

## **MODELS AND MEASURES OF POPULATION AGEING**

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### **Abstract**

Greying of population or population ageing is almost a pan-global phenomenon in the contemporary world. As the world is experiencing a surge in the share of its aged people, what may precisely be termed as '*geromotic boom*,' what concerns most to the policy makers is to provide secure ageing to the elderly people on one hand along with carrying on with the process of development. The provision of socio-economic security would definitely have its impact on the exchequer of any country. The implications of population ageing may vary with space and is supposed to have multifarious impact on all aspects of life. Ever since the phenomenon of population ageing has attracted the attention of the world, several models and measurements have been developed across the globe mainly involving socio-economic parameters so that an understanding may be developed regarding the extent and magnitude of the ageing process.

**Key Words:** Population ageing, measures, ratios.

### **Introduction**

Greying of population or population ageing is almost a pan-global phenomenon in the contemporary world. As the world is experiencing a surge in the share of its aged people, what may precisely be termed as '*geromotic boom*,' what concerns most to the policy makers is to provide secure ageing to the elderly people on one hand along with carrying on with the process of development. The provision of socio-economic security would definitely have its impact on the exchequer of any country. Again, the implications of population ageing may be different for developed and developing countries. The geromotic boom experienced by the world transcends beyond demographics and is expected to have multifarious implications for the society, economy, polity, culture, health and public administration etc.

Ever since the phenomenon of population ageing has attracted the attention of the world, several models and measurements have been developed across the globe mainly involving socio-economic parameters so that an understanding may be developed

regarding the extent and magnitude of the ageing process. This would not only aid in the formulation of necessary policies for the target group, that is, the elderly population but would also provide an estimation of the 'burden' of these people on the younger population of any nation who otherwise constitute the productive workforce.

### Models and Measures of Population Ageing

The *Coefficient of Old Age* is one of the simplest *measures of population ageing*. It simply means the share or the percentage of the aged in the total population of any area.

However, a more popular measure of population ageing is the *index of ageing* which is basically a ratio of the aged population i.e. 60 years and above (the benchmark age for ageing as proposed by the United Nations) and those belonging to the age group of 0 to 14 years. A *model* of the index of ageing was developed by **Basu and Basu (1987)** to analyse the extent of population ageing in India and Japan between 1980 and 2025. This *model* was later modified by **Kulkarni in 1988**. The index of ageing was used by **Rajan et.al (1999)** to arrive at the conclusion that the ageing process was much slower in India between the decades 1961 and 1991 attributable to its then higher fertility rates; but was projected to gain momentum by 2021.

A more appropriate measure of population ageing is the *median age*. It is the age which exactly divides the population of an area into two groups in a way that half of the population is younger than this age and the rest half is older than this age. An upward shift in the median age necessarily means the onset of the process of ageing in the population.

Apart from the above measures, there are other measures of population ageing that have economic connotations attached to them. They are essentially eco-demographic measures of population ageing that may actually enable us to assess the actual '*burden of population dependency*' on the society.

The most of these measures is the *old age dependency ratio*. This measure was presented by **Karol Ballod** in his handbook of statistics (**Rosset, 2013**). It simply means the ratio of the persons aged 60 years and above and those aged between 15 and 59 years. This measure presumes that all persons in the age group of 15-59 years are economically productive while those who are 60 years and more are economically unproductive.

The inverse of old age dependency ratio is the *potential support ratio* or the *old age ratio*. This ratio actually provides an idea about the available support base for the older

population. Hence, it is calculated with the number of persons in the age group of 15 to 59 years as the numerator and the persons aged 60 years and above as the denominator.

The *parent support ratio* is another measure which is similar to the old age dependency ratio. It measures the number of persons belonging in the 'oldest-old' category, that is, those aged 80 years and above, per 100 persons from the 15 to 59 age group. This is the most appropriate measure in estimating the support base of the elderlies from their families. An increase in this ratio suggests that those who are progressing towards the end of their working phase, they would have more aged parents to be supported by them in future (**Subaiya and Bansod, 2011**).

The *economic support ratio* is basically a modification and alternative measure to old age dependency ratio. It depicts the ratio of the number of equivalent workers or producers in a given population to the number of equivalent consumers in the same population. The concept of economic support ratio was formally introduced by **Mason and Lee** in **2006**. This measure takes into account productivity and consumption at different ages and in doing so, it overcomes certain shortcomings of the simple old age dependency ratio. Firstly, it is based on the assumption that neither all younger persons are economically productive nor all older persons are economically unproductive to the same extent. Secondly, consumption varies at different ages. Finally, this measure weighs the population of a given age by the productivity and consumption of persons of that age.

It may be interesting to note that all these measures of population ageing have been developed by the United Nations.

## **Conclusion**

Population ageing may pose several challenges on the socio-economic fronts across the globe with the nature of these problems varying between developed and developing countries. Hence the extent and magnitude of the problem needs to be discussed at all levels ranging from macro to micro through the meso. While the theories pertaining to population ageing developed within a particular socio-cultural framework provide deep insights about the situations of the elderly population in the society, the models and measures of population ageing aids in making any study related to the phenomenon more enriched both from qualitative and quantitative points of view. In fact, theories conceptualized become more effective when supported with empirical evidences.

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