Stalling Life Expectancy in Europe: a Short-Term Fluctuation or New Stage in Health Transition?

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Short abstract

In the most recent years, life expectancy improvements in several low-mortality countries have unexpectedly slowed down or even stopped. This unexpected stagnation in Europe contrasts to continuing impressive progress in Japan and some other East Asian populations. Differently from the USA, where the reversal in life expectancy trends was driven by adult mortality crisis, the European countries suffer from lacking health improvements at older ages. Do these contradictory changes refer to short-term fluctuations or rather they mark a new stage of health transition? Our preliminary analyses suggest that many low-mortality countries have already exhausted the resources from "cardiovascular revolution", which fuelled longevity progress during the few prior decades. Therefore, further longevity advances require new ways in combatting ageing-related diseases at increasingly advanced ages. We explore this hypothesis by systematically comparing age- and cause-specific mortality trajectories and their contributions to the recent life expectancy changes among the most- and least-successful low-mortality countries. Finally, we argue that the observed slow-down in life expectancy improvements in some countries does not suggest about the approaching human longevity limits. It rather confirms that the new wave of health progress eventually leads to a new phase of divergence between the established (Japan) and newly emerging (S. Korea) vanguards in East Asia and increasingly lagging behind European countries. Meanwhile, the stalling life expectancy improvements in Europe should be taken seriously, because as it has happened in the past, a short-term stagnation may eventually lead to a prolonged longevity crisis.

Extended abstract

Relying on the data from the Human Mortality Database, the Human Cause of Death Database, and the WHO Cause of Death Database, we seek to provide more empirical evidence and theoretical insights on the recent stalling longevity improvements in high-income countries in Europe. Do these contradictory changes refer to short-term fluctuations or rather they mark a new stage of health transition?

In the most recent years, progress in life expectancy in several low-mortality high income countries have unexpectedly slowed down or even stopped (Figure 1). While in the most advanced country, Japan, female life expectancy resumed progress after the Fukushima disaster in 2011, many other leading longevity countries (including the second best-performing country Spain, France, Italy, and Sweden) experienced either a notable slow-down or stagnation in the longevity progress. The most worrying changes occurred in the UK and, especially, the USA both showing reversals in female life expectancy trends. The picture is a bit less dramatic for males with the exception of the USA where the fall is even worse than for females.

A first exploratory analysis based on HMD data has shown that the determinants of the stagnation in life expectancy are quite different in the USA, where stalling health improvements at older ages occurred in the context of striking mortality increases at adult ages (Figure 2). The adult mortality epidemics due to so called “deaths in despair” including drug- and alcohol-related and violent deaths were the largest contributors to the decline in life expectancy in the USA (Case & Deaton, 2015; Ho & Hendi, 2018). Meanwhile the life expectancy progress in France, Sweden, and the UK stopped during 2014-2017 because of stagnation or even increases in mortality at older ages (Figure 2). Looking at causes of death, it appears that, in the United Kingdom and France, the slow-down of progress in life expectancy is mainly due to the increase in mortality from neurodegenerative diseases, and especially senile dementia. However, these cause-specific results, which rely on a very short period of observation, still need to be confirmed.

Increasing divergence in both life expectancy trends and pace of improvements can also be observed looking at female life expectancy at ages 65 and (especially) 80 years (Figure 3). In this case, one may observe important longevity disparities between the European countries, with Sweden, the UK, and the UK lagging behind the remaining countries. However, although France and Spain experienced more favourable trends, their performance was still much less systematic and slower than in Japan, SAR Honkong, and South Korea. This figure also provides evidence about simultaneous notable declines in life expectancy at old ages following the 2003 heat wave and flu epidemics of 2015. However, one may also identify the recent and prior slow-downs or stagnation in life expectancy occurring in some countries which cannot be attributed to temporary fluctuations and suggest about more fundamental problems.

Although some temporary departures from secular trends are unavoidable, the increasing longevity disparities between the selected high income countries suggest about the new step of the health transition. Another important signal about the ongoing major epidemiological change concerns the declining importance of the “cardiovascular revolution”. The longevity gains due to cardiovascular system diseases have substantially decreased thanks to a major progress leading to historically minimal levels in cardiovascular mortality in the majority of high income countries. Thus, the further longevity gains require reductions of mortality at increasingly advanced ages and finding the new ways to fight persisting or new ageing-related threats such as cancers or neurodegenerative diseases, including Alzheimer’s disease. In other words, the recent stagnation can be compared to what occurred in the 1960s when progress in life expectancy in many developed countries stopped due to

diminishing gains from the decrease in infectious mortality and inability to control cardiovascular and man-made diseases.

The observed slow-down in life expectancy improvements in European countries does not suggest about the approaching human longevity limits. It rather confirms that the new wave of health progress eventually leads to a new phase of divergence between the established (Japan) and newly emerging (S. Korea) vanguards in East Asia and increasingly lagging behind European countries. Spectacular health progress at older ages in Japan, South Korea, and the SAR Honkong may suggest about the continuation and even expansion of the global longevity leadership in the East Asian region. Meanwhile, the stalling life expectancy improvements in Europe should be taken seriously, because as it has happened in the past, a short-term stagnation may eventually lead to a prolonged longevity crisis.

Further steps:

- More detailed analyses including more high income countries on age- and cause-specific contributions to the recent life expectancy changes.

- Systematic comparisons of the recent cause-of-death trends in “stagnating” countries as compared to best-performing countries where progress is going on.

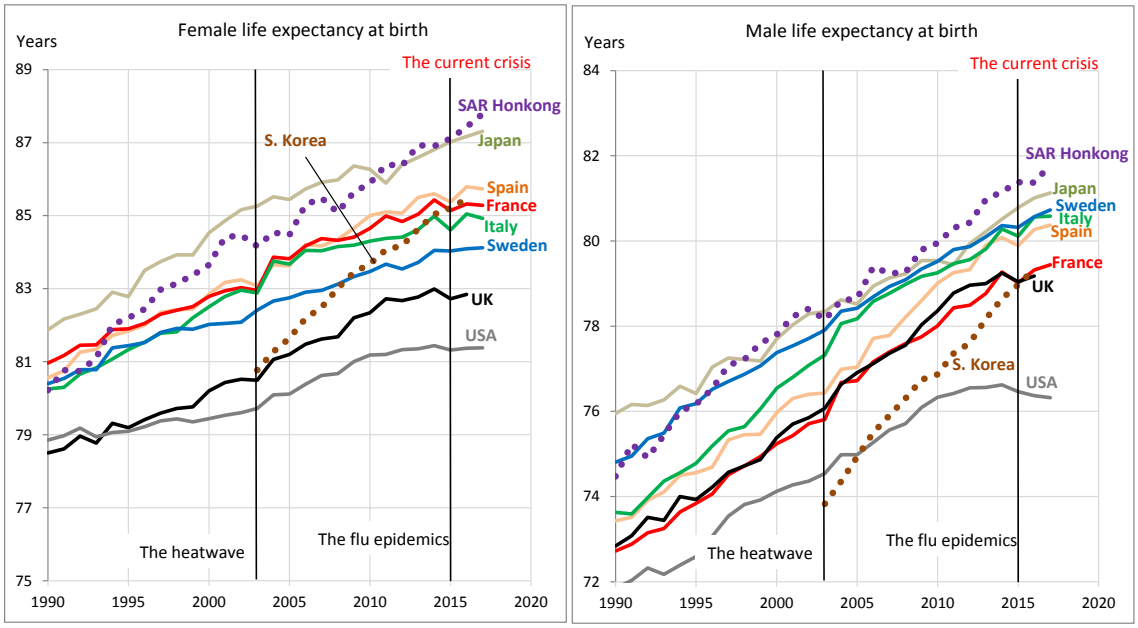

Figure 1. Trends in life expectancy in some advanced countries since 1990, females and males

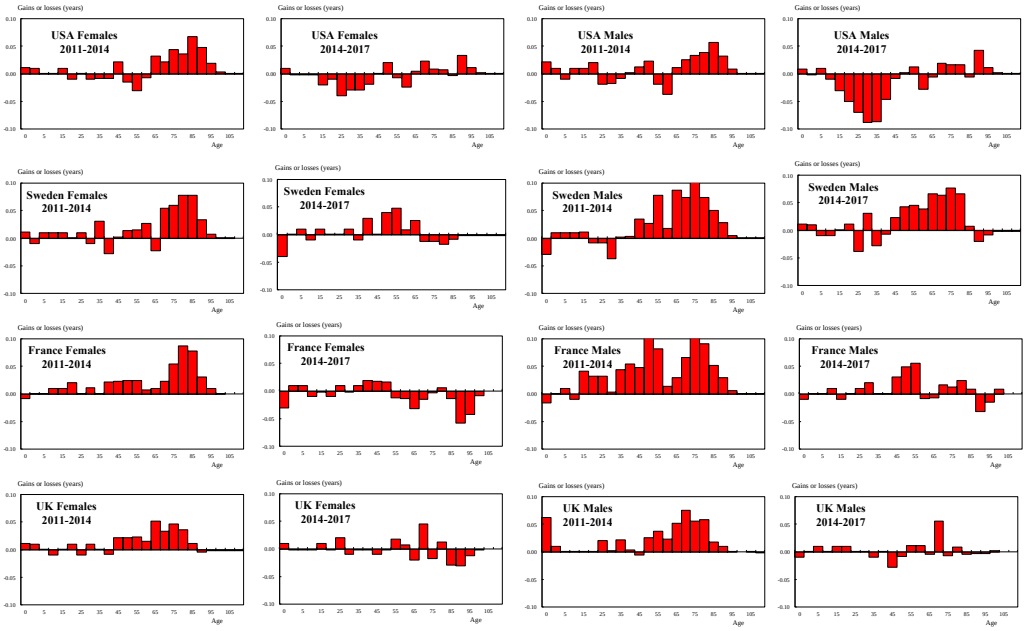

Figure 2. Age components of recent life expectancy changes in 4 low-mortality countries, females and males

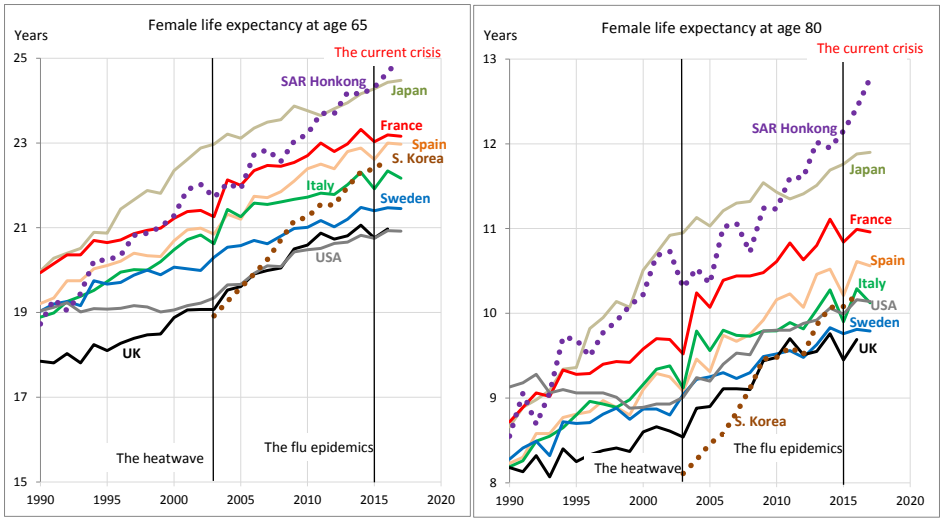

Figure 3. Trends in female life expectancy at ages 65 and 80 in some advanced countries since 1990

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Data sources:

The Human Mortality Database (www.mortality.org)
The Human Cause-of-Death Database (www.causesofdeath.org)
The WHO Cause-of-Death Database (www.who.int/healthinfo/mortality_data/en/)
The Database and Information System by the Italian National Institute of Statistics (ISTAT) (https://www.istat.it/en/)
The INEbase by the Instituto Nacional de Estadística (INE) (Spanish Statistical Office) (https://www.ine.es)