

Measures of ageing and wellbeing

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Population ageing is the process whereby low fertility and decreasing mortality gives rise to changes in the age structure of the population within which older people form an ever increasing proportion of the total. It is considered to be of economic importance because of a fundamental feature of the economic life-cycle, namely that working-age adults produce more through their labour than they consume, contrary to elderly and children who they directly or indirectly sustain.

The level of past, current or future levels in population ageing depend much on how it is measured. However, while the concept of population ageing is straightforward, there is no consensus as to what indicator is best to use, reason why over the last decade or so there has also been debate on how aged our (or any) society really is. Indeed, the population ageing indicator to use should really depend on what aspect of population ageing we are studying, e.g. whether it is to estimate the ratio between elderly and the working age population, or if we want to measure changes in economic behaviour such as income and consumption, or health and disability within the context of population ageing.

While it may appear straightforward, the level of population ageing also depends on how the old-age and working-age populations are defined. Traditionally, fixed age boundaries linked to the statutory pension age and the minimum school-leaving age are used to separate the old-age from the working-age population. With regard to the Old Age Dependency Ratio (OADR), the most common of elderly dependency ratios which is obtained by dividing the elderly population by the population of working age, the elderly population is usually defined as those aged 65 or older (or sometimes 60+) and the working age population as 15-64, 16-64, 20-64, 20-59 or similar. One important reason population ageing measurements are based on static age boundaries is because of the age of eligibility that is set by public policy for social arrangements related to ageing, particularly public pension plans. The question that can be raised, however, is how useful a static definition really is given that it implicitly assumes that there will be no progress in important factors such as remaining life expectancies and disability rates.

Counting the 'dependent' elderly

Paradoxically, the main process that causes population ageing –declining old-age mortality– makes age a poor measure of its progress. When lifespans lengthen, any given age becomes a marker reached earlier along a lifecourse. In 1919, the year statutory retirement was first introduced in Spain and set at the age of 65, mean life expectancy for women at that age was just over 10 years. Today she could expect to live another 23 years (respectively 9.5 and 19 years for men). Yet, the OADR defines all people above the statutory pension age as 'dependent', regardless of their economic, social or medical circumstances. Moreover, as remaining life expectancy (RLE) rises, elderly thus become 'younger', healthier and fitter than their peers in earlier cohorts, something which the OADR overlooks. Many have accumulated substantial assets, their spending power has sharply risen and labour force participation of the 65+, who have valuable experience or specialist knowledge, is increasing. We also know that most acute medical care costs occur in the final months of life, with little impact from the age at which these months occur, while in some countries there is evidence that severe forms of disability is being postponed to later ages. In order to capture this changing significance of age is to consider that the age of a population comprises two components: the years lived of its members (their ages) and the number of years left until death (i.e. RLE). In a period of lengthening lifespans, not only does the average age of the population increase, so too does the RLE associated with each age. In the context of elderly becoming 'younger' the idea of 'years left' instead of 'years lived' can be applied to estimate the proportion of the population that we considered elderly. Specifically, rather than making the age threshold of 'elderly' depend on a fixed age boundary like 65+ or 60+ we can make it depend on a fixed remaining life expectancy. Usually 15 years is used as in low mortality countries, which today corresponds to around 70 years for men, but equalled about 65 in the late 1980s. An alternative to the proportion of the population aged 65+ would then become the proportion of the population in age groups that have a remaining life expectancy less than or equal to this threshold. The life table is used to derive the age at which RLE equals 15, but as the age at which RLE15- tends to fall between two completed years of age, linear interpolation is applied to obtain the exact age. Subsequently,

using population data by single age and sex the total population equal to and above this age is obtained (also through interpolation) and divided by the total population to arrive at the proportion. Likewise, as an alternative to the OADR the population with RLE15- can subsequently be divided by the population with more than 15 years of life expectancy and is at least 20 years old (rather than 15 or 16 as many older teenagers and young adults still attend secondary or higher education meaning that most are not yet (fully) active in the workforce). This has been called the Prospective Old Age Dependency Ratio (POADR).

Counting the 'working' population

However, both the POADR and the OADR assumes that everyone of 'working age' actually works despite the fact that the knowledge economy keeps youngsters in education for longer while many older workers choose or are obliged to retire early. Meanwhile, greater gender equality and dual-career families have added millions of women workers to the labour market over the last 50 years. Using age to define the working population thus makes little sense. Indeed, if we count those not employed, for whatever reason, as dependent we find that in many European countries there are more dependents of working age than there are elderly who do not work. A suggested alternative is therefore to apply the same numerator as before but divide it by the population in paid employment, irrespective of age (known as the Real Elderly Dependency Ratio). Another element that should be considered in dependency ratios is part time work, a phenomenon that has become more common over the course of the last decades, thus making the number employed not comparable over time. In fact, the total number of hours worked in a year has also declined substantially due to the rise of the eight-hour working day, five-day working week and a substantial reduction in the number of working days per year (through increased holiday entitlement). One alternative population ageing indicator is the 'Non-Working-aged' Dependency Ratio, which is the number of non-working persons over 60 per full-time equivalent worker.

Old age vs. ill-health

With regard to more health related population ageing indicators one alternative that has been used is to consider disability rather than life expectancy. In a context of increasing proportions of elderly in high income/low mortality countries over the next decades, improvements in the functional status of elderly people could help mitigate the rise in the demand for, and hence expenditure on, long-term care. Pertinent is the study of disability, particularly with regard to ascertaining the population who has severe difficulty to perform one or more basic activities of daily living (ADLs). As an indicator of dependency, knowing what the trends are is relevant for policy because it is closely related to demands for long-term care.

While longer life expectancy does not necessarily imply more years in bad health, there is no scientific agreement whether we are living both longer and better. From the 1960s to 1980s in the US, UK, Canada and Australia the increase in life expectancy was higher than disability free life expectancy, causing the weight of the years lived in health to reduce from roughly 90% to 80% of the average life expectancy. However, further analysis shows that this decline was due to an increase in mild or moderate disability, while the severe form had a trend similar to life expectancy, especially in old age. Available data reflects a confusing situation because the trends were determined by the weight of mild disabilities, which are the most difficult to measure and compare internationally. By contrast, life expectancy without severe disability, a more objective measure, showed similar increases as total life expectancy, which would go against the more pessimistic views. More recent studies also point that limitations and disabilities are being postponed, especially among the young-old up to age 85, despite an increase in chronic diseases and conditions. However, while the latter would appear to be contradictory it is partly accounted for by early diagnosis, improved treatment, and amelioration of prevalent diseases so that they are less disabling. Finally, increasing levels of educational attainment and income in elderly people, improved living and workplace conditions, reduced poverty, changes in marital status towards a rising proportion of couples in elderly people, and improvements in early childhood conditions might have contributed to the fall in disability. Hence, people aged younger than 85 years are living longer and, on the whole, are able to manage their daily activities for longer than were previous cohorts. The situation is less clear for those older than 85 years.

In terms of specific population ageing indicators that include a health component, one simple example is decomposing the OADR into an old-age healthy dependency ratio (HODR) and an old-age unhealthy dependency ratio (UnHODR). This ratio represents the weight of old people in relation to the population of working age irrespective of the health condition of those on either side of the equation. Indeed, the fact that poor health is the most important determinant of exit from paid employment in Europe while there is potential growth in the number of the elderly who are still in good health raises the question of whether potential improvements in health and disability could compensate for the ageing process on the labour supply side of the market. The authors' new indicators thus distinguish between a) the weight of those who are in good health and could potentially remain in the labour force; and b) those who are disabled or have chronic conditions, and are therefore less likely to work, and are more likely to require financial and other support.

If all people of working age are considered supporting the elderly population with disabilities, results show that the growth in the number of elderly people in Europe (defined here as 65+) is expected to cause a rise in both healthy and unhealthy dependency ratios but in which the healthy dependency ratio is projected to make up a larger part of the OADR (50% in 2030 compared to 57% in 2006) due to the anticipated future improvements in population health and positive migration balance.

Internationally- or time-comparable data on disability are, however, not often easily available. One alternative is to only consider the elderly population expected to die within five years, a threshold that could be considered as an estimate of the potential health care needs and expenditure. Results for the US have shown that the ratio of this group of elderly to workers (i.e. the health care burden) has been very stable since around 1980 and will only slowly start to increase in a few years' time.

Measurements of wellbeing

The concept of well-being is very similar to that of life-satisfaction or happiness as it basically refers to the quality of life, including our health, the relationship with our partner, family and friends, the quality of our work (job satisfaction), our political freedom, our physical environment, etc. Changes in health satisfaction has the largest effect on well-being when compared to changes in other domains such as one's financial situation, working status and living and social environment.

In surveys wellbeing is often measured by asking individuals to simply denote how satisfied or how happy they are with their life as a whole. Regarding the health aspects of wellbeing, questions may be subjective -those directly answered by the respondent- as well as objective, e.g. through the conduction of physical tests such as taking blood pressure, a hand grip test or a walking speed test. A commonly asked question on self-perceived health is:

“Would you say your health is..”, whereby the respondent has the following five response categories: 1. poor; 2. fair; 3. good; 4. very good; 5. excellent.

Also common in health research, particularly focussing on elderly, are measures that assess ability and limitations in self-care and independent living activities to evaluate disability prevalence and trends. In particular, three large population-based surveys of aging in the United States (the Health and Retirement Survey or HRS), the United Kingdom (the English Longitudinal Study of Aging or ELSA), and Europe (the 12-country Survey of Health, Ageing and Retirement in Europe or SHARE) incorporate such measures in the form of identically worded questions about difficulty (on a scale ranging from 0 to 11) in doing so-called activities of daily living (ADL) and instrumental activities of daily living (IADL). All three surveys asked whether, “because of physical, mental, emotional, or memory problems,” the sample person had “any difficulty” (yes/no) with a particular activity. Respondents were asked to exclude any difficulties expected to last less than 3 months. ADL's include (a) dressing (including putting on shoes and socks), (b) eating (such as cutting up your food), (c) using the toilet (including getting up and down), (d) bathing and showering, (e) getting in and out of bed, and (f) walking across a room. IADL were as follows: (a) preparing a hot meal, (b) shopping for groceries, (c) making telephone calls, (d) taking medications, and (e) managing your money, such as paying your bills and keeping track of expenses.

There are two other measures of wellbeing that are worthy of mention as their utilization, especially when analysed alongside other variables such as age, sex, marital status, education and wealth, provides important insights into population groups that may be most vulnerable. The first one is related to depression. One index is the so-called Center for Epidemiological Studies Depression Scale

(CES-D), created by adding up to 20 scale items representing a list of ways one might have felt or behaved during the past week, such as whether respondents felt bothered by things that usually didn't bother them or whether their appetite was poor. The second one is De Jong Gierveld Loneliness Scale –a validated tool to measure loneliness in adults of any age. Loneliness is an individual's personal, subjective sense of lacking these things to the extent that they are wanted or needed and the scale is a self-reported measure that explores the gap between the affection and intimacy desired to that experienced; recognising that loneliness is more than being alone. In the initial publication the scale consisted of 11 items (six that address emotional loneliness and five social loneliness), but more recently, a simpler scale of just 6 items was constructed and validated (3 emotional loneliness and 3 social loneliness items): (a) I experience a general sense of emptiness, (b) I miss having people around, (c) I often feel rejected, (d) There are plenty of people I can rely on when I have problems, (e) There are many people I can trust completely, (f) There are enough people I feel close to.

Lastly, recently a macro-level indicator of wellbeing, the Active Ageing Index (AAI), has been constructed as a tool to measure active and healthy ageing across countries (<http://www1.unece.org/stat/platform/display/AAI/Active+Ageing+Index+Home>). On the basis of a combination of population-level indicators and aggregated results from micro data obtained from labour force and other surveys, AAI measures the level to which older people live independent lives, participate in paid employment and social activities as well as their capacity to actively age. The index is constructed from 22 individual indicators that are grouped into four distinct domains representing different aspects of measuring the untapped potential of older people for active and healthy ageing: employment, participation in society, independent, healthy and secure living, capacity and enabling environment for active ageing. AAI also offers breakdown of results by gender. However, the AAI might be less appropriate for lower income countries, particularly those of Eastern Europe as countries may score high in domains like employment not because they are ageing actively, but because they need to work to be able to make ends meet as their pension system is less well developed and generous compared to wealthier countries.

To conclude, population ageing is the result of changes in the age distribution that has led to proportionally more elderly in the population. Due to the widespread use of inadequate population ageing indicators such as the OADR this phenomenon is often seen as a threat to economic growth and government budgets spending even though many other factors are involved in the observed and projected increases in health care and social benefit spending or economic production. Indeed, an ageing population even has the potential for economic growth with the right policies in place. However, a more widespread use of more precise population ageing indicators is still required in order to get the general public, policy makers and even some academics to also understand this.

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