Old-Age Healthy Dependency Ratio in Europe

Extended Abstract

Magdalena Muszyńska[1] Yeonjoo Yi[1] Roland Rau[2,3]

[1] Duke University, NC, USA [2] University of Rostock, Germany

[3] Max Planck Institute for Demographic Research, Germany

September 21, 2009

Abstract

We discuss the prevalence of morbidity among the elderly in Europe in 1995-2001 and propose a state-of-health specific (additive) decomposition of the old-age dependency ratio into the *old-age unhealthy dependency ratio* and *old-age healthy dependency ratio* to discuss the weight of morbidity at older ages on the working-age population. About 50% of the population at age 65 and older in Europe lives without chronic physical or mental health problem, illness or disability. In most of the countries the value of the old-age healthy dependency ratio is higher than the corresponding figure for the unhealthy dependency ratio. As the number of people aged 65+ in good health is larger than the number of retired people in bad health, the burden on the people at working ages to finance social security systems could be relaxed if those elderly who are still in good health remained in the labor force for longer periods.

Introduction

Europe is growing older. In the year 2010, the United Nations expects the old-age dependency ratio in Europe to reach the value of 24 (see Table 1). That implies that there will be about four people at working ages (15–64) for each person at retirement age and above (65+). According to these estimates (medium-level scenario), Europe is the forerunner in aging among the world regions. The world as a whole will reach this level of the old-age dependency ratio in the middle of the 21st century. By this time, the proportion of the elderly in relation to people aged 15 to 64

would increase in Europe, and reach the level of two people at working ages for each pensioner. These population dynamics are shaped by three sources of population flows: fertility, migration, and mortality. In the past, fertility played the primary role in changing the age structure of a population. In recent decades, however, improved chances of survival are the primary reason for changes in the age structure of populations in highly developed countries. As Preston et al. (1989, p.691) showed for the United States and Sweden: "the dominant factor in current aging in these countries is a history of declining mortality".

This remarkable increase in life-expectancy in the last century has been also accompanied by an increase in healthy life-expectancy (Robine and Ritchie, 1991). The measure of healthy life expectancy combines in one index information on both mortality and disability. It means that we can expect not only to live longer and longer, but also to enjoy those more years of life in better health.

Does it mean, for example for the discussion of the effects of population aging, that the traditional approach to estimate the old-age dependency ratio should be rather replaced by the measure of the *Old-age-disability ratio* or the *Old-age-morbidity ratio*? These indicators would represent the weight of the number of old people, who are disabled or with chronic conditions. Taking into account exactly those people, who are unable to work and need to be financially supported by others, might be a better indicator for the aging of a population than using only an age threshold (e.g. 65+).

In this paper we discuss the prevalence of morbidity among the elderly in Europe and its changes between 1995 and 2001. In addition, comparing age-standardized morbidity ratios across the countries under study we discuss differences in the prevalence of morbidity and can compare it across countries and calendar time eliminating the influence of age composition. Finally, we propose a state-of-health specific decomposition of the traditional old-age dependency ratio into the additive components *Old-age unhealthy dependency ratio* and *Old-age healthy dependency ratio*.

Based on those indicators we discuss how the improvements in the health status of the elderly and hence their growing ability to engage in economic activity could counteract the financial burden of the growing number of the elderly on the population, especially on the working-age population.

Data & Methods

The data on the prevalence of morbidity by age in the selected European countries was downloaded from the website of the *European Health Expectancy Monitoring Unit* (www.ehemu.eu). It comes from the European Community Household Panel (ECHP) conducted in the years 1995–2001. Disability was measured in a self-assessed question: "Do you have any chronic physical or mental health problem, illness or disability?". The publicly available data presents prevalence of morbidity in the population by sex and age grouped into 5-year age groups starting at age 16 and ends with the open age group 85+.

To obtain the estimates of interest, we used the corresponding population data by age and sex downloaded from the Human Mortality Database (Human Mortality Database, 2009).

In order to compare prevalence of morbidity between the countries and over time, we weighted the age-specific morbidity rates by the standard population structure. We chose the standard population for this age-standardization to be the population of France in 1995.

The old age dependency ratio is 100 times the size of the population 65+ relative to the total population aged 15-64. The value of this ratio has been decomposed into old-age unhealthy dependency ratio and old-age healthy dependency ratio.

Results

Table 2 gives an overview of the extent and variability of morbidity at ages 65 and higher among women and men (and combined) in selected European countries in 1995 and 2001. About 50% of the population at the age 65 years and older in Europe lives with chronic physical or mental health problem, illness or disability. With large variation between the countries, the pattern is far from uniform, though.
The differences between countries and over time persist even when the ratios are age-standardized (lower panel of Table 2). It means that those differences are related to the variation in the level of morbidity and do not result from the variation in the age structure of the population.

The highest levels of morbidity were found in Germany and Finland. In both countries, almost 80% of the population aged 65 declared having a chronic physical or mental health prob-

lem, illness or disability. In both countries we also observe a similar pattern of change in morbidity between 1995 and 2001: an increase in prevalence among women and a decrease among men. In Finland, however, an increase in the prevalence of morbidity among women results from the changes in the age-structure of the population and not in the increase in the percent of the unhealthy in our age-groups (compare lower panel of Table 2).

The lowest level of morbidity characterizes Italy: less than 40% among population aged 65+ has a chronic illness. In addition, over the years 1995–2001, we observe a decrease in the prevalence of morbidity in Italy. These ratios do not change even after the age-standardization.

Unlike in all the other countries, the prevalence of morbidity decreased over time in Italy and Austria despite the fact that the population was aging. In most of the countries under study — only when controlled for changes in the age structure — one can observe a decrease in morbidity. It means that the increasing proportion of people in bad health in those countries is a result of growing numbers getting older and hence entering the age of higher prevalence of morbidity, but the prevalence of morbidity itself in those age-groups decreased over time.

Besides the old-age dependency ratio, Table 3 presents its decomposition into the additive components: old-age unhealthy dependency ratio and the old-age healthy dependency ratio, i.e. when summed up those two ratios are equal to the value of the total old-age dependency ratio.
In the year 1995 the old-age dependency ratio in the European countries under study was about 20%, varying from 18 in Ireland to 24 in Belgium, France, and Italy. It means that there were about five people at working ages (15–64) for each person at retirement age and above (65+).
In most of the countries the value of the old-age healthy dependency ratio was higher than the corresponding figure for the unhealthy dependency ratio. That means that the number of people who are 65 years or older and are still in good health is larger than the number of retired people in bad health. One could argue that the burden on the people in working ages to finance could be relaxed if those elderly who are still in good health remain (at least part-time) in the labor force beyond the typical retirement age of 65 years.

In most of the countries under study, except Denmark and Ireland, we observe an increase in the old-age dependency ratio between the years 1995 and 2001. In all of the countries, this increase is accompanied by a rise in morbidity. In Denmark and Ireland we can even observe a decrease in the healthy dependency ratio. When compared to the previous result, we can con-

clude that in these countries — simultaneous to the process of population aging — we observe an increase in the prevalence of morbidity among the elderly.

References

Human Mortality Database (2009). *University of California, Berkeley (USA), and Max Planck Institute for Demographic Research (Germany)*. Available at www.mortality.org (data downloaded on 01.09.2009).

Preston, S. H., C. Himes, and M. Eggers (1989). Demographic Conditions Responsible for Population Aging. *Demography 26*(4), 691–704.

Robine, J. M. and K. Ritchie (1991). Healthy life expectancy: evaluation of global indicator of change in population health. *British Medical Journal 302*, 457–460.

United Nations (2009). Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. World Population Prospects: The 2008 Revision and World Urbanization Prospects: The 2007 Revision. available online `http://esa.un.org/unpp`, downloaded on 11 August 2009.

Tables

Table 1: Old Age Dependency Ratio by World Region in Selected Years (Medium Variant Projection)

Region	Year					
	1950	1975	2000	2010	2025	2050
Africa	6	6	6	6	7	11
Asia	7	7	9	10	15	27
Europe	13	18	22	24	32	47
Latin America & the Caribbean	6	8	9	11	16	31
Northern America	13	16	19	19	29	36
Oceania	12	12	15	17	23	30
World	8	10	11	12	16	25

Source: United Nations (2009)

Table 2: Upper Panel: Proportion of the Population with Morbidity at Ages 65+ (in %) in Selected European Countries, 1995 and 2001. Change in the Prevalence of Morbidity in Percentage Points. Lower Panel: Age-standardized Proportion of the Population with Morbidity at Ages 65+ (in %) in Selected European Countries. Change in the Prevalence of Morbidity in Percentage Points.

Proportion With Morbidity

Country	**Women**			**Men**			**Total**		
	1995	2001	Change	1995	2001	Δ	1995	2001	Δ
Austria	49	46	−3	49	42	−7	49	44	−5
Belgium	39	41	+2	36	37	+1	38	40	+2
Denmark	56	58	+2	45	56	+11	52	57	+5
Finland	76	78	+2	77	76	−1	76	77	+1
France	58	58	±0	51	51	±0	55	55	±0
Germany	74	78	+4	77	71	−6	75	75	±0
Italy	40	35	−5	36	33	−3	38	34	−4
Netherlands	49	54	+5	43	46	+3	46	51	+5
Portugal	46	55	+9	47	50	+3	46	53	+7

Age-Standardized Proportion With Morbidity

Country	**Women**			**Men**			**Total**		
	1995	2001	Δ	1995	2001	Δ	1995	2001	Change
Austria	50	45	−5	50	42	−8	50	44	−6
Belgium	40	41	+1	36	37	+1	38	40	+2
Denmark	56	58	+2	45	55	+10	52	57	+5
Finland	77	77	±0	78	74	−4	77	76	−1
France	58	57	−1	51	50	−1	55	54	−1
Germany	74	78	+4	77	70	−7	76	75	−1
Italy	41	35	−6	36	33	−3	39	34	−5
Netherlands	48	54	+6	43	47	+4	46	51	+5
Portugal	47	55	+8	47	50	+3	47	53	+6

Table 3: Old-age Dependency Ratio, its decomposition into the (additive) components Old-age Unhealthy Dependency Ratio and Old-age Healthy Dependency Ratio in 1995, 2001, and their associated Changes (Δ) between 1995 and 2001 in percentage points, both sexes combined for selected European countries.

Country	Old Age Dependency Ratio			Old-Age Unhealthy Dependency Ratio			Old-Age Healthy Dependency Ratio		
	1995	2001	Δ	1995	2001	Δ	1995	2001	Δ
Austria	23	28	+5	11	13	+2	12	15	+3
Belgium	24	26	+2	9	10	+1	15	16	+1
Denmark	23	23	±0	12	13	+1	11	10	−1
France	24	25	+1	13	14	+1	10	11	+1
Germany	23	25	+2	17	19	+2	6	6	±0
Ireland	18	17	−1	8	8	±0	11	9	−2
Italy	24	28	+4	9	10	+1	15	18	+3
Netherlands	20	20	±0	9	10	+1	10	10	±0
Portugal	22	25	+3	10	13	+3	12	12	±0