# The Age Structure Transition and the Demographic Dividend: An Opportunity for Rapid Economic Take-off in Sri Lanka

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**Abstract**

During the past few decades the total size and the age structure of the Sri Lankan population have been subjected to irreversible changes. This paper using population data is an attempt to identify the manner in which age structure transition affects the economic development in Sri Lanka. The age structure transition in Sri Lanka has produced a demographic dividend, ranging from year 1991 to 2017, which is conducive for an economic take-off. During this period, the proportion of the working age population, aged 15 - 59 years, is significantly larger than the proportion of the dependents. The dividend will not last long since the elderly dependency is increasing rapidly. Therefore, this is an opportunity that needs to be used immediately. If this opportunity is missed out, the policy makers will have to address the consequences of demographic turbulence - an increasing dependency, which would depress the economic development. Mere existence of the dividend would be ineffective without a proper environment for economic acceleration. Nevertheless, in a congenial environment of political stability, adequate savings, investment potential, human capital, productivity and the knowledge economy, the optimum utilization of the dividend to gain economic acceleration would materialize.

**Keywords:** Age Structure Transition - Demographic Dividend - Dependency - Economic Development

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## Introduction

The middle of the last century witnessed the phenomena that the countries in Asia are undergoing a rapid demographic transition, which had already been completed in a number of countries while in the remaining states, is still underway (Gubhaju & Moriki-Durand, 2003). For any country in the developing region including Sri Lanka, it is particularly important to elucidate the causative factors of growth and the composition of population and the consequent changes in the age structures of the current and future populations. The age structure transition in any country, after lapse of a specific period of transitional process, will approach a demographic dividend phase and during that time the country will have a high ratio of population in the working ages, in relation to the dependent age categories - the aged and the children (Seetharam, 2002). This period is recognized as the' window of opportunity' suitable for an economic take-off, provided that the other factors such as political stability, adequate savings and investment, human capital and the knowledge economy, required for development are in place (Pool, 2000; Mason, 2005).

In this paper demographic, economic and social consequences of such age structural changes in Sri Lanka are examined, with special reference to the transitional age segments. Emerging population issues of Sri Lanka in the new millennium, such as recent increases in fertility levels, ageing and disability which could diminish the intensity of the demographic dividend are also highlighted in the paper.

## Population Growth in the Past

Sri Lanka's population had grown almost eight times since the first national census of 1871, which counted a population of 2.4 million and had increased to 20 million people in 2010. The first doubling of the population occurred in 1925 after 54 years from 1871, and a second doubling in 1960 after another 35 years from 1925 (United Nations, 1976). The second doubling, occurring within a short period, was the result of a relatively high rate of population growth. Demographic estimates of Sri Lankan population show that the size of the population reached 19.2 million in the year 2003, indicating that a third doubling had occurred in 43 years (Table 1). The population of 18.7 million enumerated at the latest census of population in 2001 was nearly twice the population of 9.6 million in 1960.

*Table 1: Population Growth and Density in Sri Lanka: 1871-2003*

| Year | Population ('000) | Average Annual Growth Rate (%) | Density (Per sq km.) |
|---|---|---|---|
| 1871 → 2.4 million | 2,400 | - | 37 |
| 1881 | 2,760 | 1.4 | 43 |
| 1891 | 3,008 | 0.9 | 47 |
| 1901 (Doubled by 54 years) | 3,566 | 0.7 | 55 |
| 1911 | 4,106 | 1.4 | 63 |
| 1921 | 4,498 | 0.9 | 70 |
| 1925 → 4.8 million | | | |
| 1931 | 5,307 | 1.7 | 82 |
| 1946 (Doubled by 35 years) | 6,657 | 1.5 | 103 |
| 1953 | 8,098 | 2.8 | 125 |
| 1960 → 9.6 million | | | |
| 1963 | 10,582 | 2.7 | 165 |
| 1971 (Doubled by 43 years) | 12,690 | 2.2 | 196 |
| 1981 | 14,847 | 1.7 | 230 |
| 2001 | 18,735 | 1.2 | 300 |
| 2003 → 19.2 million | 19,252 | - | 307 |

*Note: Except 1925, 1960 and 2003, Rest are Census Years.*
*Source: Department of Census and Statistics, Statistical Abstracts & Census Reports.*

The growth of the Sri Lankan population during the present century has not been uniform. Until 1946 the average annual inter-census rate of growth never exceeded 2 per cent (Table 1). The post-war years reveal a sudden spurt in the growth rate which had increased to 2.8 per cent in 1946 - 53 periods, and remained stagnant at the higher level during 1953 - 63. The mortality rate had decreased during the period, causing the population to grow rapidly (United Nations, 1976). As a reaction to the latent problems caused by such rapid growth, the government since late 1950, initiated policies and programmes to reduce fertility. As a consequence, after 1963, a clear decline in the rate of growth of population was discernible, and at present it stands at about 1 per cent. The effective causes

which triggered off a decline in the rate of growth of population were the fertility decline among all fecund age groups of women and an increase in emigration, especially to the Middle Eastern and developed countries. Although the present rate of population growth is low, Sri Lanka still adds more than 250,000 people to its population annually.

The country, covering a land area of 65,610 square kilometres, ranks as one of the most densely populated countries in the Asian region. It is estimated that there will be a little more than 300 persons per square kilometre by the turn of the present century (Table 1). As in many other countries, the population of Sri Lanka is not evenly distributed. Some parts within the country are very densely populated while other regions are less populous. As noted in the last population census of 2001, about 57 per cent of the population was located in the Wet Zone which constitutes only about 21 per cent of the total land area of the country. Colombo, the smallest of the 25 districts in Sri Lanka, has a population density which is about 11 times the national average. A demographic trend, particularly the growing size of the population and its uneven distribution, has made a strong influence on the natural resource base of the country and there had been many efforts aimed at achieving sustainable development and balanced growth.

Current trends in urbanization show that the development in the country is largely concentric to the Western Province. The internal migration patterns of the country, indicate that a bulk of the net addition would be concentrated in-and-around the Western Province of the country. Further increase of population concentration in the Western Province would aggravate the already degenerated urban population problems and consequences, particularly in the unplanned urban environments.



**Components of Population Change – Fertility Mortality and Migration**

Fertility decline commenced in Sri Lanka in the 1960's was largely due to the population planning drives of the government of Sri Lanka and to other socio economic transitions that had taken place (Dangalle, 1989). By 1994, the Total Fertility Rate (TFR) of the country reached the replacement level of 2.1 live births on the average for women aged 15 - 49 years. Nevertheless, the latest SLDHS Survey

of 2006 - 07 showed that the fertility level of Sri Lanka is increasing again and is at par currently with the fertility level of 1991 (Department of Census and Statistics - Sri Lanka, 2009). A slight decline in the age at marriage, marked declines in the use of terminal contraception and the decreased trend in reliance on abortion as a family planning method specially by married women may be the key causes of recent increases in the levels of fertility (De Silva, 1994; 2010).

Dramatic declines in mortality is another important issue in demographic transition process, which had been experienced by Sri Lanka in the post World War II period. The longevity of life of males and particularly that of females increased. The estimated life expectancy of males and females, using 2000 - 2002 data, show that life expectancy of males to be around 68 years and that of females to be around 77 years (De Silva, 2008). Virtual eradication of Malaria, expansion of health services and female education, better distribution of food supplies and general improvements of the economy of the country have caused a steady decline in the levels of mortality.

In countries with smaller populations, migration may also emerge as an important determinant of the population size. Hence, in such countries migration may be an important factor to manipulate the aspired population change. The stock of the foreign labour migrants working in the Middle East and elsewhere estimated to be about 1.8 million. There is also a component of undocumented (irregular) migration which is largely in search of employment in foreign labour markets. At present over 260,000 persons leave Sri Lanka annually, for foreign employment, largely to Middle Eastern countries to work as contract employees (Sri Lanka Bureau of Foreign Employment, 2010). Of them, nearly one half is females in prime reproductive age groups. Migration patterns have largely affected the size of the working age population and the relative size of the dependent elderly population.

The increase in migration for foreign employment has not only eased the unemployment problem in the local labour market, but also has contributed to reduce poverty and enhance national savings (Colombage, 2010). However migration of the high skill manpower has affected the labour productivity and development of Sri Lanka negatively.

## Future Population of Sri Lanka

As a prerequisite of planning for the new millennium, an in-depth analysis of the contributory factors of growth patterns of the future population of Sri Lanka and the characteristics of related socio-economic life is important. The population size, composition and distribution at any given point in time would determine the demand and supply of the socio-political commodities and services needed by the community. Population projections in this context play two distinctive roles in development planning and policy formulation. Firstly, estimates of future population are taken into consideration when setting various economic and social planning targets to cater to social demands. Secondly, the consideration of the size of the probable future population may have implications for the desirable future pattern and the rate of growth. Nonetheless, prediction of the future course of all the determinants of growth of the population may not be a possibility. Indeed, the expectation that the population change can, in itself, be achieved entirely by the policies and programmes of the planning process is not realistic. Yet, population projections can be used to estimate the likely impact and implications of the planning decisions and policy changes on the aspired demographic change. Hence the role of a demographer is not only to incorporate opinion on future birth and death rates, but also to influence the growth path of these events (Romanic, 1990).

## Assumptions for Components of Population Change

Fertility, mortality and migration are the three components of population growth of any given country. Different sets of assumptions have to be formulated for Sri Lanka to forecast the future course of these three components[1]. To examine the extent to which population policies may themselves influence and change the existing population trajectories is relevant in this regard. Various possibilities for population changes under several assumptions, including the choice of population policy methods have to be examined. In this connection, the past and current rates of fertility, mortality and international

1 The cohort component method, which involves a sequence of computations that are repeated for successive five-year time intervals, is used for projecting the future trends of the Sri Lankan population. These computations are based on assumptions on future demographic conditions to update the age and sex structure of the population, and to derive various indicators of the population size, structure and changes.

migration need to be considered. The standard population projection used in the following analysis is a simple combination of the standard assumptions on fertility, mortality and international migration taking age and sex structure of the 2001 Census of population Sri Lanka, as the base year.

## Size and Growth

Sri Lanka's total population will continue to rise in the foreseeable future, and it would be stable for some time and thereafter, a declining trend could occur (De Silva, 2007). According to the standard projection, the population of Sri Lanka would reach 20.5 million by 2011, and 21.6 million by 2021, however, beyond 2046 the size of the population would decline significantly (Table 2).

During the period 2021 to 2031, the total population would be between 21.6 and 21.9 million, while maintaining a fairly stable numerical size. The standard population projection indicates that in the year 2031 the population size of Sri Lanka would reach its peak, by attaining the highest mark of 21.9 million persons (Table 2)

The absolute size of the Sri Lankan population will increase only up to 2031, while the rate of growth decreases gradually throughout the projection period, (Table 2). During this phase of the transition, the population growth rate stabilizes at a very low, near zero level, when the crude birth rate equates the crude death rate and subsequently the growth rate as well as the absolute population numbers decrease minimally.

## Main Features of the Future Population

The age and sex structure of a population is a significant parameter that influences current and future determinants of growth, namely fertility, mortality and migration. There are various methods to analyse the gender and age group specific structural composition of a population, although only a few selected methods have been utilized for the following analysis.

*Table 2: Enumerated and Projected Population 1981 - 2071 (Standard Projection)*

| Year | Population ('000) | Growth Rate (%) |
|---|---|---|
| 1981* | 14,847 | - |
| 2001* | 18,734 | 1.40 |
| 2006 | 19,720 | 1.03 |
| 2011 | 20,558 | 0.83 |
| 2016 | 21,186 | 0.60 |
| 2021 | 21,580 | 0.37 |
| 2026 | 21,804 | 0.21 |
| 2031 | 21,883 | 0.07 |
| 2036 | 21,841 | -0.04 |
| 2041 | 21,712 | -0.12 |
| 2046 | 21,465 | -0.23 |
| 2051 | 21,104 | -0.34 |
| 2056 | 20,656 | -0.43 |
| 2061 | 20,145 | -0.50 |
| 2066 | 19,590 | -0.56 |
| 2071 | 19,030 | -0.58 |

*Note: * Enumerated Population at the Census of Population 1981 and 2001*
*Source: Compiled by the Author*



## Gender Balance

Sri Lanka, though located in the South Asian region, had not adhered to the common South Asian model. Of the total population of 18,734 thousand enumerated in 2001, the sex ratio was estimated to be 97.9 (Table 3). In 2001, for every 100 females in Sri Lanka, there were only 98 males whereas in 1981 there were 104 males, which clearly indicates, that, the sex ratio largely favoured males at that time.

*Table 3: Enumerated and Projected Population by Sex 1981 - 2071*

| Year | Male ('000) | Female ('000) | Sex Ratio (Males per 100 Females) |
|---|---|---|---|
| 1981* | 7,568.2 | 7,279.1 | 104.0 |
| 2001* | 9,268.1 | 9,466.2 | 97.9 |
| 2006 | 9,719.8 | 9,999.8 | 97.2 |
| 2011 | 10,099.0 | 10,458.8 | 96.6 |
| 2016 | 10,373.0 | 10,812.5 | 95.9 |
| 2021 | 10,538.5 | 11,041.4 | 95.4 |
| 2026 | 10,617.7 | 11,186.1 | 94.9 |
| 2031 | 10,629.0 | 11,253.5 | 94.4 |
| 2036 | 10,585.7 | 11,255.4 | 94.1 |
| 2041 | 10,502.4 | 11,209.9 | 93.7 |
| 2046 | 10,366.5 | 11,098.9 | 93.4 |
| 2051 | 10,176.1 | 10,928.0 | 93.1 |
| 2056 | 9,943.4 | 10,712.3 | 92.8 |
| 2061 | 9,686.3 | 10,458.6 | 92.6 |
| 2066 | 9,411.9 | 10,178.3 | 92.5 |
| 2071 | 9,140.1 | 9,889.5 | 92.4 |

*Note: * Enumerated Population at the Census of Population 1981 and 2001*

*Source: Compiled by the Author*

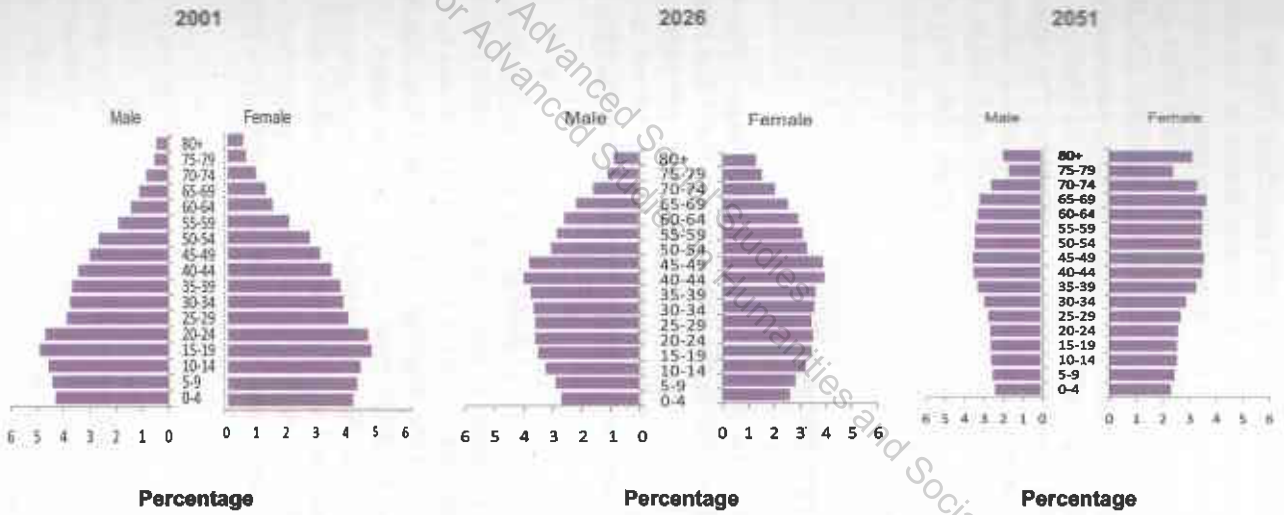
During the 1990s, more females have been identified in the Sri Lankan population and in the coming decades the female favoured sex ratio is expected to increase further, primarily due to the greater improvement in female life expectancy relative to that of male. For instance, as the standard projection highlights, when the Sri Lankan population reaches its peak in 2031, the sex ratio would be 94.4 males per 100 females, and by 2071 it would be further reduced to a level of 92.4 males per 100 females.

## Age and Sex Structure

The age and sex composition of populations (either in absolute numbers or proportions), when plotted graphically, will produce an age pyramid. The base of a pyramid indicates the segment of population in the youngest ages while the top indicates the oldest ages. The proportions of people in the various age and sex categories are subject to change because of the continuous action of population growth components, namely mortality, fertility and migration. The pyramid is an illustration of the biological history of a population, the results of 100 years of births, deaths and migration (Seetharam, 2006).

Sri Lanka's population will undergo major changes in its age structure in the coming decades. The population age structures of 2001, 2026 and 2051 (Figure 1) clearly indicate the impact of the rapid decline in fertility and the improvement in life expectancy. The age and sex structure of the population pyramid for the year 2001, demonstrates the effect of continuous changes occurred in various age and sex categories, due to changes in the population growth components during a time span of 50 years. A number of important characteristics are visible. Firstly, the fact that the fertility levels had been reduced significantly. This pattern is evident from the population pyramid which has a relatively smaller base with respect to children of less than 4 years, compared to advanced age groups. Secondly, the proportion of children aged between below 5 to 14 years is higher than the elderly population aged abpve 60 years. Thirdly, the proportion of working age population aged 15 - 59 years is significantly higher than the combined proportionate magnitude of children and the elderly (Figure 1).

*Figure 1: Projected Change in Age - Sex Structure of the Population 2001 - 2026 - 2051*




*Source : Department of Censs & Statistics; Compiled by the Author*

The projected age-sex structure for 2051 indicates a significant deviation from the 2001 structure (Figure 1). By the mid of the present century the pyramidal shape of the structure would disappear greatly and a high dependency pattern is expected with its largest component in the older ages. Among the older age groups the proportion of females would be significantly higher than that of males. The age and sex structure of 2051 demonstrates the completion of the demographic transition, thus the structure changed significantly from a pyramid shape to that of a barrel shape. The observed pattern of the demographic transition is likely to continue up to years 2026 and 2051(Figure 1). By 2051 the elderly population will reach a significantly large proportion and the female proportion of the 80 year population segment would be about twice that of the corresponding male proportion.

**Population by Broad Age Groups**

It should be noted that, the children of less than 15 years are the most susceptible to the assumptions that have been utilized in all three projection scenarios. Their numbers will depend on the key determinants affecting the changes in fertility, namely the changes in the number of women in reproductive ages and changes in infant and child mortality.

The projected numerical size and percentage of children of less than 15 years of age (Table 4). The child population of 4.9 million enumerated in 2001 is expected to decrease to 4.7 million by 2011. Because of the declines in fertility and also due to continuing out migration, by 2031 their number will be about 3.5 million. As fertility virtually remains at a stable level, the numerical size of the child population will stabilize at 3.5 to 3.2 million during the period 2031 to 2041. Beyond that phase, the child population will continue to decline and would reach 2.8 million persons by the latter part of the 21st century.

*Table 4 : Distribution of Population by Three Broad Age Groups 1981 - 2071*

| Year | Children <15 Years | | Working Ages 15 - 59 Years | | Elderly 60+ Years | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % |
| 1981* | 5,236.4 | 35.3 | 8,625.2 | 58.1 | 985.1 | 6.6 |
| 2001* | 4,922.4 | 26.3 | 12,080.5 | 64.5 | 1,731.4 | 9.2 |
| 2006 | 4,807.4 | 24.4 | 12,836.7 | 65.1 | 2,075.7 | 10.5 |
| 2011 | 4,692.4 | 22.8 | 13,294.8 | 64.7 | 2,570.4 | 12.5 |
| 2016 | 4,523.6 | 21.4 | 13,591.9 | 64.2 | 3,070.2 | 14.5 |
| 2021 | 4,196.1 | 19.4 | 13,778.8 | 63.8 | 3,605.1 | 16.7 |
| 2026 | 3,825.3 | 17.5 | 13,863.2 | 63.6 | 4,115.0 | 18.9 |
| 2031 | 3,520.3 | 16.1 | 13,826.2 | 63.2 | 4,536.1 | 20.7 |
| 2036 | 3,363.2 | 15.4 | 13,589.3 | 62.3 | 4,888.8 | 22.4 |
| 2041 | 3,299.0 | 15.2 | 13,026.7 | 60.0 | 5,386.7 | 24.8 |
| 2046 | 3,244.7 | 15.1 | 12,389.5 | 57.7 | 5,831.2 | 27.2 |
| 2051 | 3,149.3 | 14.9 | 11,874.0 | 56.2 | 6,080.6 | 28.8 |
| 2056 | 3,018.3 | 14.6 | 11,401.3 | 55.2 | 6,236.1 | 30.2 |
| 2061 | 2,902.9 | 14.4 | 10,939.5 | 54.3 | 6,301.7 | 31.3 |
| 2066 | 2,839.0 | 14.5 | 10,415.9 | 53.2 | 6,335.3 | 32.3 |
| 2071 | 2,807.2 | 14.8 | 9,893.2 | 52.0 | 6,329.1 | 33.3 |

*Note* : * *Enumerated population at the Census of Population 1981 and 2001*

*Source* : *Compiled by the Author*

The proportion of child population aged less than 15 years was about 26.3 per cent at the commencement of the projection in 2001 and is expected to decline steadily over the projection period (Table 4). The proportion will decrease to 16.1 and 14.8 per cent in 2031 and in 2071 respectively. The increase in the life expectancy, particularly among the elderly groups, hides the effect generated from the recent increase in fertility which will cause the percentage of child population to remain stable. More than 35 per cent of the Sri Lankan population in 1981 were identified to be children, which indicated a

key feature of a "young population" (Table 4). The relative magnitude of the proportion of children declined almost by 10 percentage points in 2001, and at 2006 children of less than 15 years comprised about one-quarter of the population.

The older population who are 60 years and beyond is expected to change significantly. Approximately one million elderly were identified in 1981 (Table 4), comprising only 6.6 per cent of the total population. The numerical size and the proportion of elderly had increased gradually during the past many decades. The elderly population of 1.7 million enumerated in 2001 is expected to increase to 3.6 million by 2021, showing that the elderly population will be doubled during the 20-year period.

Consequent to the declining trend in fertility and mortality in the coming years, the projected number of elderly will be 4.5 million in 2031, and that number will increase to 6.3 million elderly in 2061 (Table 4). The proportionate increase of elderly to the total population shows a strong linear pattern. The elderly population who comprise 9.2 per cent of the total population in 2001 will increase to 16.7 per cent by 2021. By 2041, one out of every four persons in Sri Lanka is expected to be an elderly person. As a consequence of the effect of the demographic transition occurring in Sri Lanka, during the latter part of the 21st century about one-third of the population would be elderly (Table 4).

Although ageing of the Sri Lankan population continues, even at 2021 the proportion of children in the population would not be out-numbered by the elderly (Table 4). Between 2021 and 2026 the afore-mentioned pattern would change in the opposite direction. As projected, in 2024 the child percentage and the elderly percentage in the Sri Lankan population would approximately equilibrate at 18 per cent in 2024. However, beyond 2024 the percentage of elderly will increase significantly and the percentage difference between the elderly and the children populations will be widened in favour of elderly.

In contrast to the child population, the working age population between 15 and 59 years of age will continue to increase numerically until 2026 and show a decline thereafter (Table 4). The working age population amounting to 8.6 million in 1981 increased to 12.1

million by 2001 and comprised 64 per cent of the total population. In 2006 it increased to 12.8 millions, constituting 65 per cent of the total population and had reached the peak, when compared to the percentage share of the working segment of the population of the latter periods, computed for the entire 21st century. Beyond 2006 the percentage share of this segment of the population declines gradually and will reach 63.2 per cent in 2031 and 52.0 per cent by 2071. Nevertheless, the share of the working age population had increased, when compared to the share of the child population in the total population which had started to decline as early as 1980's or even earlier.

The age structure transition in Sri Lanka is primarily the effect of past trends in fertility and mortality decline and the assumptions adopted for the future population growth patterns. The demographic transition experienced in Sri Lanka has not been uniform, although the current phase of changes indicate that the Sri Lankan demographic environment is conducive for rapid economic development, given the condition that necessary socio-economic polices are in place to achieve the maximum benefit of the situation.

## The Dependency Burden

Changes in the different components in the age structure have major implications for the country's socio-economic and development activities. Thus, the economic effect of the changes in the functional age groups, namely children aged less than 14 years, adults of working aged between 15 - 59 years and the elderly aged above 60 years can be presented by a summary measure known as the dependency ratio. The dependency ratio is defined as the number of dependents to every hundred persons between 15 and 59 years of age. The age structure changes of a population determine the change in the level of demographic dependency. Three dependency ratios, comprising the child dependency, old age dependency and, the sum of these two fractions known as the total dependency (Table 5).

*Table 5 : Dependency Ratio 1981 - 2071*

| Year | Child Dependency <15 Years | Old Age Dependency 60+ Years | Total Dependency |
|---|---|---|---|
| 1981* | 60.7 | 11.4 | 72.1 |
| 2001* | 40.7 | 14.3 | 55.0 |
| 2006 | 37.4 | 16.2 | 53.6 |
| 2011 | 35.3 | 19.3 | 54.6 |
| 2016 | 33.3 | 22.6 | 55.9 |
| 2021 | 30.4 | 26.2 | 56.6 |
| 2026 | 27.6 | 29.7 | 57.3 |
| 2031 | 25.5 | 32.8 | 58.3 |
| 2036 | 24.7 | 36.0 | 60.7 |
| 2041 | 25.3 | 41.4 | 66.7 |
| 2046 | 26.2 | 47.1 | 73.3 |
| 2051 | 26.5 | 51.2 | 77.7 |
| 2056 | 26.5 | 54.7 | 81.2 |
| 2061 | 26.5 | 57.6 | 84.1 |
| 2066 | 27.3 | 60.8 | 88.1 |
| 2071 | 28.4 | 64.0 | 92.4 |

*Source: Compiled by the Author*

At the beginning of the projection interval in 2001, the total dependency ratio was 55.0 dependent persons for every 100 working age persons of whom 41 persons were child dependents and 14 were old age dependents (Table 5). During the projection horizon child dependency will decrease to 24.7 per cent by 2036, while the old age dependency will increase at the faster rate of 36 elderly for every 100 working age persons. The projected changes in these two segments of dependency in Sri Lankan population will cause a reduction in the total dependency ratio from 55.0 in 2001 to its lowest of 53.6 dependent persons in 2006. Thereafter, the overall dependency will increase to 55.9 dependents by the year 2016 and to 58.3 by the year 2031. As a result of the rapid increase in old age dependency, which out-paces the decline in young age dependency, the projected overall dependency will increase significantly after 2041.

These dependency ratios imply that there is likelihood that the age structure changes in the immediate future would have a favourable impact on the economy of Sri Lanka. In the five-year period commencing from 2006, the Sri Lankan population would have the best demographic environment or the "window of opportunity" that is conducive for rapid economic development. However, by 2011 the dependency ratio would increase to the level of 55 per cent which prevailed in 2001. The low dependency ratio observed in contemporary Sri Lanka is a result of the past demographic trends. This is an opportunity that needs to be utilized immediately.

## Demographic Dividend

Age structural transition is a process and a consequence of shifting age structure from a young aged population to an old aged population. Each country would undergo a period comprising of a "window of opportunity" or a "demographic dividend" during the age structure transition. The demographic dividend is the potentially accruable gain by the society during the period of demographic transition in which there is a high ratio of individuals in the working age, in relation to the old and young segments in the dependent age categories (children & elders).

In almost all countries in Southeast Asia, the demographic dividend had a positive impact on economic growth. The general observation about these countries is that the period offering a demographic dividend or a window of opportunity was parallel with a phase of accelerated economic growth (Bloom & Williamson, 1998).

Each single country of the newly industrialized countries such as the Republic of Korea, Singapore, Hong Kong and Taiwan had effectively utilized the window of opportunity offered by the best demographic environment. In each of these countries, the rapid economic take-off had taken place when the dependency burden was the least - the highest proportion of the population was in the working ages (Bloom et al., 2003). However the demographic dividend will slowly disappear from these countries in the near future and the period of demographic turbulence will commence with the onset of rapid ageing process.

With the onset of demographic turbulence, population and labour supply will begin to decline and the dependency burden will

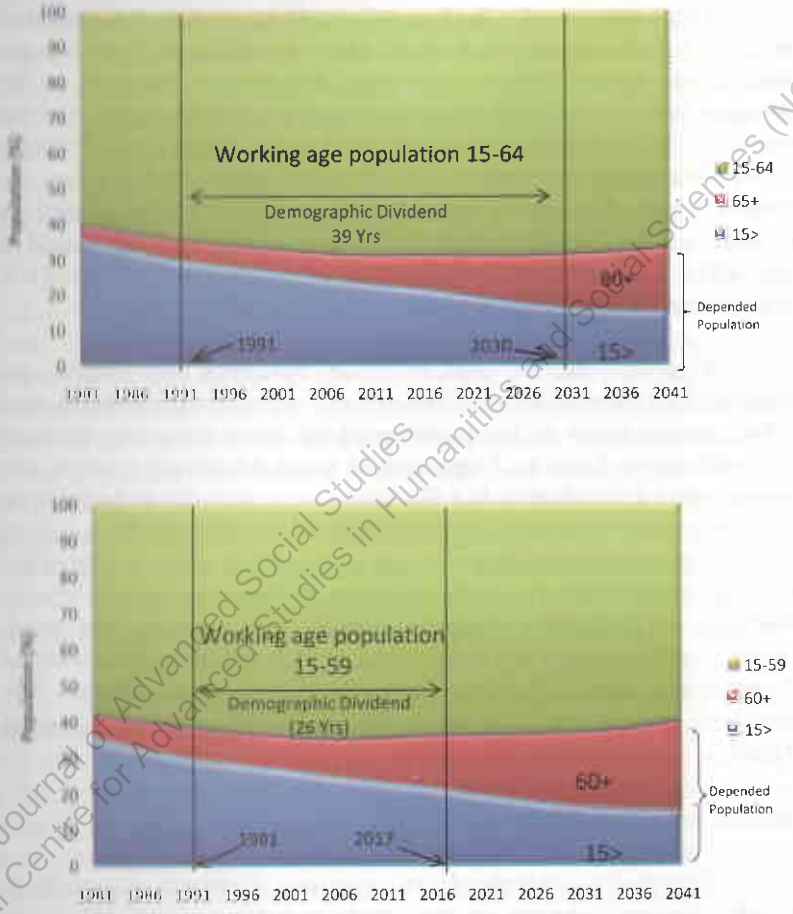
increase significantly. This scenario is presently observed in Japan as the dividend has disappeared now. Japan presently is experiencing a decline in its population and labour force and this trend will be aggravated by the closed door immigration policy (Bongaarts, 2004).

The United Nations Population Department (UNDP) defines the period of demographic dividend as a transitional time, interval when the proportion of children and youth under 15 years fall below 30 per cent of the population and the proportion of people 65 years and older below 15 per cent (Bloom et al., 2003). In Sri Lanka the labour force participation rates among the elderly in the 60 years and above age category are significantly lower than their younger counterparts. Also in Sri Lanka, as in many developing countries, policy makers and researchers usually have defined the elderly as persons of 60 years and above age category. This could also be partly related to the mandatory retirement age of 60 years in the state sector. Most of the workers in the private sector also get the retirement papers at the same age (De Silva & Senarath, 2009).

The UN definition of dependents, including children less than 15 years and adults above 65 years. Alternatively, this paper broadended the category of deoendents to include adults above 60 years. Accordingly, Sri Lanka could experience a favourable demographic dividend.

The proportion of children aged less than 15 years in 1981 was as high as 35 per cent of the total population. Any country with child population of 35 per cent or above considered being a young population. However with the rapid decline in fertility, the country's child population was only 29.5 per cent in 1991 while in the same year 65 years and older population was 4.3 per cent only (Top diagram of Figure 2). The population projections show that, in Sri Lanka, by year 2030, the proportion of population 65 years and older would increase to over 15 per cent of the total population. Thus according to the UN definition, the onset of demographic dividend was in 1991 which will disappear by 2030, having prevailed for a period of 39 years.

**Figure 2: Age Structure Transition and Prevalence of Demographic Dividend (Bonus)**




*Source : Department of Census & Statistics, Compiled by the Author*

The prevalence of the demographic dividend, according to the alternative definition is presented in the second diagram (Figure 2). Even though there is no difference in the year in which onset of the dividend had occurred, there is a significant deviation at the end point, when the elderly is considered as 60 + years. The dividend is expected to last only up to 2017, the year in which the proportion of

elderly will increase above 15 per cent level. Thus the dividend will prevail for about 26 years from its onset in 1991.

Once we consider the two definitions separately, the period of prevalence of demographic dividend varies significantly. Even though according to United Nations definition, the dividend prevails in Sri Lanka up to the year 2030, the best part of it will fade away after the year 2017. Thus, the remaining part of the best demographic dividend in Sri Lanka will remain only for a short period of around five years. By observing both diagrams (Figure 2), it is evident that Sri Lanka had experienced the lowest proportion of dependents during the period of 2006-2011. Therefore the remaining period of the dividend would not be attractive as the period that we have already missed.

Undoubtedly, the age structure dynamics are one of the important factors of economic growth, but the magnitude and direction of the effects seem to be conditioned by socio-economic policies and institutional factors. If appropriate socio-economic policies are implemented immediately, the Sri Lanka economy could be lifted to a higher growth trajectory, so as to sustain the benefits for a longer period. Significant improvements are expected on many areas of the socio-economic arena in order to utilize this window of opportunity effectively. In a situation where the expected improvements in socio-economic environment are not introduced, the existence of a window of opportunity alone will not be adequate for economic take-off, thus along with a rapid ageing process, Sri Lanka will enter in to a period of demographic turbulence.

## Factors Required for Take-off

During the period of demographic dividend, expenditure for education and health is expected to decline significantly due to decline in the proportion of children in the society. Therefore economic progress will be a great possibility during the period of demographic dividend if favourable policies are formulated and implemented successfully. The conclusions of the 1998 Symposium on Population and Economic Development held in Italy characterise the demographic dividend as **(a)** more workers producing more total output, if they are productively employed; **(b)** greater accumulation of wealth, if savings are moblized and are productively invested and **(c)** a large supply of human capital, if appropriate investments are made in its formation (Birdsall & Sinding, 1998).

The mere existence of a favourable demographic dividend would be ineffective without a proper environment for economic acceleration. An increasing working age population seeking gainful employment, but with no proper job opportunities will be a dilemma for a country. Nevertheless in a congenial environment of political stability, adequate savings, investment potential, human capital and the knowledge economy, the optimum utilization of the demographic dividend to gain economic acceleration would materialize.

**Political Stability**

South East Asia's newly industrialized nations such as Singapore, Taiwan, South Korea and Hong Kong, also known as the "Asian Tigers" though currently politically stable and have strong governments, had faced severe internal problems in the past (Owen, 2004). Careful analysis of the socio-political and economic environment of Asian Tiger countries reveals that these nations had overcome the internal political problems and had established strong governments with visions for economic development, with set goals, objectives and plans for accelerated economic growth (Deshpande et al., 2004). These governments maintained effective governance and law and order. The people were motivated by these strategies and cooperated with the political leadership and the government.

After thirty years of civil strife, Sri Lanka has gained political stability again. At least two thirds of the electoral seats have been won over by the political party in power which reflects the stability of the government. The government, in its long term plans, has declared its vision, set goals and targeted programmes and plans for development. This presents an opportunity to harvest the remaining period of demographic dividend, and become better prepared for the upcoming period of gradually increasing dependency rates.

The present calmness in the political arena is an ideal opportunity to attract foreign capital investments for development since adequate opportunities have been created for such capital investment. In addition to the traditional emphasis on welfare expenditures in Sri Lanka, huge construction projects such as construction of harbours, air ports, and super highways have been undertaken to develop infrastructure, and to expand communication and telecommunication networks. Due to such investments, the opportunities as well as the potential for the employment of human

capital will be high (Central Bank of Sri Lanka, 2010).

**Domestic Savings in Relation to Age Structural Changes**

The question as to how the population magnitude and growth would affect the economic growth of a country had been an area of contention and debate among the demographers and the economists. On matters pertaining to economic development, some economists tend to concentrate only on population growth ignoring the changing age distribution within the population (Lee et al., 1997). These changes are arguably important as the populations expand.

The stages of life cycle entail that at different stages of life, the economic behaviour and the needs of the people vary and the responses of the economy to such needs also vary. The Children less than 15 years of age require substantial investment on health and education. The elderly require additional health and care services. These changing needs relative to the life cycle stages affect the recurrent and capital expenditure behaviour of the Government economy and the country's economic preferences. According to the Dependency Rate Hypothesis proposed by Leff (1969) as the dependency rate increases, the working age population has a heavier family consumption burden, which decreases the family savings rate and the physical capital accumulation.

The working age group of the population bears the responsibility for supporting the age groups who are in the dependent categories. Changes in the number of dependents may affect negatively or positively the heaviness of the economic burden of that group. Since the total dependency ratio is the sum of old and young age dependency ratios, even when the old age dependency ratio is increased, the economic burden of the working age group may yet decrease to the extent of decreases in the young age dependency.

The demographic transitional experience is a situation that the numerical size of the young and the aged in the population increases while the share of the working age group and labour supply decreases. In such circumstances, the family consumption burden of the working age population would be heavier. It is rational to assume that in such a family environment, the elderly group may consume their lifetime savings which they accumulated during their working period of their life. This consumption syndrome based on the life

cycle pattern of wants and needs entailsthat the savings rate of the earning individual as well as the family, would decrease which in turn, would reduce the physical capital formation of the economy.

Up to the last decade of the 20th Century, increasingly high dependency burden of the working age population had been a critical feature which hampered the savings habit of the family unit. The total dependency ratio of the population in 2001 was 55 for every 100 persons in the working ages, of whom, 41 were young dependents and 14 old aged dependents (Table 5). In 1981 the ratio had been 72 persons, which confirms that the dependency load had been even higher previously. High dependence had been a continuous obstacle for the economic growth of the country. Nevertheless with the commencement of the demographic dividend period, the dependency ratio had declined by 2006, reporting 54 dependents for every 100 in the working ages. The ratio increased again to 55 dependents in 2011 and then a continuous increase throughout the entire projection period is shown (Table 5). The increase in the total dependency ratio is entirely due to the increase in the old age dependency. The demographic transition process causes aging in a country which in turn will increase the old aged dependency (De Silva & Senarath, 2009). By the year 2031, for every four persons in the population there would be an old aged dependent person thus the ratio can be presented as 4:1 and higher will be the dependency burden (World Bank, 2008).

In a situation of a demographic dividend in a country, when the child & old age dependency is at a minimum level, the level of savings will increase. The thirty years long internal war with the Liberation Tigers of Tamil Eelam (LTTE) in Sri Lanka, denied the opportunity of maintaining the domestic savings at a high level. Military requirements of the war compelled the government to spend large amounts of money for those purposes. Non existence of a long term economic policy for the nation was another critical factor which caused savings to decline. These prevailing conditions hampered the government in its optimum utilization efforts of the demographic dividend to gain economic prosperity (De Silva, 2007).

At present an unexpected demographic challenge is discernible. In addition to the increasing proportions in the 'old age dependents' segment of the population, a sudden spurt in the level of fertility which would eventually lead to an increase in the child

dependency is indicated. In such circumstances, the demographic dividend accruable to the economy is liable to fade away causing an adverse effect on the economy. The expected domestic savings may not increase and the expected economic growth may not materialize. Along with other economic development policy considerations, the population ageing phenomena should be a major policy consideration in Sri Lanka and the relevant strategies and action plans need to be implemented.

**Investment of Domestic Savings and Transitional Changes**

The hypothesised close association between savings and investments is that, any increases in savings will contribute towards further investments in a country. During a demographic dividend period it may be anticipated that a similar relationship between savings and investments would exist. Nevertheless an abrupt increase in fertility during such a period will lead to a decline in savings. Similarly when the population is aging there would be a tendency for investments to decline.

The life cycle hypothesis of consumption contends that an individual may plan a pattern of consumption expenditure, based on the expected income of his entire life time (Ando & Modigliani, 1963). The presumption in this instance is that a person in his early years of life spends and consumes either by borrowing from others or spending the assets owned from his parents. In his working years he consumes less than the income, thus makes net positive savings. He invests savings on assets as accumulation of wealth, in order to consume in the latter part of the life cycle. During the time of retirement he again uses his savings as he consumes more than his income in later years of life. These assumptions of life cycle hypothesis would not be fully valid if he wishers to leave some assets or wealth for his children.

A continuous increase in the number of pensioners during the period 1992 - 2010 is indicated in Table 6. The commitment of the government to allocate an increased amount of funds annually to pay pensions is evident. The aged population who are not beneficiaries of a pension fund would normally depend on their savings or their children's income for consumption spending. Such a tendency will affect the economy at macro level because there will be a decline in the total domestic savings. (Dornbush & Fisher, 1978). In such situations,

if domestic savings are insufficient for investment, alternative sources have to be sought.

*Table 6: Total Number of Pensioners in Sri Lanka*

| Year | Total Number of Pensioners |
|---|---|
| 1992 | 258,120 |
| 1993 | 293,719 |
| 1994 | 303,993 |
| 1995 | 310,854 |
| 1996 | 332,824 |
| 1997 | 342,343 |
| 1998 | 358,228 |
| 1999 | 364,472 |
| 2000 | 371,728 |
| 2001 | 383,838 |
| 2002 | 394,625 |
| 2003 | 400,000 |
| 2004 | 411,427 |
| 2005 | 418,923 |
| 2006 | 430,153 |
| 2007 | 438,190 |
| 2008 | 445,120 |
| 2009 | 456,113 |
| 2010 | 473,762 |

*Source: http://www.pensions.gov.lk , Compiled by the Author*

**Foreign Direct Investment**

In Sri Lanka an ideal environment has developed for investments because of the demographic dividend. During such a period the working age population aged 15 - 59 years would increase numerically in relation to other age structure segments in the population. The capacity to save is high in a period of demographic dividend, as the proportion of working age population is highest than the proportions of old and young dependents. The policy makers

should make maximum use of this opportunity by preparing strategies to attract foreign direct investment to the country to open industries so that sufficient employment opportunities for youth are created and the envisaged accelerated development will take place.

Foreign Direct Investment (FDI) in Sri Lanka, will not only supplement the domestic investment effort, but also confer many benefits such as employment creation, transfer of technology, increased domestic competition and other positive externalities. Sri Lanka offers attractive investment opportunities for foreign companies and has adopted a number of policies to attract foreign direct investment into the country and the country offers some of the most liberal FDI options in South Asia (Atukorala, 2003). The last five years witnessed the increase of FDI inflows to Sri Lanka to exceed one billion dollar mark (Jayasundara, 2011). A regression analysis conducted by Atukorala (2003) found that there is not much evidence of a robust link between FDI and economic growth in Sri Lanka. He took into consideration the investment scenario which existed in Sri Lanka in 2003. Nevertheless the investment scenario currently has greatly changed providing a more robust and congenial atmosphere for FDI in Sri Lanka.

The prevailing internal peace after three decades of conflict in Sri Lanka has proved to be an ideal period to invite foreign investments. Still it can be argued that the expected interest of the foreign investors to open industries factories in Sri Lanka has not been fully materialized. Probably India, Bangladesh, Malaysia and Vietnam are the strongest contenders to Sri Lanka's investment efforts. In contrast to those countries, the existing labour laws in Sri Lanka, the relatively high salary scales of the workers and the higher cost of production, may be the reasons why this country is not conducive to attract foreign investment. It is to be noted that these are the areas that the foreign investors make complaints (Kelegama, 2004).



**Knowledge Economy**

Investment in production of knowledge and education makes workers and machines' more productive. A workforce equipped with knowledge and education is referred to as the Human Capital and is an important component of economic growth (Ando & Modigliani, 1963; Lutz & Sanderson, 2000).

In Sri Lanka it is imperative to expect that there would be substantial additions of initial youth entrants to the labour force during the demographic dividend period. This potential labour input to country's economic growth could be enhanced by exposing the added labour input to technological and academic education. The government contends that for such a purpose, the technical and technological education facilities in Sri Lanka are being reoriented to suit the current market demand. New strategies have to be implemented by the educationists to train the labour force for usage of high-tech modern equipments.

Another important area of development of human capital is technological and academic advancement of females to increase their competitiveness in labour force participation. They should be given opportunities in policy developing positions at managerial level, in public as well as private sectors. Their involvement in the capacity of executives and managers will lead to an acceleration of the economic development process of the country.

Unlike in the past, the modern nuclear family consists of less children. Contemporary parents endeavour to provide quality education for their children. A wide variety of institutions such as international schools, educational institutions, English training centres, Internet Cafes Information Technological Institutions, Tri Lingual Education Institutions and a variety of courses and educational Kiosks are available throughout Sri Lanka. The government involvement through legislation and supervision is the necessity of the hour, to ascertain quality assurance of these institutions and to avoid the student driven education aiming for competitive examinations.

The Government expects that "Sri Lanka should be the Knowledge Hub of Asia" which could easily be achieved by generating human capital from the "Demographic Bonus" by increasing calculated investments for future benefits in education and by imposing radical changes in the tertiary educational courses. In such instances, the knowledge could be used as a tool for future development. The capability of Sri Lanka to produce skilled specialists to cater to international demands will be a major leap forward for growth in the "Knowledge" economy.

The globalization, featured with expansion of international trade, flow of investment and technologies, could help a county like

Sri Lanka to maximise the demographic dividend (Jones, 2005). The globalization concept confirms that the labour force of a developing nation such as Sri Lanka should be able to undertake any challenge and compete with the developed nations of the world. Such visions had been the guiding principle of the architect of the modern Malaysia Dr. Mahathir Mohamed. He envisaged that Malaysia should be a fully developed nation at par with USA and Japan (Noorshah, 2012). Today Malaysia is one of the economically powerful nations in Asia. It is very necessary that Sri Lanka too should possess a vision to drive our nation towards the expected goal in economic development during the period of the demographic dividend.

International migration for employment as a solution to the skilled labour deployment had been encouraged by successive governments. Planned export of human capital for employment would also bring in the much-needed foreign exchange. Nonetheless policies should be in place for curtailment of "brain drain" and permanent migration of scarce human capital such as the highly educated researchers experts, managerial and specialist categories of Sri Lankan labour force. Youth migration to foreign countries for their university education with the objective of subsequent settling down after the completion of higher education may be an initiation of brain drain dilemma. It is necessary that the policy makers adopt a constructive strategy to discourage this trend.

**The Demographic Dividend of Asian Tigers: The Case of South Korea**

Since 1970, the share of children aged under 15 years of the South Korean population has changed considerably. In 1970 child population was 42.5 per cent and by 2003 the percentage share declined to 20 per cent. This was due to the decline in the total fertility rate from 4.53 in 1970 to 1.19 in 2003. The share of the working age group had increased from 54.4 per cent in 1970 to 71.7 per cent in 2003. The share of the working age group increased but at a decreasing rate due to a decline in fertility. The noteworthy changes in the age structure of South Korean population was the increase in the share of elderly, aged above 65 years in the population which was 3.1 per cent in 1970, but had risen to 7 per cent in 2003 and to 8.3 per cent in 2003. The share of the elderly segment had increased as a result of the increases in life expectancy of the population from 62 years in 1970 to 77 years in 2003 coupled with a decreasing trend

in the fertility rate. Finally, now South Korea has become an aging society (Chong-Bum, 2006).

According to the dependency ratio hypothesis proposed by Leff (1969) when the dependency ratio increases, the working age segment of the population has a heavy burden of providing adequate means of family consumption. High dependency ratio results in a decline in the family savings and hence the country's physical capital accumulation capacity. The decreasing pattern of the dependency ratio in South Korea during 1970 to 2003 period suggests that such a trend would have produced the required demographic dividend for the economic growth of the country. South Korea from its own basic conditions captured in due course, the active use of the favourable opportunities offered by international industrial restructuring. They choose the industries that had comparative advantage and provided resources, financial support and promoted the development of the national economy, to launch an accelerated economic development (Chong-Bum, 2006).

The government with the use of foreign aid from USA built infrastructure that included a nationwide network of primary and secondary schools, modern roads and a modern communications net work. The result was that by 1961, South Korea had created a well educated young work force to provide a solid foundation for economic growth.

Seoul presumed that a well educated and highly motivated work force would produce low cost, high quality goods that would find ready markets in the USA and in rest of the industrial world. The government expected that the profits generated from the sale of goods would be used to expand capital investment, provide new jobs and eventually pay off loans.

In the early 1960's there was absolute poverty throughout the country and therefore, economic policies to overcome this situation was the need of the hour. The government was facing a critical problem of raising funds to foster the needed industrial development. Domestic savings were at a very low level, and the available domestic capital too was very little. This obstacle was tackled by introducing foreign loans and offering attractive interest rates that enticed the local capital in to the production arena.

In comparison to Taiwan, Hong Kong, and Singapore only South Korea financed its economic programme with a dramatic build up of a foreign debt. It totalled to US$ 46.8 billion in 1985 making the country the fourth largest third world debtor. South Korea created an Economic planning Board in 1961, and it became the nerve centre of the planning process to promote economic development. The Board was headed by a deputy Prime-minister and staffed with persons of high intellectual capability and sound educational background in business and economics. By the beginning of 1960's, the Board thus created allocated resources, directed the flow of credit and formulated all of South Korea's economic plans.

South Korea administered a series of economic development plans. The government mobilized domestic capital and encouraged savings. The type of industrial plants that could be constructed with the available funds was determined and the potential for development of the products for exports was reviewed. Nevertheless, the role of the government was not limited to such measures as mobilizing capital and allocating investments.

The government restructured defence and construction industries as a cutting edge to stimulate economic competition. The Economic Planning Board established export targets, and regular monitoring was put in place to find whether such targets were met. Additionally, the government subsidized credit was made available so that it gave the producers further access to the growing domestic market. Failure to meet such targets led Seoul to face the withdrawal of credit facilities (Library of Congress, n.d).

South Korea's Gross National Product (GNP) grew at an average rate of more than 8 per cent per year. From USD 2.3 billion in 1962 to USD 204 billion in 1989. Per capita income grew from USD 87 in 1962 to USD 4,830 in 1989.The manufacturing sector share of GNP was 14.3 per cent in 1962 increased to 30.3 per cent in 1987. The ratio of domestic savings to GNP grew from 3.3 per cent in 1962 to 35.8 per cent in 1989 (Library of Congress, (n.d)).

As discussed above the window of opportunity has a positive impact on economic growth. Therefore the newly industrialized countries such as South Korea, Singapore and Taiwan have utilized the demographic bonus to expand the economy. According to the predicted demographic transition, Sri Lanka is undergoing a

demographic bonus period with effect from 1991. In Sri Lanka the dependency ratio started to decline from 1981 and by the year 2011 it will commence to rise again. Thus it is imperative to take advantage of the relatively low dependency levels while they last, at the same time preparing to address the needs of an aging population (De Silva, 2007).

## Emerging Population Issues in the New Millennium

### Recent Increase In Fertility

Sri Lanka was the first country among all the nations in South Asia to reach a level below replacement fertility in the year 2000, even when the country's per capita Gross Domestic Production (GDP) amounted to only USD 1990. However in a short period of time the trend had reversed. The total fertility rate of Sri Lanka was reported as 2.3 for the period 2003 - 2006. According to the 2006 - 2007 DHS the TFR is significantly higher than the TFR observed in the 2000 DHS, which was 1.9 for the period 1995 - 2000. This was contrary to the projected estimates of certain demographers (De Silva, 2010; Abeykoon, 1998).

Significant implications could be associated with the recent increase in the level of fertility in Sri Lanka during the first decade of the 21st century (Table 7). No single country in Asia has demonstrated a trend of this nature (De Silva, 2010). Along with the ongoing population ageing process, the increase in fertility in 2006 - 2007 will cause the child dependency ratio to increase in the near future. The future demographic scenario for Sri Lanka indicates a difficult outlook at both ends of the population pyramid.

*Table 7 : Total Fertility Rate 1953 - 2006*

| Source | Year / Period | Total Fertility Rate |
|---|---|---|
| Census, Registration | 1953 | 5.3 |
| Census, Registration | 1963 | 5.3 |
| Census, Registration | 1971 | 4.2 |
| World Fertility Survey 1975 | 1974 | 3.6 |
| Census, Registration | 1981 | 3.4 |
| Demographic & Health Survey 1987 | 1982-1987 | 2.8 |
| Demographic & Health Survey 1993 | 1988-1993 | 2.3 |
| Demographic & Health Survey 2000 | 1995-2000 | 1.9 |
| Demographic & Health Survey 2006 - 2007 | 2003-2006 | 2.3 |

*Source: Department of Census and Statistics (2009), Compiled by the Author*

This unexpected fertility increase would have significant effects on the size and the age structure of the Sri Lankan population. The most direct implication would be the increase in total population of the country. For instance the actual population in year 2011 may exceed the projected figure of 20.5 million (Table 2). The sudden increase in the total population would lead to an increase in the demand for basic amenities, in the immediate quarter of the century.

In terms of implications, the added demand generated by this particular group for food, clothing, education and health would dramatically increase the total demand. For instance, in the field of health and education, both quality and quantity would have to take priority at whatever the cost. With the increase of fertility, during the last decade, the female labour force participation rate of 10 years and above has demonstrated a significant decline from 39 per cent in 1990 to 30 per cent in year 2010 (Ministry of Labour and Labour Relations - Sri Lanka, 2012).

Presumably, the increase in fertility observed during the early part of the new millennium may not continue for a long period. There may be a point in time in the near future where fertility will start to decline towards the replacement level again. That particular

point may be determined primarily by the degree to which pro-natalist views and practices are not adopted by the Sri Lankan community (De Silva, 2010).

## Ageing

Asian societies have traditions which hold the elderly in reverence. However, the United Nations (1999) observes that industrialization, urbanization and new technology have brought about radical social changes, weakening the family support system in Asian societies. In such circumstances, population ageing is becoming a serious problem in many Asian societies (Gubhaju, 2008).

Comparison of the ageing experience of western countries with that of Sri Lanka reveals that ageing in Sri Lanka is occurring parallel to a lower level of economic development. A favourable combination of fertility, mortality and international migration trends leading towards an age structural transition in the country, has resulted in a significant increase of the proportion of elderly population. Nevertheless, the recent economic and social changes such as urbanization and increased female labour force participation (even though their labour force participation is relatively low still), have lessened the capacity of females to support the elderly.

The proportion of elderly population in Sri Lanka is higher than in other South Asian countries. In 1996, around 9 per cent of women and 9.1 per cent of men in Sri Lanka's population were 60 years of age and above, which is a relatively large elderly population for a developing country (De Silva, 2007). Even though the definition of "elderly" varies from society to society, in Sri Lanka the population 60 years and above is usually defined as the elderly.

During the last three decades, the international labour migration, largely concentrated within young adult age groups had increased, causing a reduction in the proportion of the working age population in the country. To the extent of the proportion of the working age population who has migrated, the proportion of the elderly population is inflated (Korale, 1985; De Silva et al., 2008). Taking in to consideration such emigration patterns and the future trends in mortality, fertility and international migration, the proportion of the population aged 60 and over is projected to increase by nearly 36 per cent from 9.2 per cent in 2001 to 12.5 per cent in 2011. By the

year 2041 nearly a quarter of the Sri Lankan population will be in the age range of 60 years and above (Table 8).

*Table 8: Composition and Growth of the Elderly Population 1971 - 2071*

| Year | Age (Percentage) | | | Percentage & Number of Elderly (60+) | | Annual Growth Rate | |
|---|---|---|---|---|---|---|---|
| | 60-74 | 75+ | (%) | (%) | No. ('000) | Total Population (%) | Elderly (60+) (%) |
| 1971* | 80.5 | 19.5 | 100.0 | 6.3 | 807 | - | - |
| 1981* | 79.5 | 21.1 | 100.0 | 6.6 | 986 | 1.60 | 2.04 |
| 2001* | 77.0 | 23.0 | 100.0 | 9.2 | 1731 | 1.17 | 2.83 |
| 2011 | 77.2 | 22.8 | 100.0 | 12.5 | 2570 | 0.93 | 3.95 |
| 2021 | 77.2 | 22.8 | 100.0 | 16.7 | 3605 | 0.49 | 3.38 |
| 2031 | 71.8 | 28.2 | 100.0 | 20.7 | 4536 | 0.14 | 2.29 |
| 2041 | 69.0 | 31.0 | 100.0 | 24.8 | 5387 | -0.08 | 1.72 |
| 2051 | 68.0 | 32.0 | 100.0 | 28.8 | 6081 | -0.28 | 1.21 |
| 2061 | 61.5 | 38.5 | 100.0 | 31.3 | 6302 | -0.47 | 0.36 |
| 2071 | 60.3 | 39.7 | 100.0 | 33.3 | 6329 | -0.57 | 0.42 |

*Note: * Enumerated Population Percentages at the Census*
*Source: Compiled by the Author*

During the period covering 2010 to 2041, the Sri Lanka population will increase moderately by about 9 percent from 20 to 22 million. During this period the elderly population aged 60 years and above will increase from 2.5 million in 2010 and to 5.3 million in 2041 indicating an increase of over 100 per cent, registering a doubling of the elderly population.

**Structural Changes Among the Elderly**

Different proportions of males and females in the elderly age groups reflect the differential mortality and migration events that had occurred over the life time of cohorts. According to Table 9, the

proportions of females in the elderly age groups are rapidly increasing. The sex ratio among the elderly population had declined from 113 males for every 100 females in 1981 to 88 in 2001 and is projected to decrease to 78 by the year 2031. This decline is stronger among the "old old" group aged above 75 years. The life expectancy of the females is higher than that of males, signifying that a large number of females when compared to males, survive to old ages. The sex ratio of the total population of Sri Lanka and much more the elderly population is increasingly becoming disproportionately female biased (Table 9).

***Table 9: Sex Ratio of the Elderly Population 1971 - 2071***

| Year | Age | | |
|---|---|---|---|
| | 60-74 | 75+ | All 60+ |
| 1971* | 126.0 | 106.2 | 121.8 |
| 1981* | 114.6 | 107.2 | 112.9 |
| 2001* | 89.11 | 84.6 | 88.05 |
| 2011 | 85.21 | 73.7 | 82.45 |
| 2021 | 83.74 | 69.0 | 80.15 |
| 2031 | 82.31 | 67.6 | 77.90 |
| 2041 | 82.54 | 66.7 | 77.30 |
| 2051 | 85.69 | 65.1 | 78.57 |
| 2061 | 87.55 | 66.6 | 78.88 |
| 2071 | 87.30 | 67.2 | 78.74 |

Note: **Ratio** - *Number of Males per 100 Females.*
*Enumerated Population Percentages at the Census.*
Source: **Compiled by the Author**

One of the most significant demographic variables which can be used to identify social well-being of the elderly is the marital status. Although the level of permanent celibacy is very low in Sri Lanka, relatively more elderly males than females are single (Caldwell et al., 1999, De Silva, 1997). Marital status to a certain extent defines the living arrangements of persons. For social security as well as economic reasons such living arrangements may be especially important to the elderly.

Widowhood is more prevalent among women than men. The proportion of widows who were 60 - 64 years of age increased by about three times to that of widowers in the same age group, while the proportion of widows in 60+ age group increased by about 4 times to that of widowers, during the period 1981 to 1994. There are three reasons for the high widowhood among the elderly females. First, wives are generally younger than their husbands. Second, higher life expectancy of females is a consequence of the lower mortality of females in all age categories. Third, the frequency of remarriage among widowers is greater than widows who may be reflected in the lower proportion of widowers than widows among the elderly. Those who are in a marital union have someone not only to share their difficulties but also to make a positive influence on their physical and mental stability. Thus, as found in many Asian countries, it appears that women in Sri Lanka are also disadvantaged in terms of access to companionship and assistance in their later years.

**Disability**

Parallel to the rapid ageing phenomenon of the Sri Lankan population, the incidence and prevalence of disabilities have increased. Apart from ageing, civil disturbances experienced until recent times have also aggravated this situation. Irrespective of the cause, the disability situation is associated with several economic, social and demographic implications of many aspects. Also, the effective utilization of demographic dividend is noted to be restrictive if the disability levels are increasing significantly.

The 2001 Census of Population collected data on disability which is the most recent information on the subject. A comparison of 2001 data with that of 1981 census figures enables a worthwhile study on the demographic characteristics of the disabled (Department of Census and Statistics - Sri Lanka, 1981a; 2003b). The basic measure of comparison was the number of disabled people per 10,000 populations. The analysis based on the data of the two censuses, was on four types of disabilities namely, blindness, hearing and speaking, hands, and legs, prevalent at the time focussing on the six age groups classified from 50 - 54 years to 75+ years.

A marginal decline in blindness is observed from 1981 to 2001 in 50 - 54 years to 65 - 69 years of age groups but a conspicuous increase observed among 70 and beyond years, in both sexes.

During the period 1981 to 2001, as a whole the disability in seeing increased marginally from 21.8 to 22.5 per 10,000 populations among the population aged 50 and above. The contributory factors which arrested any significant increase in the disability in seeing were the improvement in education including health education, and knowledge of eye care and health facilities with specialist treatment (De Silva et al., 2008).

The hearing and speaking situation was different as there was a dramatic increase in these disabilities among all the age groups with a higher frequency in the higher age groups. In totality, the level of disability had increased from 17.4 in 1981 to 55.7 per 10,000 populations in 2001. Environmental factors such as the noise pollution, both at home and work places, violence, and bomb explosions may be the prime causes for such disability situations (De Silva et al., 2008; Department of Census and Statistics - Sri Lanka, 1981; 2003).

Disability in hands has increased to a greater measure both among females and males and very much being felt in the former. The females recorded an increase from 14.7 per cent to 37.1 per cent, while males from 28.9 per cent to 61.5 per cent during the inter-census period. Home and road accidents, bomb blasts, and occupational hazards were some of the causes for such a situation. Disability in legs either in one or in both is caused mostly by paralysis. But the numbers of persons with loss of one or both legs were only a few. Among the diseases, diabetes and pre-vascular diseases are the causes of amputation of legs. There seemed to be an upward trend in both sexes in the incidence of this category during 1981 and 2001. Behaviour pattern of elderly people in their dietary pattern, consumption of liquor and tobacco, and sedentary lifestyles mostly contributed to the prolonging of such diseases. Disability of legs might also have occurred due to civil war casualties, largely due to land mines.

The overall picture of disability set out above depicts a dramatic increase over the period 1981 and 2001 with the exception of blindness that recorded only a marginal increase. Since 1977 an increasingly large number of males and females have migrated permanently or semi-permanently to foreign countries for their own or their family well-being. Almost all those who have made this international migratory movement would have been free of disability.

Thus this migration trend may have contributed indirectly to the observed, significantly high disability rate among the population aged 50 years and over in Sri Lanka in 2001 (De Silva et al., 2008).

An increasing proportion of working age population, particularly females, had entered the labour force, and workplace hazards could have been a leading cause for the increasing disability in Sri Lanka. The workers who are engaged in industries such as mining, forestry, construction and agriculture in the third world counties are often identified to be at a higher risk of occupational injuries or diseases than those in other industries.

## Conclusions

During the past many decades, the total size, as well as the age and sex structure of the Sri Lankan population has been exposed to irreversible changes. Population had grown almost eight times since the first national census i.e. from 2.4 million in 1871 to 20 million in 2010. The changes that had occurred in components of population, namely fertility, mortality and migration, are reflected in the growth and structure of the population.

The projected population for Sri Lanka shows that the population will undergo major changes in its size and age-sex structure in the coming decades. The enumerated population of 18.7 million in 2001, according to the standard projection, had increased up to 20.5 million by year 2011. The same projection also indicates that in the year 2031 the population size would reach its peak level of 21.9 million persons. The population is expected to stabilize around 22 millions. If the previously observed increase in fertility continues for a reasonable period of time in the future, the expected population stabilization will be delayed and the size of the population may exceed the projected 22 million mark. Nevertheless, according to the present projection, 2.0 million persons will be added to the present population of 20 million. It would be an enormous challenge for policy maker's planners to plan for this added segment for a planning period of at least the next 20 years.

The pattern of changes in demographic components which had caused irreversible changes to the population age structure of Sri Lanka are such that, within next few decades, the pyramid shaped population age structure in 1981 will take the shape of a barrel.

The age structure transition, covering the period of 1991 to 2030, has produced a demographic dividend, which is conducive for an economic take-off in the country. During the period of demographic dividend, the proportion of the people in the working ages, aged 15-64 years, is noted to be significantly larger than the proportion in the dependent age categories aged less than 15 and above 65 years. Nevertheless if the working age is defined as above 15 - 59 years, the most lucrative part of the population dividend would fade away by 2017. Thus the remaining period of the dividend will be as short as only five years.

The mere existence of a favourable demographic dividend would not be effective without a proper environment for economic acceleration. Nevertheless in a congenial environment of political stability, adequate savings, investment potential including the ability to draw FDI, development of human capital, productivity and knowledge-based economy, the optimum utilization of the demographic dividend to gain economic acceleration would materialize. The prevailing political stability and peace in the country provides a congenial environment for the accelerated economic development and maximization of a knowledge economy to suit the current national and international demand for a skilled labour force. Another important area of development of human capital is technological and academic advancement of females to increase their competitiveness in labour force participation.

It is essential that the economic planners in the country should immediately identify the growth sectors of the economy in order to generate sufficient amount of employment for the influx of youth to the labour markets during the period of the demographic dividend (Chandrasiri, 2012). Currently the country's economic growth mainly depends on the cumulative inputs in the sub-sectors of trade, hotel services, transport, storage and communication, manufacturing, finance, insurance and real estate. These sub sectors had contributed to as much as 64 per cent of GDP in 2008 (Ministry of Labour Relations and Manpower - Sri Lanka, 2009).

The possibilities of harnessing the demographic dividend to maximize development and the ways and means of exploiting the window of opportunity for growth in the current period, is contained in the long term policy document of the government. The declared goal of the long term policy plan of the present government, is to

build the country to be at par with the global challenges and to face international competitiveness (Department of National Planning Sri Lanka, 2010).

The present time is ideal to pursue a long - term economic development plan and to create an investment friendly, economic environment. Similar to South Korean experience, the first phase of development of Sri Lanka is affirmatively associated with building of infrastructure, a drive towards food self sufficiency and the development projects in industrial and agrarian sectors. Due emphasis is being placed on the areas of power and energy.

The incongruence of the demographic transitions in Sri Lanka to the nature of economic development has created a number of demographic, social and economic problems that need to be addressed immediately. The 'population ageing' phenomena are an unavoidable demographic issue in the latter period of the demographic transition. The changing agents that had effectuated the transitional process have also caused the disintegration of the family traditions and irrevocable damage to the traditional old age social security mechanisms. Migration of females to Middle - East and other countries for employment has aggravated the problem of caring for the aged, as females are generally the primary care - takers of the elderly in Sri Lanka. Partly due to the rapid ageing process of the population and the changes in the socio - economic environment, the prevalence of an increased proportion of the disabled among the Sri Lankan population is observed. A dramatic increase in the overall level of disability during the recent past is also due to many other factors. Among those, the environmental factors and such as the noise pollution, violence, bomb explosions, accidents and behavioural factors of elderly people including dietary pattern, consumption of liquor and tobacco, and sedentary lifestyles may be the prime causes.

Ageing and disability have increased significantly over the last few decades in Sri Lanka. Apart from these issues, the TFR also increased from below replacement to above replacement level during early part of last decade. Ageing, disability and fertility three factors increase combined could have an impact on the available demographic dividend negatively. If the combined effects of these issues are aggravated, the demographic dividend will fade away earlier than the predicted time.

The inadequacies of the social security net to cover the population segments that need social security such as the elderly, disabled and single parents are also an important issue at hand to be addressed immediately (De Silva, 2005). Such issues are the basis of grave demographic, social and economic implications, with an ability to generate a crisis situation in the country. However the prevailing peace and the current political stability will drive the government to implement the necessary structural changes to the economy to achieve a level of economic development capable of making the maximum utilization of the last phase of the demographic dividend before the onset of demographic turbulence.

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