A Note on the Concept of the Equivalent Length of Life

Magdalena Muszyńska-Spielauer [*], Jacques Silber [†]

The goal of this note is to draw the attention of the demographic community to the fact that the measure proposed by Gisbert Goerlich in the paper entitled "Distributionally adjusted life expectancy as a life table function", published in Demographic Research (2020, 43-14), is not a new concept in demography and this fact has not been acknowledged by the author.
The idea of applying economic measures of income inequality to study distributions of deaths by age beyond a single moment of the distribution (i.e. life-expectancy, modal age at death or any of the many measures of the life-span inequality) has been already proposed in 1982 by Silber and further developed by the author via the concept of the *Equivalent Length of Life* (ELL) in a series of articles (Silber, 1983, 1988, 1992). The concept of the ELL is also not new to demographers as two of the papers have been published in a demographic journal, *Genus*, and so the application of the method to study distributions of age at death in the Human Mortality Database countries presented in Muszyńska and Janssen (2016).
While we strongly agree with Gisbert Goerlich that comparisons of mortality between countries would benefit from an inclusion of more than a single moment of the distribution and the index of the "equal equivalent length of life" (the author even uses the original Silber´s term on p.378 and does not quote any of the Silbers´s papers) is perfectly suited for this exercise as based on already well-developed methods to study income distributions, we want to point out that such an index has been not only already developed by Silber but also extended beyond the proposal of Gisbert Goerlich: while in his 1982 article, Silber derived the ELL index also applying Atkinson´s

[*]Austrian Academy of Sciences, Wittgenstein Centre for Demography and Global Human Capital (IIASA, OeAW, Univ. Vienna)

[†]Department of Economics, Bar-Ilan University, Israel

index of income inequality, in the 1983 paper the sensitivity of the ELL to the specifications of the Atkinson´s index was studied. In his 1988 article, Silber extended the index to the adjustment of life-expectancy to dispersion and asymmetry of the distribution. The ELL was given an elegant interpretation that points out to its origins from economic studies "... the length of life which, if being identical for all individuals, would give the same social welfare as the actual distribution of deaths by age." (Silber, 1983, p.21).
Similar to Gisbert Goerlich, Muszyńska and Janssen (2016) applied the concept of the ELL to the Human Mortality Database and demonstrated that it makes an important contribution to our understanding of differences in mortality between HMD countries and their dynamics, which also reaches significantly beyond the contribution of the Gisbert Goerlich paper.

References

Muszyńska, M. and F. Janssen (2016). The concept of the equivalent length of life for quantifying differences in age-at-death distributions across countries. *Genus 72*(1), 6.

Silber, J. (1982). Health and inequality: some applications of uncertainty theory. *Social Science & Medicine 16*(19), 1663–1666.

Silber, J. (1983). ELL (the equivalent length of life) or another attempt at measuring development. *World Development 11*(1), 21 – 29.

Silber, J. (1988). On inequality before death and life table summary measures. *Genus*, 25–39.

Silber, J. (1992). Inequality in mortality: measuring the contributions of various causes of death. *Genus*, 93–107.