SALMAND
IRANIAN JOURNAL OF AGEING

2019. Vol 13. Special Issue

Research Paper

Aging and Economic Growth

*Neda Miri[1], Majid Maddah[1], Hossein Raghfar[2]

1. Department of Economics, Faculty of Economics, Management and Administrative Sciences, Semnan University, Semnan, Iran.
2. Department of Economics, Faculty of Social Sciences and Economics, Alzahra University, Teharn, Iran.

Use your device to scan and read the article online

Citation: Miri N, Maddah M, Raghfar H. [Aging and Economic Growth (Persian)]. Salmand: Iranian Journal of Ageing. 2019; 13(Special Issue):626-637. https://doi.org/10.32598/SIJA.13.Special-Issue.626

https://doi.org/10.32598/SIJA.13.Special-Issue.626

Received: 09 Sep 2018
Accepted: 25 Jan 2019
Available Online: 10 Mar 2019

Key words:
Autoregressive Distributed Lag Model (ARDL), Economic grow, Aging

ABSTRACT

Objectives Demographic changes is one of the important issues affecting economic growth. The demographic structure can affect investment, savings, consumption, and ultimately economic growth. The present study aims to analyze the effect of the age structure of the population (by emphasis on aging) on the growth of Gross Domestic Product (GDP) per capita in Iran.

Methods & Materials This study has been investigated by library research method, using Iranian economic data published by Central Bank of Islamic Republic of Iran and Statistical Center of Iran and United Nation in 2018. In this research, the autoregressive distributed lag model method was used to investigate the effect of the population age structure on the economic growth of Iran in the period between 1987 and 2017.

Results The results indicate that the effect of the growth of 0-14 year's old population is insignificant on the economic growth in the short term. The effect of the growth rate of population aged 14-64 years is positive and significant on economic growth, in both the short and long term. Also, the effect of the growth rate of the population older than 64 years on economic growth is negative and significant in the long term (r=-1.37). All variables are stationary and only two variables, including the growth rate of the people over 64 to the total population and the growth rate of the 0 to 14 year's people to the total population are at the stationary level, and their first-order difference will be stationary.

Conclusion An increase in the share of older than 64 years old people can slow down the economic growth in the country in the long term. In other words, increase in the proportion of this consumer group, reduces the marginal propensity to saving, thus makes the formation of capital troubled, and reduces capital per capita, so it will have a negative effect on economic growth.

Extended Abstract

1. Objectives

Over the past 50 years, the world has experienced a large increase in population number and growth rate. Needless to say, the population and its demands are the foundation of any long-term policy. Moreover, demographic structure and its change over time are significantly effective in economic growth. Achieving high economic development are important goals that all countries are thriving for it; however, economic growth requires identification of potential resources and their proper utilization.

* *Corresponding Author:*
Neda Miri, PhD. Student
Address: Department of Economics, Faculty of Economics, Management and Administrative Sciences, Semnan University, Semnan, Iran.
Tel: +98 (912) 1546150
E-mail: nedamiri@semnan.ac.ir

The population age structure has changed along with the change in the population number that has important and decisive effects on economic growth. The present study aims to analyze the effect of aging on the growth of GDP (Gross domestic products) per capita in Iran over the period of 1987 to 2017, using the Autoregressive Distributed Lag (ARDL) method.

2. Methods and Materials

This study used library research method, through searching in Iranian economic data published by Central Bank of Islamic Republic of Iran and Statistical Center of Iran and United Nation in 2018. In this research, the effect of the age structure of the population on the economic growth of Iran was investigated using the Autoregressive Distributed Lag Model (ARDL) method from 1987 to 2017.

The dependent variable in this model is the GDP growth per capita, as well as the explanatory variables which are selected based on the growth models of Barrow [1], and Levine and Renelt [2]. So, the study variables included gross domestic capital, government consumption expenditures, trade (exports and imports) and age structure of the population.

The reviewed model is as follows:

GDP rate=f (export rate, import rate, RKL, GOV rate, RLPW, RPWP, rate -14, rate+64), which its variables are as follows: GDP rate: GDP per capita growth rate;

Export rate: The ratio of the export growth to the number of employed people;

Import rate: The ratio of the import growth to the number of employed people;

RKL: The ratio of the capital stock growth to the number of employed people;

GOV rate: The ratio of the government expenditures growth to the number of employed people;

RLPW: The ratio of the employed people growth to the active population proportion;

RPWP: The ratio of the active population (14-64 years old) growth to the total population proportion;

Rate -14: The ratio of growth of the people aged 0 to 14 years to the total population proportion;

Rate + 64: The ratio of growth of the people over 64 years to the total population proportion.

It is worth noting that all variables used in the model were considered as the rate of growth per capita. Since the main objective of the present study is to investigate the effect of the age structure of the population on economic growth, the age structure of the population was classified into three groups: 0-14, 14-64 (active population), and older than 64 years.

3. Results

In order to implement the ARDL method, EViews 9 software was used. All variables were stationary and only two variables of the growth rate of the ratio of people over 64 to the total population and the growth rate of the ratio of 0-14 year's people to the total population were at the stationary level, and their first-order difference was stationary.

The results showed that in the short run, the effect of the variables of the rate of the growth of import to the number of employed people, the growth rate of the share of the people between 0 and 14 years to the total population and the growth rate of the people over 64 years to the total population is insignificant on Iran's economic growth. In the long term, all coefficients derived from the long-term estimation of the model are significantly effective. The significance of the growth rate coefficient of the share of active population aged 14 to 64 compared to the total population in the short term and long term is consistent with theories that 14-64 years age group is young, active, and working; therefore, as expected, the effect of an increase in the share of this population compared to the total population is positive and significant on the economic growth.

The age group of older than 64 years is the old and retired community group. The higher proportion of this group, which are mostly non-saver and merely consumers, impede the formation of capital. As a result, increasing the share of this age group has a negative and significant effect on economic growth in the long term. Increasing the population growth rate of people aged 0-14 years compared to the total population has also a positive and significant effect on the economic growth rate in the long run. Although this conclusion is not expected theoretically, the workforce in Iran and in many developing countries includes children over the age of 10, some of which are in this group. The increase in the population of this age group can also stimulate households' demand on one hand and their willingness to save for the future of their children, which will result in the long-term economic growth. It should be noted that the validity

of these models is confirmed when existing variables are accumulated.

4. Conclusion

According to the research objective, the increase of active population share and working age group of 14-64 years can lead to economic growth, in the short and long term, but an increase in the share of older people than 64 years old, can lead to decrease in economic growth in the country in the long term. In other words, increase in the share of this consumer group, reduces the marginal propensity to save, thus makes the formation of capital troubled, and reduces capital per capita, so it will have a negative effect on economic growth. An increase in the share of a population under the age of 14 years in the short run will have no significant effect on the economic growth. But in the long run, it can have a positive effect on economic growth due to the stimulation of demand and the increased desire for household savings (to motivate future delivery of their children).

Ethical Considerations

Compliance with ethical guidelines

There is no ethical principle to be considered doing this research.

Funding

This study was extracted from a PhD. thesis titled "The effect of population aging on economic growth" which was authored by Neda Miri, supervised by Dr. Majid Maddah and Dr. Hossein Raghfar, and approved by Faculty of Economics, Management and Administrative Sciences at Semnan University.

Authors' contributions

All authors contributed in designing, running, and writing all parts of the research.

Conflicts of interest

The authors declared no conflict of interest.

Acknowledgments

The authors would like to thank Ms. Kermani, employee of Iran Plan and Budget Organization, for valuable cooperation.

JEL Classification: C22, J10, O40