Comparing Ageing in Europe and Asia: Adjusting for life-expectancy and cross-country differences

Abstract:

Traditional indicators of ageing misleads the population ageing scenario in different countries. New measurements of ageing either uses a constant remaining life expectancy to define elderly (Sanderson and Scherbov, 2005,2007) or define elderly based on the age distribution (Sanderson and Scherbov, 2005,2007). But, there are also cross-country differences in whom is to be considered as elderly. In this paper, we combine In this paper, we use the characteristic approach framework (Sanderson and Scherbov, 2013) and understand the cross-country differences in elderly using survival analysis. Our results agree with the new measures of ageing that the traditional measures of elderly has been misleading. The results also suggest when the cross-country differences in elderly is accommodated, that the Old age dependency differences between European and Asian countries is lesser and there are some trend reversals for some countries.

Introduction:

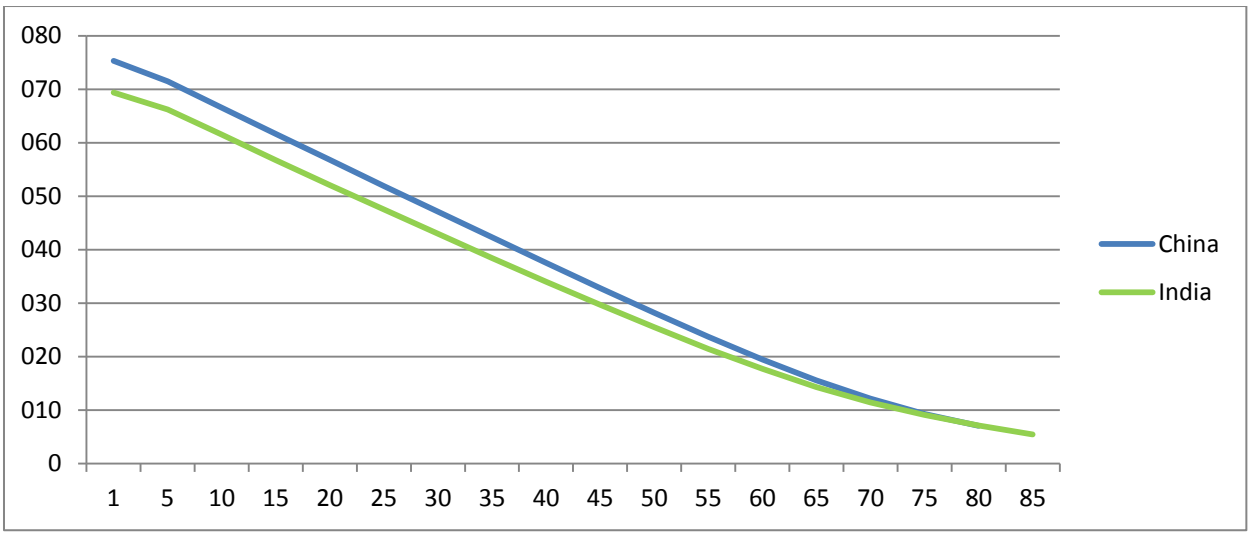
The number and share of elderly people has been increasing extensively in most countries in recent decades and the increase is projected to accelerate in the upcoming decades. Population ageing is to become one of the most substantial social renovations of the twenty-first century and the world is expected to hold largest share and size of elderly ever. Europe has the highest share of elderly among total population, whereas Asia has the highest number of elderly in the world (UN World Population Ageing Report, 2015).

An important drawback of the existing measures of ageing, like the proportion of people aged 65 or 80 and over, or the old-age dependency ratio is that they do not take into account the vast increase in life expectancy at birth for almost all parts of the world during the last four decades. Hence, there is a tendency to over-estimate the impact of population ageing when these indicators are used. Out of the different approaches that do accommodate for the improvements in life-expectancy, the one that uses remaining life expectancy (RLE) has gained momentum (Ryder, 1975; Siegel, 1993; Sanderson and Scherbov, 2005,2008). In this approach, the elderly population is defined based on the age at which RLE is a fixed number of years, mostly 15 or 10. Attractiveness of the measure is its 'forward looking approach' which is in line with people's decision making that is more based on their future plans than based on their chronological age. Sanderson and Scherbov (2005) calls this approach the 'prospective age' approach and uses a threshold RLE of 15 to define elderly.

While this approach has been successful to incorporate improvements in life expectancy within a country, using the same RLE for different countries might not sufficiently grasp cross-country differences in ageing. Life expectancy and improvements in life expectancy has been traditionally different in the developing and developed countries (UN World Population Ageing Report, 2015).

Ageing means different things in different countries (Diamond Jared, 2012). Hence, having a RLE 15 does not mean the same across different countries with different age distribution and age structure. In the 1980s, at the chronological age of 65, the RLE was 15. Also, it was assumed that the RLE of 15 is pragmatic due to the availability of data. These were among the main reasons to choose an RLE 15(Sanderson and Scherbov, 2005,2007). But, there are also cross-country differences in whom to be considered as elderly. Being with an RLE of 15 has different meaning in different countries, just as being of age 65 is different in different countries. In countries where there are more number of people surviving to higher ages, ageing postpones to later age. The following example of India and China illustrates that two countries may have similar RLE, but the survival rate may be different.

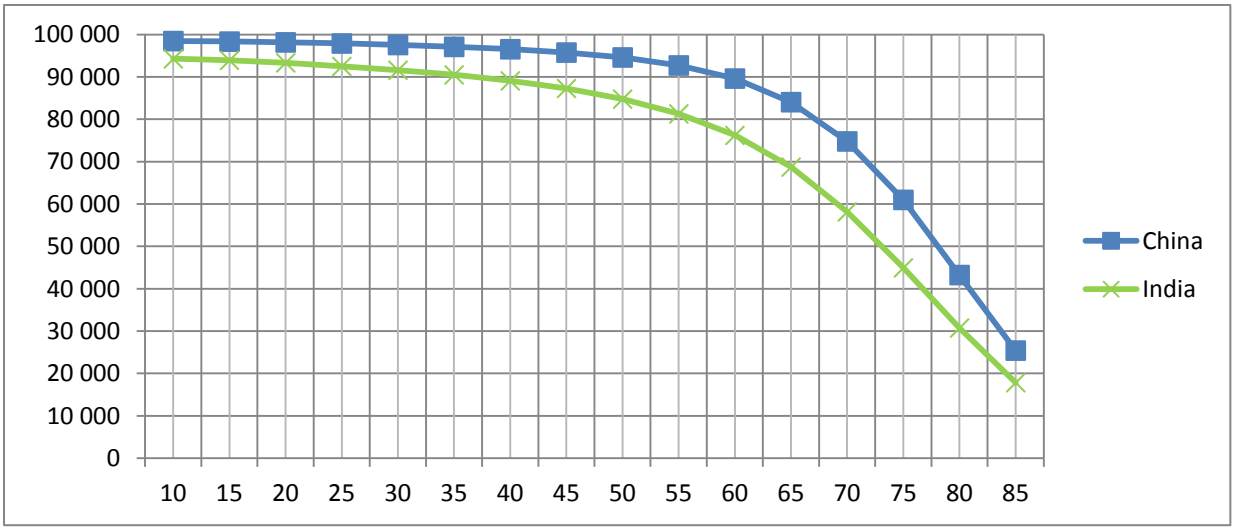
Figure 1:



Author's calculation based on UN Population data, 2010.

From the figure 1, it can be seen that there is only small difference between that RLE of India and China at different ages. The difference between the threshold ages of the two countries would be hence be low if we use a constant RLE of 15 years. But the proportion of people surviving at different ages is different for these countries. This can be observed from figure 2.

Figure 2:



Author's calculation based on UN Population data, 2010.

It can be observed that at a particular age, say 60, the proportion of people surviving in China is much higher than that of India. It means that it is more common to be of age 60 in China than in India. Hence, the old-age in China postpones to a later stage that that of India, as there is cross-country difference in being 60 in these two countries.

Objective: To compare ageing in Europe and Asia after adjusting for life expectancy and cross country differences

Approach and Methodology: We make use of the characteristics approach framework (Sanderson and Scherbov, 2013). By this approach, two populations with the same characteristics have the same 'alpha-ages'. In our case, this means that two populations that has the same survival rate has same level of ageing. The age at which the survival rate reaches a pre-defined survival rate is the old-age threshold for that particular population.

Taking clues from the 'prospective approach' that uses a RLE of 15, based on the RLE at age 65 of Europe in 1980, we look into the survival rate at age 65 for Europe. The survival rate of European population in 1980, which is 74.6 ~75. This means that 75% of the European population survived the age of 65 in 1980. Taking this as the standard, we compare the ageing in Europe and Asia. Hence, in our approach a population reaches old-age threshold at that age when less than 75% of its population survives. We therefore accommodate the cross-country differences in who is considered old by this approach.

Results:

Table 1: Age at which survival rate is 75%- Selected European and Asian countries

Country/Region	Age 75% of population survives
ASIA	67
China	70

Japan	78
India	61
EUROPE	70
Ukraine	63
Germany	74
Netherlands	75

Author's calculation based on UN Population data, 2010.

Table 2: Old-Age Dependency ratio and percent of elderly using new old-age threshold: Selected European and Asian countries

Country/Region	OADR	Percent of elderly
China	7.58	5.83
India	13.08	8.24
Ukraine	27.24	18.21
Netherlands	10.07	7.64
Germany	15.83	11.91
Japan	12.60	9.75
ASIA	9.26	6.40
EUROPE	17.25	12.39

Author's calculation based on UN Population data, 2010.

It can be observed that our results agree with the Sanderson and Scherbov (2005,2007) that the traditional measures of ageing gives an exaggerated picture on ageing. At the same time, this results understand the cross-country differences in whom to be considered old. The proportion of elderly population and the old-age dependency ratio is lesser than that of the traditional measures if we accommodate for the improvements in life expectancy and cross-country differences in ageing.

It is also interesting to note some trend reversals with this measure. For example, it can be seen that the percentage of elderly in China is less than that of India, just as the percentage of elderly in Germany is more than that of Japan. Hence, it can be understood that if we adjust for when a population is considered as old in different countries, the ageing picture changes.