Changing population growth rate and its determinants with the beginning of 21th century

L.N.M.Liyanapathirana[1]

Abstract

In 19th century, Sri Lankan population increased slowly like other developing countries. But Sri Lanka began the 20th century with 3.6 million population. At the end of 20th century Sri Lankan population was 18.8 million. Furthermore at the mid of 20th century reported the largest population growth in Sri Lanka. In 1960 both death rate and birth rate began to decrease representing the next stage of population growth. Therefore at the beginning of 21th century population growth rate was less than before. However this changes of the population has effected more problems in Sri Lanka. Thus the main objective of this study was identifying the relationships between the population growth rate and its determinants with the beginning of 21th century in Sri Lanka. The study used time series data from secondary sources in Sri Lanka. To satisfy the objective of the study, charts, descriptive statistics and correlation coefficients have been employed. The data analyzed by SPSS and Excel software. According to results, with the beginning of 21th century the population has been increasing similar to past. The most people representing in 2011. But population growth rate has been going down. The population growth rate is positively related with birth rate, net migration rate, fertility rate, life expectancy and urban population. The death rate is negatively related with population growth rate. But strong relationships is representing with birth rate, life expectancy and urban population. There are not strong relationships between population and its determinants such as death rate, net migration rate and fertility rate. The most related variable for population growth rate is the birth rate. Hence the population changing mostly depend on the birth rate in Sri Lanka with the beginning of 21th century.

Key words: *Population, Population growth, Population changing*

[1] Social Statistics (Special) third year, nishara.malki@gmail.com

Introduction

The population of any country is a main factor that determine development process of that country (Podimanike, 2011). Population means all people who are living in certain land on certain time (Dayarathna, 2009).That is, group of individuals of same species living in the same geographic area at the same time (Ali, 2011).All people living in the earth called as world population. Before 20 century the world population was increasing very low. Since milled of 18 century it was changed and increased the world population growth around 1% beginning in the 20 century. Since 1960, it was around 2.04% & October in 1999, world population was six billion. According to United Nation Organization's data, they have projected that the world population will increase to 9.2 billion since 2050 (Podimanike, 2011).

World have to face Some of the global effects of overpopulation such as ultimate shortages of energy sources and other natural resources, famine, serious communicable diseases in dense populations, Shortage of arable land (where food crops will grow), little surplus food, mass extinctions of plants and animals as habitat is used for farming and human settlements, war over scarce resources such as land area, high birth rates, lower life expectancies, lower levels of literacy, child poverty, higher rates of unemployment, especially in urban, poor diet with ill health and diet-deficiency diseases, low per capita GDP (Gross Domestic Product), increasingly unhygienic conditions, government stretched economically, increased crime rates resulting from people stealing resources to survive (Ali, 2011).

Currently growth of population in developing countries is higher than developed country (Podimanike, 2011). That is, a country which have undeveloped features such as less development of economy, high poverty, uncertain political situation, depend on developed counties, regressive features called as a developing country (Manawadu & Liyanage, 2008). Generally population growth rate of developing countries is around 2.5% & it is less than 1% in developed country. According to this data, a developed country takes around 70 or 80 years & a developing country takes around 25 or 30 years to double the population (Podimanike, 2011). Therefore population growth can be identified as the factor affect to developing countries than developed countries highly.

In 2015, midyear population was 20,966,000 in Sri Lanka & it is increasing by now (Central Bank Report in Sri Lanka, 2015). According to Sri Lankan Central Bank data sheets, it is increasing continuously. As Sri Lanka is a developing country, it also has undeveloped features such as less development of economy, high poverty, uncertain political situation, depend on developed countries, regressive features already today. Therefore Sri Lanka has to face many bad results of population growth. Mainly population growth directly affects economy in the country, for examples decreasing Per capita income & savings, increasing Welfare payments etc. (Dayarathna, 2009).

Mainly population is determined by three factors birth rate, death rate & net migration of a country (Podimanike, 2011). The CBR (Crude Birth Rate)and CDR (Crude Death Rate) are determined by taking the total number of births or deaths in a population and dividing both values by a number to obtain the rate per 10000 (Rosenberg, 2016). Migration (human) is the movement of people from one place in the world to another for the purpose of taking up permanent or semi-permanent residence, usually across a political boundary (Podimanike, 2011). There are only two ways to enter a population by birth and by in-migration. There are two ways to leave a population, by death and by out-migration (Ali, 2011). In 2015, birth rate was 16 & death rate was 6.3 per 1000 people in Sri Lanka (Central Bank Report in Sri Lanka, 2015). There is not now a satisfactory theory of all factors affecting birth and death rates and hence there is no complete theory of what affects population growth (Schultz, 1973). Rate of Natural Increase (RNI) also affect to population growth. It happen, when CBR is greater than CDR (Lerner, 2007). Therefore the main objective of this study was, 'identifying the relationships between the population growth rate and its determinants with the beginning of 21th century in Sri Lanka'. To satisfy the objective of the study, charts, descriptive statistics and correlation coefficients have been employed. The data analyzed by SPSS and Excel software.

Methodology

The study used time series data via secondary data sources in Sri Lanka. The variables are population growth rate, birth rate, death rate, net migration rate, fertility rate, urban population and life expectancy. Among them, population

is the dependent variable & others are independent variables. The data represent from 2000 to 2015 year. To satisfy the objective of this study, charts, descriptive statistics and correlations have been employed. The data analyzed by SPSS and Excel software.

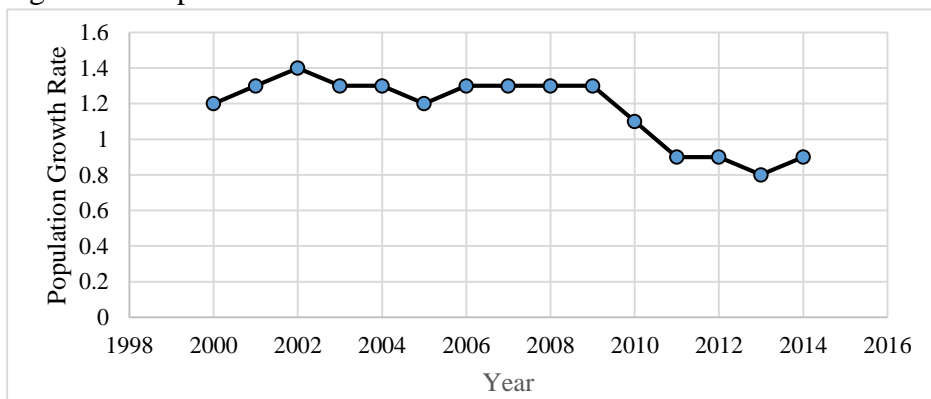**Significance of the Study**

Continuously population of Sri Lanka is increasing day by day .Hence in the future Sri Lanka will have to face lot of economical & sociological effects such as unemployment, aging problem, decreasing of per capita income, & increasing government welfare payment. As a result of these conditions Sri Lanka cannot achieve its development progress. Thus via searching the main factor determine the population can take some important decision to solve the future population problems in Sri Lanka. Therefore it is very important that identifying factors affecting on population in Sri Lanka. The study will help to identify the relationships between the population growth rate and its determinants with the beginning of 21th century in Sri Lanka'. It would provide a significant for population growth. Therefore someone can take some decision to manage size of the population.

Results and Discussion

Trend of population and its Determinants

With the beginning of 21th century the population has been increasing similar to past. But the population growth rate has been decreasing compare to past. According to figure 01, it is very essay to understand.
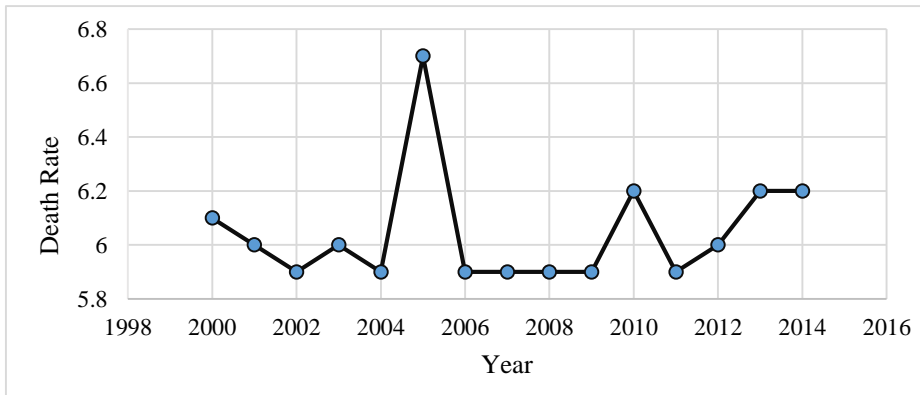
Figure 01: Population Growth Rate

Source: Author, 2016

Mainly the population is changed by two factors as birth rate and death rate. Hence birth is a main variable that determine the population. With the beginning of 21th century, it has been decreasing continuously. But the birth rate is different from year by year compare to the mid-year population. Further death rate also is different from year by year. It has been represented in figure 02.
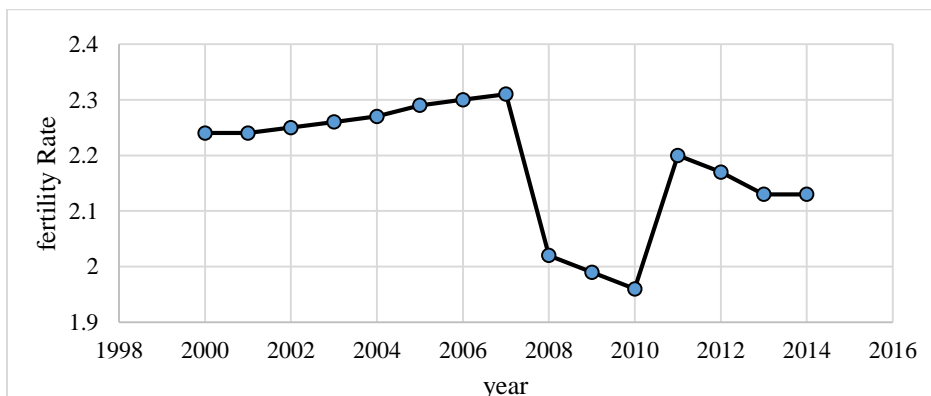
Figure 02: Death Rate

Source: Author, 2016

Net migration rate is also a main factor that determine the population. With the beginning of 21th century, it has got negative values similar to past. But in 2002, it has increased compare with other years. In 2000, the fertility rate is 2.24. It has been increasing slowly. But after the 2007, it has felt down and again it has been increasing in 2010 (figure 03).

Figure 03: Fertility Rate

Source: Author, 2016

Furthermore population is determined by life expectancy and urban population. With the 21th century, life expectancy has been increasing gradually like population. But urban population is fix from 2000 to 2008. After 2008, it has increased and again fell down. But after 2011, it has been increasing continuously.

Descriptive Statistics

According to table 1, the maximum population growth rate is 1.4% and minimum is 0.8%. There is a 0.6% gap between them. Also the mean population growth rate is 1.153%. Maximum of birth rate, death rate, net migration rate, fertility rate, life expectancy, and urban population are 19.4, 6.7, -0.6, 2.31, 76.35 and 18.47. Minimum of birth rate, death rate, net migration rate, fertility rate, life expectancy, and urban population are 16.9, 5.9, -2.16, 1.96, 71.61 and 18. Mean value of birth rate, death rate, net migration rate, fertility rate, life expectancy, and urban population are 18.420, 6.047, -1.39, 2.18, 74.17, and 18.47. Standard deviations of birth rate, death rate, net migration rate, fertility rate, life expectancy, and urban population are 0.79, 0.22, 0.42, 0.12, 1.61, and 0.915. Range of birth rate, death rate, net migration rate, fertility rate, life expectancy, and urban population are 2.5, 0.8, 1.56, 0.35, 5.19, and 3. According to this results, standard deviations are good. Thus there is not more variation among the data.

Table 1: Descriptive Statistics

Descriptive Statistics					
	Range	Minimum	Maximum	Mean	Std. Deviation
Population Growth Rate	.6	.8	1.4	1.153	.2264
Birth Rate	2.5	16.9	19.4	18.420	.7939
Death Rate	.8	5.9	6.7	6.047	.2167
Net Migration Rate	1.56	-2.16	-.60	-1.3947	.41720
Fertility Rate	.35	1.96	2.31	2.1840	.11507
Life Expectancy	5.19	71.16	76.35	74.1727	1.61449
Urban Population	3	18	21	18.47	.915

Source: Author, 2016

Correlation Between

The table 2 represent the correlation between population growth rate and its determinants. According that results, the population growth rate is positively related with birth rate, net migration rate, fertility rate, life expectancy and urban population. The death rate is negatively related with population growth rate. But strong relationships is representing with birth rate, life expectancy and urban population. There are not strong relationships between population and its determinants such as death rate, net migration rate and fertility rate. The most related variable for population growth rate is the birth rate.

Table 2: Correlation

Birth Rate	**0.908**
Death Rate	-0.302
Net Migration ate	0.603
Fertility Rate	0.257
Life expectancy	0.718
Urban Population	0.784

Source: Author, 2016

Conclusion

According to results, with the beginning of 21th century the population has been increasing similar to past. The most people representing in 2011. But population growth rate has been going down. The population growth rate is positively related with birth rate, net migration rate, fertility rate, life expectancy and urban population. The death rate is negatively related with population growth rate. But strong relationships is representing with birth rate, life expectancy and urban population. There are not strong relationships between population and its determinants such as death rate, net migration rate and fertility rate. The most related variable for population growth rate is the birth rate. Hence the population changing mostly depend on the birth rate in Sri Lanka with the beginning of 20th century.

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