Mortality Convergence between East and West Germany - The Elderly made the Difference

by Robert Beise

Max Planck Institute for Demographic Research, Rostock

Abstract

Mortality improvements beyond age 60 are most important for the narrowing of the life expectancy differences between East and West Germany. For females 80% and for males 60% of reduction of gap were caused by mortality reduction in ages beyond 60 years. If there had been no improvements in old and oldest old mortality after 1989 there would be still a gap of 2.1 years for the female and 1.9 years for male population.

1 Introduction

It is a well known fact, that during the separation of Germany the mortality conditions in Eastern and Western part have diverged. In the late 1980s the life expectancy in East Germany was around 2.5 years lower than in West Germany, for both sexes.

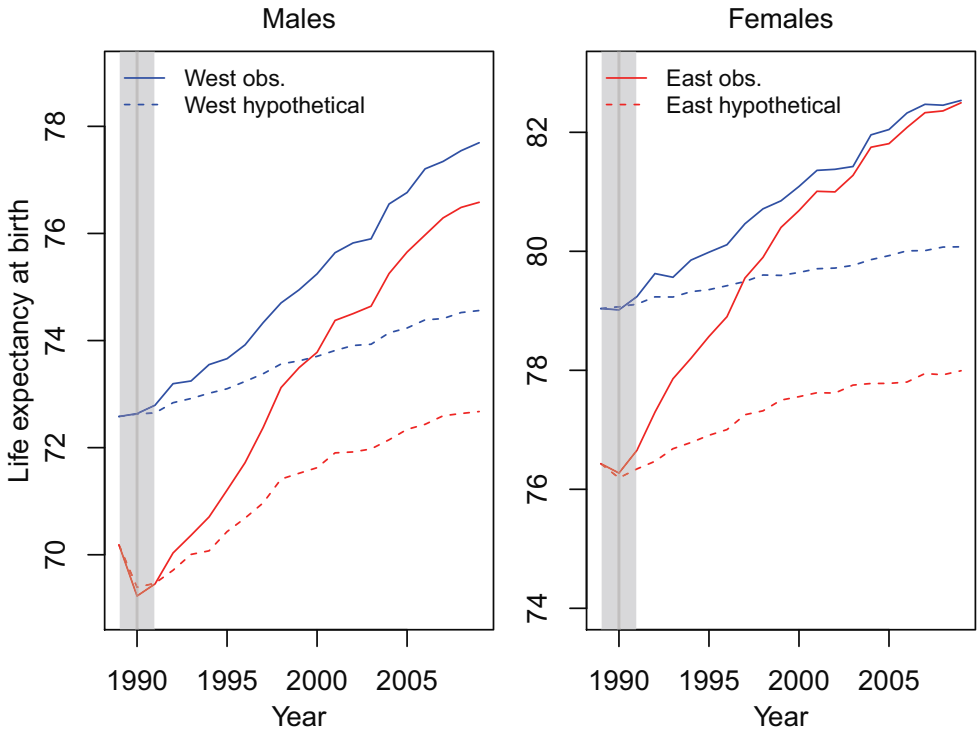
In 1989 the Berlin Wall fell unexpectedly and Germany was reunified in October 1990. Within one year after the fall of the Berlin Wall the eastern part of Germany was integrated into the political, economic and welfare system of the western part. This radical change in the environmental conditions, which led to changes in the demographic measures again, can be seen as a 'natural experiment' (Vaupel et al., 2003). These changes also affected the mortality conditions. Immediately a mortality convergence started and within 15 years the differences almost disappeared. In 2005 there was no gap anymore observable for women. For men it was around 1 year. The female life expectancy at birth increased between 1990 and 2005 by 5.5 years. This is equivalent to an increase of 4 months and 12 days a year, which is even higher than the increase in record life expectancy (Oeppen and Vaupel, 2002).

2 The contribution of Elderly in closing the gap

By decomposition analysis it has been shown that most of this increase in life expectancy in East Germany can be explained by changes in the ages above 60 (Gjonca et al., 2000; Luy, 2004b). But it is the same case in West Germany and most of the industrialized countries (Gjonca et al., 2000; Christensen et al., 2009; Rau et al., 2011). Furthermore, some analysis suggest that a great part, for females even the whole amount, of the remaining gap in mid 1990s is a result of mortality differences in older ages (Nolte et al., 2000; Luy, 2004a). By holding the mortality for older ages constant form 1989 onwards, it becomes more obvious how important the mortality changes in old and oldest-old were for increase in life expectancy and the reduction of the mortality differences after unification.

In figure 1 the observed life expectancy at birth will be compared with a hypothetical situation where the death rates after age 60 were held constant from 1989 till today. In this situation all improvements made after reunification in old and oldest old mortality were excluded. A difference between the hypothetical and observed life expectancy can only be the result of mortality changes in older ages, since all improvements made in ages earlier than 60 years are included. Also the indirect effects of surviving to higher ages, due to mortality reductions in younger age, are taken into account.

Figure 1: Observed e(0) versus e(0) for constant mortality rates above age 60 from 1989 onwards



Source: Human Mortality Database, authors calculation

Table 1: East-West life expectancy differences for observed e(0) and e(0) for constant mortality rates beyond age 60 from 1989 onwards

	Males		Females	
	observed	hypothetical	observed	hypothetical
1989	2.40	2.40	2.61	2.61
1995	2.45	2.67	1.42	2.45
2000	1.46	2.08	0.40	2.09
2005	1.11	1.89	0.24	2.15
2009	1.11	1.89	0.04	2.08

Source: Human Mortality Database, authors calculation

By comparing the observed and the hypothetical life expectancy, it is obvious that the driving forces of the increase in both regions were mortality improvements beyond age 60. While the observed life expectancy increased as described above, the hypothetical one increased very slowly. For East German females the life expectancy under constant old age mortality conditions gained only by 0.6 years instead of 2.5 until 1995, and 1.6 years instead of 6.1 years until 2009. For

West German females the difference is a bit smaller, but still remarkable. The observed life expectancy increased by 3.5 years while the hypothetical one only increased by 1 year. In first 5 years after reunification over 80% of the increase in female life expectancy in East and around 60% in West results from a reduction of old and oldest-old mortality. These results are similar to Gjonca et al. (2000) and Luy (2004b).

Also the reduction of the gap is strongly influenced by the mortality over age 60. In 1989 the gap between female life expectancy in East and West Germany was 2.6 years. In the following years observed gap decreased to 1.4 years in 1995 and to nearly zero in 2009. The hypothetical gap on the other hand decreased only slightly. In 1995 there was still a difference of 2.45 years. Afterwards this difference decreased a bit and became stable from 1999 onwards at a level of 2.1 years. So 80% of the decrease in the mortality differences between East German females and their West German counterparts from 1989 to 2009 can be explained by the reduction in old age mortality.

For males the picture is a little more complex, since in 1990 some reverse effects were observable. In 1989 the difference between East and West German male life expectancy was 2.4 years. In 1990, the hypothetical as well as the observed life expectancy in East Germany went down drastically and the gap rose by 1 year to 3.4 years. This is mainly caused by external causes of death, namely traffic accidents, and ill defined cause (Nolte et al., 2000). The fact that the hypothetical life expectancy also decreased, shows that the mortality increase was limited to younger ages. After 1990 it took some time to recover the life expectancy. The observed value in 1993 reached again the level of 1989, for the hypothetical life expectancy it took even 2 years more. Nevertheless the results in long-run are quite similar to the results for the females. In 2000 the observed gap was reduced to 1.4 years, while the hypothetical one was still 2.1 years. Latest in 2005 both gaps became constant. The difference in the hypothetical case became stable at a level of 1.9 years, which is equivalent to a decrease of differences by 20% compared to 1989. The observed gap instead decreases by nearly 55% to 1.1 years.

3 Summary

The performed analysis show clearly, that the mortality improvements beyond age 60 are most important for the narrowing of the life expectancy differences between East and West Germany after the unification. In the first years also the mortality reductions at the younger ages had a slight influence on the process of narrowing, but latest since 2000, only the reductions in older ages are important. In the long-run, the disappearing of the mortality differences between East and West German females is to 80%, and to 60% for males, caused by mortality reduction in ages beyond 60 years. If there had been no improvements in old and oldest old mortality after 1989 in Germany, the gap between East and West females would had only been reduced to 2.1 years instead of disappearing completely. For males it would had become stable at 1.9 years, instead of 1.1 years. So for a study of the causal reasons for the narrowing and disappearance of the mortality differences in between East and West Germany, it is necessary to focus on causes which affect mainly the old age mortality.

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