-reviewed literature. More generally, environmental factors, including climate, have only recently gained attention as possible migration causes (Piquet, 2012). The present study tries to contribute to the debate by disentangling the circumstances under which climatic factors may influence mobility patterns.

3. Methods and research area

A mixed-method approach was used in this study, combining qualitative and quantitative research tools. The main data source is a questionnaire survey of 150 households, which yielded mainly quantitative data. In addition, the survey team organized 34 participatory rural appraisal (PRA) sessions, which included 264 local residents as participants. The participatory research tools included focus group discussions, transact walks, wealth-ranking exercises and mobility mapping. The team also conducted 15 expert interviews with community representatives (village chiefs, the chairman of the Commune People’s Committee and the
Internal migration in the Upper Mekong Delta, Viet Nam: What is the role of climate-related stressors?

chiefs of the Women’s Union and the Farmer’s Union), staff of national government agencies, such as the National Institute of Meteorology, and provincial and district officers of the Department of Agricultural and Rural Development (DARD) and the Department of Natural Resources and Environment (DONRE). The qualitative data from participatory research tools and expert interviews did not play a central role in this paper, but instead were used to explain the context and decision-making processes, which were hard to capture in the questionnaire survey. Lastly, existing regional data on climate, agriculture, economy and demographics were collected, particularly at the provincial level (Dong Thap Province, see figure 1). The methods, which were designed for a larger set of case studies, are described in more detail by Rademacher-Schultz and others (2012).

Figure 1: Map of Viet Nam, indicating the research area (Dong Thap Province)

Source: Khoa and others (2012, p. 17)
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Fieldwork was conducted during October-November 2011, with a team of four senior researchers, who facilitated focus group discussions, and other participatory research tools and supervised five junior researchers, who conducted the questionnaire interviews. The three villages selected
for the research were in Hung Thanh Commune (Thap Muoi District, Dong Thap Province). An important limitation of the research was that it did not follow migrants to their destinations. Fieldwork took place only in the migrant source area. Hence, when entire households had migrated, they could not be captured in the household survey.

Hung Thanh is a typical rural commune in the Mekong Delta region, where rice cultivation and fishing are the main sources of food and income. An elevated tarmac road, which was completed around 2005, passes through the commune. On both sides of the road, there is a narrow strip of elevated land that provides dry ground on which people can build their houses. The paddy fields start right behind the houses and cover approximately 80 per cent of the commune’s land area of 5,812 hectares. In 2011, there were 8,745 inhabitants and 2,105 households in the commune (data on land use and population were provided by the Commune People’s Committee). The commune has a small market, a clinic and education facilities for pupils up to 15 years of age.

During the fieldwork, the Mekong Delta was experiencing the highest floods in ten years, and the research area was entirely inundated, except for the small, elevated strip along the provincial road. For security reasons, the team was not allowed to travel by boat to interview households located off the main road. In order to reduce the bias this caused in the survey sample, the team interviewed household heads who lived in flooded areas when they accompanied their children to school by boat or when they came to the main road to do errands. Still, it is recognized that the 150 households surveyed may not be representative of the whole population of Hung Thanh Commune.

Compared to many other parts of the Mekong Delta, the research area is somewhat less exposed to climate threats. It is more than 100 kilometres from the coast, making it less exposed to typhoons; it is not very low-lying so there is less threat from sea-level rise and salinity intrusion; and with 150 inhabitants per square kilometre, the commune is less densely populated than most of the other ones in the delta.

Secondary data, gathered from meteorological stations, ministries and the Census Office sketch some broad trends in the research area that are related to the key variables in the research — climate, livelihood/economy and migration (more details are in Khoa and others, 2012). The data reveal that over the past one to three decades, Dong Thap Province has experienced the following:

(1) an increase in total annual rainfall and heavy rainfall events;
(2) a reduction in average flood levels, but extremely high floods in 2011;
Substantial growth in rice production, much faster than population growth; a significant rise in GDP; a sharp increase in outmigration.

The context for the research is an area of moderate climatic changes, overall economic growth and development and increasing freedom of movement. Until the Doi Moi reform process began in 1986, migration flows were heavily controlled by the government. Since then, restrictions on people’s movements have reduced substantially. It is important to take such factors into account. Local livelihoods may be affected by climate-related stressors, but significant economic growth, rapid development, demographic change and political reform shape the conditions under which people decide where they want to live. Population growth and changes in population composition further influence mobility patterns through their effect on employment and access to limited natural resources.

4. Results

In this section, we present an analysis of climate impacts and reasons for migration, differentiated by income groups. The analysis shows the importance of disaggregating climate impacts and migration causes for different socioeconomic groups.

Land ownership plays a key role in local wealth distribution. About a third (30.7 per cent) of the surveyed households are landless, while land-scarce households – owning less than one hectare – made up 26 per cent of the household sample. The remaining households (43.3 per cent) own an average of 2.4 hectares of land. More than 80 per cent of the landless households in the survey sample earn less than one dollar per capita per day, against only 11 per cent of the households that own at least one hectare of farm land.

Almost all households that own land have their own rice farm. The vast majority indicate that their rice yields are negatively affected by changing rainfall patterns and changing flood regimes. Nevertheless, most respondents also report that rice productivity is improving as a result of better seed varieties, improved techniques, increased use of fertilizers and a higher frequency of cultivation. Hence, the negative impact of climatic changes is to some extent offset by positive changes to agricultural practices and resources.

Despite this positive overall development in rice productivity, 18.0 per cent of the respondents report that their households have experienced “inadequate food intake” at some point in the past year, and 23.3 per
cent in the past 5 to 10 years. Among landless households, the figures are much higher: 41.3 per cent in the past year and 52.2 per cent in the past 5 to 10 years. Food insecurity reaches its peak in the flood season, from September to November, particularly for landless people (see figure 2). The latter mostly work as farm labourers and demand for labour is low in the flood season.

Figure 2: Households “regularly” facing food shortage, by month and by land holding


Impact of climatic hazards and changing rainfall patterns

In focus group discussions, during which the research team asked local people about changes in rainfall patterns in the past ten to twenty years, there was agreement about the following three changes: (1) the rainy season comes earlier and lasts longer; (2) total rainfall has increased; and (3) extreme weather events, such as storms, heavy rainfall events and thunder and lightning, have become more frequent and severe. The questionnaire yielded similar findings. These local perceptions of rainfall changes tally with meteorological data for the area (see Khoa and others, 2012 for a more detailed analysis of local rainfall data). People also noticed changes in flood regimes. Most questionnaire respondents and focus group participants felt that the floods were starting and receding later and that flood levels were rising. However, monthly flood-level data (1990-2010) from the nearest hydrological station do not clearly confirm this. According to data from the station, flood levels have been slightly lower in the 2000s than in the 1990s, and no clear trend in the start and end of the flood season is discernible (see Khoa and others, 2012 for a more detailed analysis of flood-level data). It is not uncommon that people’s perceptions of local climate-related changes differ from official
data (Schmidt-Verkerk, 2011). Discrepancies can result from inaccurate measurements or problems of scale, as well as from factors that influence people’s perception, such as a tendency to romanticize the past. In the case of flood perceptions in Hung Thanh Commune, perceptions of longer-term change were probably influenced by recent events; during the fieldwork for this research the highest flood in ten years occurred.

The questionnaire inquired about impacts of climatic stressors on food production and the household economy. Stressors were mainly flooding, heavy rainfall events, storms and changing rainfall patterns (more rain and a longer rainy season). Ninety per cent of the respondents reported adverse effects, particularly on crops and houses or properties. Only 10 per cent reported no adverse effects. Within the group that incurred negative effects, most qualified the impacts as being “moderate”. “Severe” impacts were reported less frequently (see table 1). This is not surprising. The climatic changes that people in the research area have experienced so far are quite subtle, and extreme weather events, such as typhoons, occur less frequently there than along the coast. Moreover, agricultural production in the area is only partly dependent on local rainfall conditions.

<table>
<thead>
<tr>
<th>Income group</th>
<th>Income/cap/day</th>
<th>Severe impact</th>
<th>Moderate impact</th>
<th>No impact</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very poor</td>
<td>Less than $1</td>
<td>22 (46%)</td>
<td>20 (42%)</td>
<td>6 (13%)</td>
<td>48 (100%)</td>
</tr>
<tr>
<td>Poor</td>
<td>$1 to 2</td>
<td>12 (30%)</td>
<td>25 (63%)</td>
<td>3 (8%)</td>
<td>40 (100%)</td>
</tr>
<tr>
<td>Non-poor</td>
<td>More than $2</td>
<td>8 (19%)</td>
<td>30 (71%)</td>
<td>4 (10%)</td>
<td>21 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>42 (32%)</td>
<td>75 (58%)</td>
<td>13 (10%)</td>
<td>130 (100%)</td>
</tr>
</tbody>
</table>

Notes: Climate-related stressors included floods, changes in rainfall patterns and extreme weather events, such as storms and extreme rainfall. Total income per capita per day was calculated as the sum of income from different sources (crop sales, livestock sales, fish sales, non-farm income, remittances and rent), and cross-checked with household estimations of the total income. In 13 cases, the difference was larger than a factor of 2; these households were excluded from the analysis. There were seven missing values for impact.

Whereas impacts of climate-related stressors have been relatively moderate overall, an analysis differentiated by income group, also in table 1, shows that this is much less the case for people who are poor, and especially for those that are very poor. The percentage of very poor respondents reporting severe impacts was more than twice as high as
the percentage among non-poor households. This is despite the fact that a majority of the very poor were landless and did not cultivate their own crops. Thus, the severe impacts reported by this group came only partly from damage to rice crops. Many in this group were farm labourers. These labourers particularly lamented the fact that the rainy season and the flood season last longer and that there are more days with thunderstorms and lightning. On those days, they have no work, and for many of them, a day without work means a day without having enough money to feed the household. The very poor also reported severe impacts from extreme weather on their houses, which tended to be of poor quality.

Migration

Reliable migration data at the commune level are lacking, but the household survey yields several indications that migration from Hung Thanh Commune is a recent phenomenon that has increased sharply over the past decade:

1. The vast majority (91.1 per cent) of the household members with migration experience made their first trip after 2000, with 71.5 per cent of them made their first trip after 2005.

2. In households that contained at least one member with migration experience, the first migrant was more often a child (66.7 per cent) than a parent (33.3 per cent).

3. Transfers from migrants to their families in the area of origin increased sharply over the past ten years. For 17.3 per cent of the households, transfers from internal migrants had become one of the three principal sources of income against only 2.7 per cent ten years ago.

The household survey reveals that in 90 out of 150 households (60 per cent), at least one current member has migrated from Hung Thanh Commune to other communes, provinces or regions in Viet Nam. A total of 168 household members have migrated, either seasonally (45.6 per cent), for a longer period (48.1 per cent) or for both (6.3 per cent). Men (63 per cent) migrated more than women (37 per cent). Exactly half are current migrants, and the other half are returned migrants. None of the households have international migrants. On average, migrants from Hung Thanh Commune were 22 years old at the time of their first migration. Almost half of the migrants have moved to destinations outside the Mekong Delta region, but still within the southern part of Viet Nam. They mostly go to Ho Chi Minh City, Binh Duoung and Dong Nai, where they find jobs in industry. People from Hung Than Commune who migrate within the province are mainly seasonal migrants who work as farm labourers or in local factories for periods shorter than six
months, usually during the flood season, when there is less work in their own community.

The sharp increase in internal migration in the past decade is to a large extent related to structural changes in the Viet Namese economy and society. There is large demand for labourers in industrial centres, while the increasing levels of education and access to communication technology have prompted many young people to aspire to a more urban lifestyle. Most of the causes for increased migration from Hung Thanh Commune are related to improved opportunities. This is not the full story, however.

A number of case studies, from around the world, have found that when migration is primarily opportunity-driven, wealthier households tend to send out more migrants, while in situations in which migration is primarily survival-driven, more migrants come from poor families (see Ellis 1998; de Haan 1999; Kusters 2010; Wouterse and van den Berg 2011). Table 2 shows that the tendency towards migration from Hung Thanh Commune is inversely related to income. Two-thirds of the very poor households send out migrants, compared to only half of the non-poor households. This difference is still moderate, but if migration purposes are taken into account, the gap between poor and non-poor is much larger; only 23 per cent of non-poor households have members who migrated for work, while in the case of very poor households, the figure is 60 per cent. The picture for student migration is opposite: 30 per cent for non-poor households against only 10 per cent for the poor and very poor. These findings indicate that for members of poor and very poor households, migration is not only opportunity-driven; pressures on local livelihoods also play an important role.

The household survey also contained questions about reasons for migration. Respondents were asked to indicate on a list of 40 potential reasons whether each of those reasons had been important in their or their household members’ decision to migrate. Table 3 contains the ten most frequently mentioned reasons. The reasons for migration are arranged according to the income group for which each reason was the most relevant. The table shows that the conditions that make people decide to migrate differ among socioeconomic groups in the research area. On par with results of a similar case study conducted in Thailand (Sakdapolrak and others, 2014), respondents in non-poor households indicated more often that good job opportunities in urban areas were an important reason for them to migrate. Another important pull factor for non-poor households was that they perceived urban areas as more attractive places to live. By contrast, respondents in poor and very poor households indicated more often that unemployment, lack of income and landlessness were important reasons to migrate.
Table 2: Migration tendency and purposes, by income group

<table>
<thead>
<tr>
<th>Income/cap/day</th>
<th>N=</th>
<th>No. of migrants in HH</th>
<th>Economic migrants in HH</th>
<th>Educational migrants in HH</th>
<th>Other migrants in HH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very poor: &lt; $1</td>
<td>52</td>
<td>17 (33%)</td>
<td>31 (59%)</td>
<td>5 (10%)</td>
<td>3 (6%)</td>
</tr>
<tr>
<td>Poor: $1-2</td>
<td>42</td>
<td>19 (45%)</td>
<td>19 (45%)</td>
<td>4 (10%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Non-poor &gt; 2 $2</td>
<td>43</td>
<td>21 (49%)</td>
<td>10 (23%)</td>
<td>13 (30%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Total</td>
<td>137</td>
<td>57 (42%)</td>
<td>60 (44%)</td>
<td>22 (16%)</td>
<td>6 (4%)</td>
</tr>
</tbody>
</table>

Notes: There are 13 missing values for income/cap/day (see note to table 1); HH = household; “Other migrants” mainly moved for family reasons; multiple answers possible, for example, a household could have economic migrants, as well as educational migrants.

Table 3: Migration reasons, by income group

<table>
<thead>
<tr>
<th>Migration reason</th>
<th>Very poor (n=35)</th>
<th>Poor (n=23)</th>
<th>Non-poor (n=18)</th>
<th>Total (n=76)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most common among the very poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>83%</td>
<td>83%</td>
<td>56%</td>
<td>76%</td>
<td>2</td>
</tr>
<tr>
<td>Not enough land for farming</td>
<td>77%</td>
<td>44%</td>
<td>28%</td>
<td>55%</td>
<td>5</td>
</tr>
<tr>
<td>Work for my skills not available</td>
<td>31%</td>
<td>30%</td>
<td>28%</td>
<td>30%</td>
<td>9</td>
</tr>
<tr>
<td>Most common among the poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not enough income</td>
<td>80%</td>
<td>87%</td>
<td>61%</td>
<td>77%</td>
<td>1</td>
</tr>
<tr>
<td>Not satisfied with livelihood</td>
<td>51%</td>
<td>61%</td>
<td>22%</td>
<td>47%</td>
<td>6</td>
</tr>
<tr>
<td>Not enough fish</td>
<td>31%</td>
<td>39%</td>
<td>22%</td>
<td>32%</td>
<td>8</td>
</tr>
<tr>
<td>Better living quality in city</td>
<td>20%</td>
<td>35%</td>
<td>33%</td>
<td>28%</td>
<td>10</td>
</tr>
<tr>
<td>Most common among the non-poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No school for children in village</td>
<td>46%</td>
<td>52%</td>
<td>78%</td>
<td>55%</td>
<td>4</td>
</tr>
<tr>
<td>Better job opportunities</td>
<td>51%</td>
<td>61%</td>
<td>67%</td>
<td>58%</td>
<td>3</td>
</tr>
<tr>
<td>City attracts me</td>
<td>20%</td>
<td>35%</td>
<td>56%</td>
<td>33%</td>
<td>7</td>
</tr>
</tbody>
</table>

Notes: The questions about migration reasons were only asked if at least one household member had migrated, which was the case in 90 households. There are 13 missing values for income group (see table 1) and one for migration reasons. The last column contains rankings for the overall importance of migration reasons.
The prime causes of migration among poorer households are indirectly related to climate variability. Changing rainfall patterns and extreme weather have a negative impact on people’s sources of food and income. These factors, in turn, are important drivers of migration, especially for poor and land-scarce households. As Black and others (2011a) underline in their framework for understanding the effect of environmental change on migration, environmental factors tend to influence migration indirectly, mostly through economic drivers (see also Foresight, 2011). Climate variability affects local livelihoods and the prime reasons to migrate are related to lack of livelihood security or low living standards at home.

Whether migration is beneficial to the migrant and his or her family depends on who migrates and under what conditions. In focus group discussions about migrants’ experiences in destination areas, participants stated that poor migrants often lacked the necessary training and skills to migrate “successfully”. This, according to them, explains why many end up working in unstable jobs under hazardous conditions with low pay. Meanwhile, high costs for accommodation and daily needs in destination areas reduce savings to levels far below what their families in the place of origin might expect. Participants in focus group discussions repeatedly stated that many young migrants could barely support themselves, let alone transfer money to their families in the area of origin. Whereas migration could be a viable adaptation strategy that contributes to livelihood security (Tacoli 2009; Black and others, 2011b; Scheffran and others, 2012), these insights from participatory research tools indicate that migrants from poorer households in the study area, after moving to avoid one type of vulnerability, are exposed to another type at their new location.

5. Conclusion

This case study about the links between migration and climate-related stressors in the Upper Mekong Delta in Viet Nam shows that increased migration from the study area is partly related to increased demand for industrial labour and a desire of younger people to adopt a more urban lifestyle and move away from their rural homes and tedious work in agriculture. The study also shows, however, that an important group of poorer and landless or land-scarce households migrate because of severe pressures on their livelihood and food security. This is the group of people that experiences severe climate impacts on their household economies and food security.

As this study finds that poor, landless and land-scarce households in the study area are most affected by climate-related stressors and are also most likely to migrate, it would make sense to prioritize these groups in projects and interventions that aim to improve people’s adaptive capacities. This can be done by focusing on local livelihood options,
for example, by supporting in efforts to engage in of improve non-farm income-generating activities or by helping them to upgrade their fishing and aquaculture activities. It can also be achieved by improving their migration options, for example through skills training.

Migration can contribute to a sustained improvement in livelihood security for migrants themselves and the quality of life of their children and their relatives who stay behind. In that sense, internal migration can serve as an essential element of climate change adaptation strategies. In a context of agricultural mechanization and industrial growth, the aim should not be to keep people in place, but to ensure that they are well prepared for their migration and that it has a good chance of being “successful”. Their rights in the migration destination should be protected and, prior to migration, education and vocational training should help them to acquire the skills to migrate more successfully.

If migrants are well prepared, migration can help make societies become less vulnerable to climate change. By contrast, if people move as a last resort or as a survival strategy, they run the risk of becoming even more vulnerable in their destination areas.

References


Will Bangladesh seize or squander the economic opportunity offered by the demographic dividend?

Abstract:
Bangladesh experienced a significant reduction in fertility and mortality during the last three decades of the twentieth century, leading to a drastic change in the population structure. To date, the number of persons in productive ages by far exceeds the number in dependent ages. This creates a one-time opportunity to boost economic growth. The present paper examines the extent to which Bangladesh has taken advantage of this window of opportunity. It also identifies remaining challenges to exploiting this opportunity to further increase economic growth and development. The paper concludes that in order to reap benefits from this window of opportunity, Bangladesh must make critical investments in its human capital base, as well as improve infrastructure and the overall investment climate.

By Rafiqul Huda Chaudhury

Keywords: Demographic dividend, demographic transition, human capital investment

1. Introduction

The present paper examines the implications of the age structural transition, which is associated with declines in fertility and mortality, on economic growth. The effect of the age-structural transition on economic growth is expected to be transitional. It can be sizeable in the short and medium term if the decline in fertility results in a period during which the working age population grows more rapidly relative to the number of younger and older dependents, or in other words, there are more workers per dependent (Navaneetham, 2002). However, this effect becomes negligible or negative when both fertility and mortality reach

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their lowest levels and fewer people enter productive ages and the older population\(^2\) rises both in number and proportion. There is a considerable time lag between the decline in the child dependency ratio and the increase in the working-age population and the rise in older population. This time lag creates a one-time opportunity for about two to five decades to boost living standards of the population. The present paper is organized into the following sections. Section 2 traces the demographic transition in Bangladesh and its economic implications. Section 3 identifies the linkages between the demographic dividend and economic growth. Section 4 presents the findings of the effect of the demographic transition on human, social and economic development. Section 5 examines the net effect of changes in the age structure on economic growth. Section 6 delineates the future prospects and challenges of achieving the full economic benefit of the demographic dividend, and section 7 summarizes the findings and highlights policy implications.

### 2. Demographic transition in Bangladesh

Bangladesh experienced a dramatic decline in fertility and mortality during last four decades (1970-2010). In this section, a detailed account of these dramatic changes in the demographic transition is presented along with a discussion of the period when the economic benefits of the demographic dividend are likely to reach their highest levels, while other factors are kept constant.

#### 2.1 Decline in fertility

The total fertility rate (number of children per woman) declined from 6.3 in 1975 to 2.3 in 2011. During the same period, the contraceptive prevalence rate increased from 7.7 per cent to 61.2 per cent (see figure 1).

#### Figure 1. Trends in total fertility and contraceptive prevalence rates, 1975-2011

![Trends in total fertility and contraceptive prevalence rates](image)

*Source: Bangladesh Demographic and Health Survey, 2011 and 2013.*

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\(^2\) The population in “productive ages” is usually defined as the population between 15 and 64 years old; the “older” population is defined as the population above 65 years old.
2.2 Decline in mortality

During the period 1970-2010, mortality also declined significantly, with the infant mortality rate falling by at least 74 per cent to 38 per 1000 live births and the under-5 mortality rate easing 78.7 per cent to 47 per 1000 live births. During the same period, life expectancy at birth increased by 51 per cent to 70.2 years in 2010. Also of note, the maternal mortality rate declined by 63 per cent to 240 per 100,000 live births during 1980 to 2010 (see figure 2).

**Figure 2. Trends in life expectancy at birth and various other mortality rates, 1970-2010**

![Graph showing trends in mortality and life expectancy](source: Chowdhury and others, 2013.

2.3 Changes in the Bangladesh age structure

This dramatic transition in fertility and mortality resulted in a significant shift in the age structure of the population, characterized by a decline in the share of the young age group (0-14 years), an increase in the working-age population and a decline in the dependency ratio (the number of workers per dependent increased). The share of the young age group fell from 46 per cent in 1961 to 30.0 per cent in 2011, while the share of the working ages (15-64) group increased from 48.8 per cent to 66.1 per cent during the same period (see figure 3).
Figure 3. Percentage of population by broad age groups, 1951-2011


Figure 4. Trends in the growth rate of working-age population (15-64), dependent population (0-14 and 65+) and total population, 1951/61-2001/2011 in Bangladesh


The rate of growth of the working-age population was 2.39 and 3.45 per cent per annum, in the periods 1981-1991 to 2001-2011, respectively, compared to the growth rates of 1.99 to 1.97 per cent per annum, respectively, for the entire population during those two time periods (see figure 4). The growth rate of the working age population has a powerful
Will Bangladesh seize or squander the economic opportunity offered by the demographic dividend?

positive impact on GDP per capita growth (Bloom and Williamson, 1998; Mason 2001; Mason and Yamaguchi, 2007; UNFPA, 2003).

This has resulted in a decline in the dependency ratio, with dependents per 100 persons of the working population declining from 105 in 1961 to 51 in 2011 (see figure 5). Figure 5 shows that the child dependency ratio declined faster, while old age dependency changed slowly. There is a considerable time lag between the decline in the child dependency ratio and an increase in the working age population on the one hand and the rise in old aged population on the other (see figures 3 and 4).

This age-structural transition, with more of the population in the working ages than in the dependent ages, creates a window of opportunity for economic growth. Figure 5 shows changes in dependency ratios at different ages, which may create this window of opportunity.

Figure 5. Young, old and total dependency ratios, 1951-2011

The young dependency ratio is defined as the ratio of young population at ages 0-14 to the population at productive ages (15-64 years), while the old dependency ratio is defined as ratio of older population at ages 65 and above to the population at productive ages. The total dependency ratio is defined as total dependents at young and old ages to the total working age population. These ratios are expressed in terms of per 100 persons of the working-age population.


The period of the window of opportunity can be characterized as (a) more workers producing more total output if they are productively employed, (b) greater accumulation of wealth, if savings occur and are more productively invested, and (c) a large supply of quality human capital, if appropriate investments are made into its formation (Birdsall
and Sinding, 1998). The underlying message that emanates from the above preconditions clearly indicates that the demographic bonus can contribute to economic growth, if a congenial environment is created through appropriate policy regimes to capitalize on it. After this window of opportunity closes, a period of economic stagnation may follow. This was the case in many OECD countries, including Germany and Italy, due to the rise in the older population, both in terms of number and proportion, and a fall in working-age population (Lindh and Malmberg, 1999). The window of opportunity closes as the share of older persons in the total population rises.

3. Linkages between demographic transition and economic growth

The demographic dividend can help to improve living standards of the general public by:

1. Increasing capital. Capital per worker is an important determining factor of output per worker. Output per worker has traditionally been shaped by two important factors, capital per worker and level of technology. If the level of technology remains constant, economic growth occurs because of an increase in capital per worker. The rate of capital is determined by savings and investment. A decline in fertility and in the youth dependency burden should lead to an increase in savings stemming from the reduction in required outlays for basic needs, health and education. This would present governments with the option to invest in productive and growth-oriented activities that are important for job creation and poverty reduction, such as infrastructure development. More people in the working age group and a lower dependency ratio contributes to savings, which, in turn, can boost the investable surplus. The increased savings, therefore, are likely to contribute to an increased investment rate and a rise in labour productivity.

2. Improving the quality of the labour force. The decline in fertility and population growth can contribute to human capital development, as the decline in the number of children will enable governments to spend more money per child without increasing the overall budget and thus boost the quality of education.

3. Increasing female participation in the labour force. The decline in fertility should lead to a rise in female labour force participation as women spend less time on rearing children. The decline in fertility is also likely to promote education of girls, which can further enhance female labour force participation, since it opens up new employment opportunities for women. The opportunity cost of women’s time spent in child-rearing increases with their
participation in the labour force. Increased participation of women in productive employment opportunities will contribute to economic growth. Working women are also more likely to invest their additional income in the health and education of their children, and thus contribute further to human resource development.

4. **Slowing unsustainable fractionalizing of landholdings.** Savings and capital generated from the fertility decline will have many multiplier effects. One significant effect will be the establishment of new industries and the construction of factories. Agricultural workers will likely be the source for the resulting increased demand for labour in the industrial sector, thus easing pressure on the need to divide up agricultural landholdings. In addition, the fertility decline will directly slow the fractionalization of land among family members.

5. **Increasing demand for goods and services.** Low fertility leads to higher per capita income and consumption of goods and services through human capital accumulation (Anderson, 2001; Bloom and Williamson, 1998; Birdsall and Sinding 1998; Birdsall and others (eds); 2003; Mason, 2001; Mason, 2007; Lee and Mason, 2009; UNFPA, 2003; Navaneetham, 2002).

### 4. Benefit of demographic transition in Bangladesh

Many countries have benefitted from the demographic transition. Studies suggest that the age-structural transition accounted for one-third to one-fourth of the average growth per capita increase in East Asia during the period 1970-1980 (Bloom and Williamson, 1998; Mason, 2001). However, they also indicate that a number of non-demographic factors supported the economic gains, such as quality of human capital, public institutional quality, prudent economic policy, political stability and good governance. Bangladesh has also reaped some benefit from the demographic dividend. Between 1960 and 2010, an increase in the working-age population and a dramatic decline in dependency ratio contributed to:

- A rise in human capital, in terms of increased literacy rate, educational attainment and life expectancy at birth for both males and females (see figures 2, 7, and 8).
- An increase in the in growth rate of GDP per capita, and national and domestic savings and a reduction in the poverty rate (see figures 9, 10 and 11).
4.1 Human capital development

4.1.1 Increased literacy rate

Reduced fertility or fewer children and lower dependency leaves more opportunities for parents to increase their savings, enabling them to spend more on the education and the health of their children. For example, in Bangladesh, the literacy rate of persons aged 7 years and above increased from 26.8 per cent in 1974 to 56.0 per cent in 2011 (see figure 6). This increase was registered for both males and females. For males, the increase was from 36.6 per cent in 1974 to 58.7 per cent in 2011. For the corresponding period, the female literacy rate rose from 16.4 per cent to 53.4 per cent (see figure 6). Data show a strong negative correlation (correlation between total fertility rate and male and female literacy rates are -0.923 and -0.956) between the literacy rate and the fertility rate, a higher literacy rate corresponds to a lower fertility rate.

Figure 6. Level and trend in total fertility rate (TFR) and male and female literacy rate, 1974-2011

Sources: Bangladesh Statistical Yearbook, 2008; Bangladesh Population Census, 2001; Bangladesh Population and Housing Census, 2011; and ESCAP, 1981.

4.1.2 Educational attainment

The increased income per worker stemming from reduced fertility per worker will also present parents with the option to invest in higher education for their children. This is also indicated by data in Bangladesh. Progress was also registered with regard to secondary education for both males and females. The proportion of females and males who attended or completed secondary and higher education increased from 2.1 per cent and 6.6 per cent in academic year 1993/94 to 34.6 per cent and 36.9
per cent, respectively, in 2011. Conversely, the proportion of males and females who attended or completed primary education declined from 58.7 per cent for males and 49.7 per cent for females in 1993/94 to 38.4 per cent for males and 36.1 for females, respectively, in 2011 (see figure 7).

Figure 7. Per cent distribution of the de facto male and female household populations age at 6 years and above by highest level of schooling attended or completed and sex, 1993/94-2011


4.2 Improved female labour force participation rate

As expected, female labour force participation increased with the decline in fertility, as it enabled women to spend time on activities that are not related to child-rearing. Figure 8 shows that female labour force participation rates increased from 24 per cent in 1999/00 to 36 per cent in 2010. During this period, the total fertility rate almost halved, decreasing from 4.3 children per woman in 1991 to 2.3 children per woman in 2011 (see figure 6).
Figure 8. Labour force participation (refined activity rate*) by sex, 1999/00-2010

* Refined activity rate refers to ratio of the economically active population to the population aged 15 years and above expressed in percentage. This is also called economic participation.

Sources: Bangladesh Statistical Pocket Book, 2009; and 2010.

The increase in female labour force participation is seen in both rural and urban areas, although it is slightly more in rural areas (see figure 9). Female labour force participation rate increased from 26.5 per cent to 34.5 per cent between 1999-00 and 2010 in urban areas. For the corresponding period, the female labour force participation rate in rural areas rose from 23.1 per cent to 36.4 per cent. The increase in the female labour force participation rate in rural and urban areas corresponds to the fertility decline in both areas. Fertility in rural and urban areas declined by 29.3 per cent and 25.6 per cent to 2.50 and 2.0, respectively, during the period between 1993-94 and 2011 (Bangladesh Demographic and Health Survey, 1993-94; 1996-97; 1999-2000; 2007; 2011).

The distribution of female employment across occupational groups over time also shows increased participation of women in non-agricultural sectors, particularly in sales and service-related occupations, administrative and managerial (professional) occupations and service work. Between the period 2005-2006 and 2010, female participation in sales and services grew by 42.5 per cent, while participation in professional work expanded by 36.83 per cent and in service work by 10.43 per cent between the period 2005-2006 and 2010 (Bangladesh Labour Force Survey, 2010).
Will Bangladesh seize or squander the economic opportunity offered by the demographic dividend?

Figure 9. Labour force participation rate (refined economic activity rate*) by sex and rural-urban areas, 1999/00-2010

* Refined activity rate refers to the ratio of the economically active population to the population aged 15 years and above expressed in percentage. This is also called economic participation.

Sources: Bangladesh Statistical Pocket Book, 2009; and 2010.

4.3. Improved health

Health indicators also showed positive results. This is reflected by the better health conditions in Bangladesh compared to countries at a similar level of development (Social Progress Imperative, 2014). Reduced fertility and fewer dependents, as stated earlier, have enabled parents to invest in the health of their children, which resulted in reduced infant and child mortality. As noted earlier (see figure 2), infant and the under-5 mortality rate declined from 147 and 220.6 per 1000 live births in 1970 to 38 and 47 per 1000 live births, respectively, in 2010. The maternal mortality rate declined by 63 per cent from about 650 per 100,000 live births in 1980 to about 240 per 100,000 live births in 2010.

High quality human capital contributes towards boosting labour productivity. It also helps to attract foreign investment and facilitate the use of superior technology imported from developed countries.

4.4. Increased savings

The need to spend less on basic needs resulting from lower fertility and a reduced youth dependency burden is likely to lead to increased savings. This will give governments more leeway to boost investment in productive and growth-oriented activities, such as job creation and infrastructure development, and to purchase new machinery. Such investments are important for economic growth and poverty reduction. Changes in the age structure, such as an increase in the growth of the working age population has boosted savings in many East Asian
countries (Bloom and Williamson, 1998; Mason, 2001). This is also seen in Bangladesh, albeit modestly. National savings as a percentage of gross domestic product (GDP) increased from 9 per cent in 1980 to 37.3 per cent in 2010. Similarly, domestic savings as a percentage of GDP rose from a meagre 1.5 per cent in 1980 to 27.6 per cent in 2010 (Bangladesh Ministry of Finance, 1981-2010). Increased savings associated with declining fertility and youth dependency has contributed to a rise in GDP per capita in Bangladesh (see figure 10). In East Asia, a one percentage point increase in the growth of the working age population was found to be associated with a 1.46 percentage point gain in GDP per capita (Bloom and Williamson, 1998; Mason 2001).

4.5. Increased GDP per capita

Increased savings and capital per worker contributed to the rise in economic growth during the period 1980-2010. Greater savings and capital per worker, which is associated with the increase in the working age population, contributed to growth of GDP per capita and ultimately led to poverty reduction. GDP per capita in purchasing power parity (constant at 2005 international dollar) rose from $661 in 1980 to $1,464 in 2010 (see figure 10).

Data also show that while the young dependency ratio (number of population below 15 as a percentage of working age population) decreased, GDP per capita grew (see figure 10).

Figure 10. Trends in young dependency ratio and GDP per capita ($, PPP), 1980-2010

Sources: UN DESA, 2013; World Population Prospects: The 2012 Revision; and World Bank, 2014b, GDP per capita.
4.6 Increased GDP growth rate

During the last decade, GDP of Bangladesh grew by more than 6 per cent in local currency terms. Per capita GDP growth also increased, in line with a significant reduction in poverty rates. Meanwhile, the poverty rate, based on the national poverty line of $1.13 per capita per day, declined from 50.1 per cent in 1996 to 31.5 per cent in 2010. Figure 11 shows a positive relationship of the working age population with GDP/savings ratio, GDP (per capita) growth rate and a negative relationship with poverty reduction.

Figure 11. Trends in GDP growth, savings, poverty rate and working age population, 1995/96-2010/11

Sources: Bangladesh gross domestic product (GDP); Poverty Rate- Poverty rate refers to the year 1996, 2000, 2005 and 2010 and these are obtained from http://data.worldbank.org/country/bangladesh; Savings obtained from Statistical Pocketbook Bangladesh,-2012 Working Age Population obtained from UN DESA, World Population Prospects: The 2012 Revision.

4.7. Statistical analysis

This section contains a discussion of a statistical analysis that was carried out to examine the net impact of a changing age structure, in particular the share of different age cohorts, on economic growth over time, while controlling for other economic and demographic factors using a logistic regression. The regression analysis was carried out from annual time series data covering the period 1980/85-2005/10. A similar type of analysis was carried out by Navaneetham (2002) using data of some Asian countries.
Table 1. Logistic regression of economic and demographic variables on GDP growth rate, Bangladesh 1980/85-2005/2010

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variable</th>
<th>Standardized coefficients</th>
<th>t-value</th>
<th>Significance level</th>
</tr>
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<tbody>
<tr>
<td>Percentage of age group-</td>
<td>Log of GDP growth rate</td>
<td>NI*</td>
<td>NI*</td>
<td>NI*</td>
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<td>0-14</td>
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<td>-3.200</td>
<td>0.193</td>
<td></td>
</tr>
<tr>
<td>25-64</td>
<td>7.803</td>
<td>16.002*</td>
<td>0.040</td>
<td></td>
</tr>
<tr>
<td>65+</td>
<td>2.359</td>
<td>3.009</td>
<td>0.040</td>
<td></td>
</tr>
<tr>
<td>Growth rate of total population</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.173</td>
<td>8.048+</td>
<td>0.079</td>
<td></td>
</tr>
<tr>
<td>log of national savings (% of GDP)</td>
<td></td>
<td>-1.104</td>
<td>-7.306+</td>
<td>0.087</td>
</tr>
</tbody>
</table>

* NI= Not included, * significant at 0.04 level, +significant at less than 0.08 level.

Source: Author’s calculations

Data in table 1 show that the relationship between the changing age structure and economic growth varies by stages of demographic transition. As expected, the share of the working age population has a significant positive association with GDP per capita, which means the larger the working age population, the higher the growth rate. This relationship is found to be statistically significant. However, the size of the youth population has a negative relationship with the per capita GDP growth rate. This finding is also in the expected direction as a large chunk of the youth population incurs large educational expenditure. Unexpectedly, the regression analysis shows a positive but insignificant association between the older population and the per capita GDP growth rate. One would expect to find a negative relationship between the size of the older population and per capita GDP growth rate as they both incur health expenditure due to chronic degenerative diseases and loss of income resulting from morbidity and limited opportunity to be productively engaged. However, this is not supported by the data, which is not unexpected given the fact that the older population accounts for an insignificant (4 per cent) proportion of the total population. A similar finding that shows economic growth follows a life-cycle path is also corroborated by other studies in Asia, such as Navaneetham (2002), and in Scandinavian countries (Lindh and Malmberg, 1999; Anderson, 2001).
Data also show a positive relationship between overall population growth and economic growth. This relationship is found to be statistically significant. The finding may be unexpected, however it can be attributed to the differential age composition of the population and its relative size and weight on the economy. In Bangladesh, there are more people in the productive age-group than in the younger and older dependent age groups. The number of people in the productive age group has had a strong positive effect on economic growth while the number of people in the younger and older dependent age groups has had a negative and positive effect on the economy, respectively. Consequently, the negative effect of younger and the positive effect of older ages on the economy is outweighed by the strong positive impact of the largest population group — those in the productive ages — on the economy. This produces an overall positive impact on the total population size on the economy. However, the positive relationship between the total population size and economic growth is not found to be statistically significant at an acceptable level of 0.05 per cent or lower. Contrary to expectations, data show a negative relationship between national savings as a percentage of GDP and economic growth, but this is not found to be statistically significant at an acceptable level of 5 per cent or lower. National and domestic savings as a proportion of GDP are still too modest to have an impact on the economy.

Table 2 examines the relationship between demographic and economic variables on the one hand and the poverty rate on the other using a simple regression analysis. The poverty rate is defined as the rate of those with an income below the national poverty line of $1.13 per capita per day. Consistent with the finding of a positive association observed earlier between the age-structural shift (in which there are more people in the working age group than the dependent age group) and the GDP growth rate. Data also show a significant negative relationship between the share of the working age population and the poverty rate (see table 2). In other words, the higher the proportion comprising a working age, particularly at the prime productive ages (25-59), the lower the poverty rate. As expected there is also a negative relationship between the GDP growth rate and the poverty rate. However, the relationship is not found to be statistically significant. This, however, is not surprising given that much higher and steady rates of growth would be required to bring about a significant impact on poverty.
Table 2. Regression of economic and demographic variables on poverty rate, 1980/85-2005/2010

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variable</th>
<th>Standardized coefficients</th>
<th>t-value</th>
<th>Significance level</th>
</tr>
</thead>
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<tr>
<td>Percentage of age group-</td>
<td>Poverty rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-14</td>
<td>NI*</td>
<td>NI*</td>
<td>NI*</td>
<td></td>
</tr>
<tr>
<td>15-24</td>
<td>-2.33</td>
<td>-1.17</td>
<td>0.361</td>
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</tr>
<tr>
<td>25-64</td>
<td>-10.81</td>
<td>-4.45+</td>
<td>0.047</td>
<td></td>
</tr>
<tr>
<td>60+</td>
<td>67.51</td>
<td>3.33*</td>
<td>0.080</td>
<td></td>
</tr>
<tr>
<td>GDP growth rate</td>
<td></td>
<td>-10.8</td>
<td>-0.95</td>
<td>0.443</td>
</tr>
</tbody>
</table>

* NI= Not included, +significant at<0.05 level, * significant at less than 0.10 level.

Source: Author’s calculations

6. Challenges in reaping the benefits of the demographic dividend

The demographic dividend is defined by the United Nations Population Division as the period when the proportion of children under 15 years falls below 30 per cent and the proportion of people over 65 years is still below 15 per cent. According to this definition, the period of the demographic dividend in Bangladesh will span about 35 years from 2015 until around 2050, when the working-age population will continue to outstrip the young and old population (see figure 12).

Figure 12: Percentage of the population by broad age groups, 2011-2051

As children and older persons produce much less than they consume and adults of working age, on average, produce more than they consume, countries in which the working age group comprises a large share of the population are likely to produce increased GDP outputs. In countries where the working age population tends to be educated and skilled, the gain in per capita income is expected to be even greater.

In Asia, the East Asian countries have been the most successful in reaping the demographic dividend. The working-age population in these countries has accounted for as much as one-third of the economic growth. The young generations have been successful because they tend to be well educated and have benefited from policies that helped to create and sustain jobs. Countries from other subregions in Asia, such as Thailand, Malaysia and Sri Lanka, are also geared up to reap the benefits of the demographic dividend as a high proportion of their educated and skilled population falls in the working ages.

In the case of Bangladesh, while the demographic transition has been accompanied by economic and social progress, the country lacks an investment environment conducive for rapid economic growth. To exploit this opportunity, Bangladesh needs to focus on the following: (i) improving the human resource base not only in terms of numbers of the educated labour force, but also the quality of education; (ii) creating more jobs in the manufacturing sectors; (iii) improving the climate for more public and private investment; (iv) attracting more foreign development investment (FDI); (v) improving infrastructure; (vi) strengthening governance/institutions; and (vii) ensuring political stability. Thus, there are several critical challenges the Government needs to address simultaneously for the country to truly capitalize on the demographic dividend.

6.1.1 Improving the human resource base

According to the 2011 Bangladesh population census, about 25 per cent of young people in the age group 15-34 years cannot read and write (Bangladesh Bureau of Statistics, Ministry of Planning 2012a). Moreover, in the age group between 7 and 9 years, 31 per cent cannot read and write and another 30 per cent can read only. This age group, which comprises about 11 million young children, will join the labour force in the next ten years and enter into low productivity jobs. Thus, the country faces the challenge of improving the skill levels of those already in the labour force and those who enter the workforce with only limited levels of education. At the same time, as a long-term strategy, Bangladesh needs to ensure universal primary and secondary education and to minimize school dropout rates. It should, therefore, focus heavily on human capital development, including improving the quality of the human resource base.
6.1.2 Quality of the human resource base

Although significant progress has been made in terms of ensuring universal primary education, improving the literacy rate and increasing the number of students who have completed primary or secondary school, the quality of the education needs to be improved. Using primary school curricula and basic mathematics tests, Asadullah and Chaudhury (2013) find low levels of cognitive achievement among Bangladeshi children aged between 10 and 17 years. About half of the children have failed to pass the competence test and among the children who have failed, at least 50 per cent had completed primary school (Asadullah and Chaudhury, 2013). According to a government learning assessment survey conducted in 2013, about 92 per cent and 82 per cent of sixth graders were found to be falling short of the expected competence in English and mathematics, respectively (EIA, 2013). The World Bank Bangladesh Education Sector Review also corroborated the Government survey with similar findings (World Bank, 2013a).

Poor quality education at the primary level is attributed to a shortage of qualified teachers and poor school facilities in terms of numbers of schools, classrooms, libraries and playgrounds (Haider, 2014). The World Bank Bangladesh Education Sector Review also pointed out that most of the common teaching methods at the secondary level in the country entail lecturing and reading textbooks with very little or no time dedicated to class interaction. As a result, a large number of students have failed to acquire the desired competencies due to a flawed teaching system (World Bank, 2013a).

Moreover, the secondary curricula in Bangladesh do not reflect market needs. As a result, traditional primary, secondary and higher secondary studies are not producing enough skilled personnel. In view of the demands of a changing global economy, it will be important to develop a linkage between the education sector in Bangladesh and the job market (Haider, 2014). Further efforts should be made to create technically skilled human resources. In this vein, school curricula from grade 6 to the higher secondary level (class 12) should include ICT-based education and vocational courses (Haider, 2014).

Currently, the Government of Bangladesh spends 2.2 per cent of its GDP on education. This rate is lower than in many other comparable countries in South Asia (Haider, 2014) and falls much short of the UNESCO global standard of allocation on education. The World Declaration on Education for All calls for allocation of at least 6 per cent of GDP on education by 2015. To improve the quality of education, more investment is required.

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to upgrade school infrastructure facilities, improve teacher training, provide a better compensation package to attract qualified candidates for teaching jobs and improve skill development of the young generation. In its attempt to improve quality education, the Government of Bangladesh has recently introduced a creative method of questioning in 21 subjects and expanded teachers training on creative testing.

6.2 Creation of jobs

Bangladesh faces a herculean task of absorbing its growing labour force. The working-age population grew by 2.39 per cent per annum between 1981 and 1991, and 3.45 per cent per annum during the period 2001-2011 (see figure 4). Speaking in absolute terms, the working age population increased by about 2.26 million per annum between the period 1991-2011 and another 1.73 million per year during 2011-2020 over and above the current backlog (see annex, table 1).

Although most of the labour force is currently employed, a large proportion of it is underemployed and engaged in low productive jobs in unorganized sectors. In 2010, a relatively small percentage of the labour force was engaged in the manufacturing sector (12.3 per cent) and in the service sectors, trade, hotels and restaurants (14.7 per cent), while a large portion (47 per cent) of the labour force were working in the oversaturated agriculture sector (Bangladesh Labour Force Survey, 2010) and more than one fifth of the labour force were reported to be underemployed, such as those who worked less than 35 hours in the reference period (Bangladesh Labour Force Survey, 2010). These are some of the stumbling blocks Bangladesh must deal with in order to advance to the next stage of development to become a middle income country.

Moreover, the unemployment rate tends to vary positively with the level of education. It increases from 2.8 per cent among people with little or no education to 13.7 per cent among those with a higher secondary certificate or equivalent, 10.3 per cent among those with a Master’s degree or equivalent and 14.3 per cent among engineers (Bangladesh Bureau of Statistics, Ministry of Planning, 2011b). A high unemployment rate of 47 per cent was also reported among university graduates in Bangladesh by the Intelligence Unit of the Economist (Economist Intelligence Unit, January 2014).

This indicates that the education curriculum needs to be adjusted in order to be better suited to market demand. A skill shortage exists in the country, especially in the middle level management, due to relatively weak quality of the education system. Emphasis should be placed on skill development to meet the potential demand for jobs that require a relatively higher skill level, especially in key industrial sectors, including export sectors, such as agro-food, tourism and hospitality, pharmaceuticals, ceramics and furniture making and for migration
abroad (World Bank, 2013b). In addition to the supply-side deficiency of skilled labour, there is also a demand-side deficiency related to the structure of the economy, which simply is not generating adequate demand to absorb skilled labour. Migrant workers from Bangladesh tend to be relatively low skilled and take low-paid jobs in comparison to their counterparts from neighbouring countries, such as India and Nepal. Consequently, remittances per worker are lower (World Bank, 2013b). Bangladesh must invest in skill development of its young generations in order for them to work effectively in the domestic and global markets. Therefore, it would be prudent to articulate a comprehensive framework for skill development among the population, encompassing all levels of education policy priorities over the short and medium terms (World Bank, 2013b).

6.3 Investment

Both public and private investment is needed to ensure greater absorption of the rising labour force in productive jobs to sustain higher economic growth. Investment is key to employment generation, savings and economic growth. The investment to GDP ratio is very low in Bangladesh. Investment accounted for only 28.7 per cent of GDP in the fiscal year 2013/14. The shares of public and private investment were 7.3 per cent and 21.4 per cent of GDP, respectively (Bangladesh Economic Review, 2014). This falls way short of the investment to GDP ratio required to achieve the desired GDP growth rate specified in the Sixth Five Year Plan (2010-2015). The investment to GDP-ratio must be raised to 32.5 per cent to achieve the Government’s target to attain 8 per cent GDP growth by 2014/15, assuming an incremental capital-output ratio of around 4 (Ahmed, 2014). GDP growth can be easily achieved through growth in public investment by 15 per cent, among other factors, which expanded 8.5 per cent during the last 10 years (Hussain and Zutt, 2014). Further efforts are needed to encourage public and private investments and also to attract FDI to boost and maintain growth in income.

6.3.1 Public investment

Public investment is required to boost agricultural productivity and to promote growth in manufacturing and services. For this, the most important investments lie in improving transport, power and gas. Power and transportation networks are perhaps the greatest obstacles to sustained higher growth. Better infrastructure will lead to improved productivity, which will make exports more competitive and attract more foreign investment (Le Houérou, 2014).

Furthermore, the country’s tax-to-GDP ratio has to be increased to allow room for priority fiscal spending, particularly investment in power and transport sectors with higher social return (Sharif and Joliffe, 2014).
Will Bangladesh seize or squander the economic opportunity offered by the demographic dividend?

6.3.2 Private investment

In today’s economic climate, attracting private financing is essential, because there is simply no way that public funding alone can close the infrastructure gap” (Badré, 2014). A strong public investment programme is critical to any strategy to attract substantial resources from the private sector. Drawing in private resources and FDI is essential, as public funding alone cannot close the infrastructure gap. Infrastructure helps provide basic services for poor people and plays a key role in creating jobs and opportunities and facilitating access to markets (Le Houérou, 2014).

Some of the requisites for attracting private investment, including FDI are appropriate governance, pricing structure and a credible regulatory environment, streamlining foreign exchange regulations and government institutions that are more accountable to citizens (Badré, 2014 and Le Houérou, 2014).

6.3.3 Foreign direct investment (FDI)

Bangladesh’s scorecard on attracting FDI is still far from satisfactory, although some progress has been made. According to a recent publication of the United Nations Conference on Trade and Development (UNCTAD) on Bangladesh, “[s]o far, FDI attraction has been dismal even by the standards of least developed countries” (UNCTAD, 2013). Inward FDI flows in relation to population and ratio of GDP were consistently 80 per cent less than the average for all least developed countries and 50 per cent below the inflows to other populous low-income countries, such as India and Indonesia (UNCTAD, 2013). FDI inflows to Bangladesh increased steadily from a very low base of $2 million during the period 1986-90 to more than $300 million in the 1999 and to highest level of almost $1.6 billion in 2013. This compares with $7.4 billion in Viet Nam and $32.2 billion in India (UNCTAD, 2014; annex tables). FDI can bring in new technology and management know-how into the country, contributing to job creation and economic growth (Tasin, 2014).

The World Bank, International Finance Corporation and UNCTAD (2014) have identified several bottlenecks in efforts to attract private sector and foreign direct investment. The most important of them are: political instability, unreliable electricity, limited access to financing and land, a relatively low-skilled labour force, corruption, weak public governance, congested roads, poor transport access to remote areas and unfriendly market policies, such as too decentralized and complicated industrial policies and incoherent laws (World Bank, 2014a).
7. Conclusions

Bangladesh experienced its first stage of the demographic bonus during the period 1990-2000, when the share of the working-age population grew higher relative to the dependent population (0-14 + 65 years and over), creating opportunities for economic growth. Bangladesh has reaped some benefits from this opportunity. This is supported by an increased literacy rate and educational achievements for both males and females, a higher female labour force participation rate, increased savings at domestic and national level, rising GDP growth rate and a reduction of poverty.

This window of opportunity will be available for the next three decades (2015-2050), when the share of the working age population will continue to dominate the dependent population and population ageing would also be slower (see figure 12). During this period, Bangladesh has the potential to boost economic growth if appropriate policies are adopted and implemented. These policy initiatives should include, among other things, (i) promoting political stability; (ii) improving the quality of education, making education curricula more market-friendly and creating a pool of skilled labourers to meet market needs; (iii) seeking significant investments to improve infrastructure; (iv) ensuring greater accessibility of credit and land to establish manufacturing industries and factories to generate employment; (v) improving infrastructure, particularly uninterrupted power supply and improving road and transport accessibility to the remotest corner of the country; (vi) creating an environment for investment; (vii) attracting foreign direct investment; and (viii) good governance. Sustained economic growth and development cannot be achieved without good governance.

If such policies are not successfully implemented and not enough jobs are created to absorb the rising labour force, some warn that it may lead to a demographic catastrophe, particularly a “youth quake” or “tsunami” (Teitelbaum and Winter, 2014).
### Annex.

**Population by major age group: Bangladesh, 1951-2050**

<table>
<thead>
<tr>
<th>Age group</th>
<th>1951 (a)</th>
<th>1961 9a</th>
<th>1974 (a)</th>
<th>1981 (a)</th>
<th>1991 (b)</th>
<th>2001 (c)</th>
<th>2011 (d)</th>
<th>2020 (e)</th>
<th>2030 (e)</th>
<th>2040 (e)</th>
<th>2050 (e)</th>
</tr>
</thead>
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<td>45010</td>
<td>42250</td>
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<td>3395</td>
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<td>4880</td>
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<td>30.0</td>
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<td>48.8</td>
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Will Bangladesh seize or squander the economic opportunity offered by the demographic dividend?


Hussain, Z, and J. Zutt (2014). Done well, but can be better. Daily Star (Dhaka), 10 April.


Will Bangladesh seize or squander the economic opportunity offered by the demographic dividend?


Note from the Editorial Board

ESCAP would like to express its gratitude to the members of the former Editorial Board for their service and thoughtful inputs to the Asia-Pacific Population Journal to provide high-quality research on population issues on the Asia-Pacific region. ESCAP is now pleased to inform you that a new Editorial Board has been formed that will serve the Journal for the coming years.

The Editorial Board has decided to increase the number of thematic issues of the Asia-Pacific Population Journal and to expand the scope of the Journal to wider social policy issues. It is envisaged that specific thematic issues of the Journal will alternate with issues that cover a wide range of population topics. In addition to traditional population topics, such as fertility, mortality, morbidity and migration, the Editorial Board particularly encourages researchers to submit research papers on other areas, such as social protection, population ageing and labour markets. The Editorial Board encourages research covering all the Asia-Pacific region, and particularly research related to least developed, landlocked developing and small island developing States.

The Editorial Board of APPJ hopes to continuously provide high-quality, evidence-based and forward-looking articles on a wide range of population and development issues in Asia and the Pacific.
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Original contributions are invited, especially papers by authors from or familiar with the Asian and Pacific region. Ideally, such papers would discuss the policy and/or programme implications of population issues and solutions to problems, reporting on experiences from which others could benefit.

All material submitted for the consideration of the Editorial Board should be in the English language. Manuscripts should not exceed 6,000 words, including tables, figures, references and other material. Consideration will also be given to shorter technical and policy papers and notes on areas of specific policy interest and value. Manuscripts should include a short abstract (100-200 words) of the issues addressed and the most important policy-related findings. The manuscript should be prepared in one of the major word-processing programs and be double-spaced. The margins should be at least 3 cm (roughly 1 inch) wide, preferably more for the left-hand margin. If possible, please submit the manuscript as an e-mail attachment to the address given below. If e-mail attachment is not possible, send a hard copy (a single-sided print copy on A4-sized paper), together with an e-file of the text on CD-ROM.

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A brief introduction about the author(s), including title and affiliations, should also be submitted.

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Published since 1986 by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the Asia-Pacific Population Journal (APPJ) brings out high-quality, evidence-based and forward-looking articles on a wide range of population and development issues in Asia and the Pacific.

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By Minja Choe and Hyung-Seog Kim

Internal Migration in the Upper Mekong Delta, Viet Nam: What is the role of climate-related stressors?
By Kees van der Geest, Nguyen Viet Khoa, and Nguyen Cong Thao

Will Bangladesh seize or squander the economic opportunity offered by the Demographic Dividend?
By Rafiqul Huda Chaudhury