

# A Tempo-Based Hypothesis for Converging Mortality in West and East Germany

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## **Extended Abstract**

The demographic changes and developments in Eastern and Western Germany are generally seen to offer a unique possibility to understand the interaction between societal, social respective economic conditions and population processes. Almost identical demographic composition and behaviour until 1945 were followed by 45 years of life under different political and socio-economic structures resulting in completely different demographic conditions (Dinkel, 1992, 1994; Gjonca et al., 2000). With Reunification in 1990 the population in Eastern Germany returned to the Western societal and economic system what caused sudden changes in all its demographic developments. These special preconditions – leading some scholars to describe the Eastern German population as a kind of “natural experiment” (Vaupel et al., 2003) – generated a large number of researches about changes in Eastern German demography. In the field of mortality research especially the rapid convergence of survival conditions since 1990 following roughly two decades of continuous divergence are subject of central interest. The fact that both, the former increase and the recent decrease of the life expectancy gap between West and East Germany were mainly caused by age groups between 60 and 80 led to the central message that “it’s never too late” for increasing length of life (Vaupel et al., 2003).

The general and most important intention of all studies examining the mortality differences between West and East Germany is to find the factor or the factors responsible for causing such a change in East German's survival conditions within only one or two years. There is good reason to assume that those conditions which were responsible for the increase of West-East German mortality differences before Reunification could also have been responsible for or contributed to their later decrease. In the late 1980s, some speculations were formulated about the potential nature of the widening West-East differential in mortality already visible at that time (for an intensive discussion see Dinkel, 1992, 1994; Heinemann et al. 1996; Luy 2004a). The most factors discussed are the same that are assumed to be responsible for the general mortality gap between Western and Eastern European countries (e.g. Bobak and Marmot, 1996a, 1996b; Hertzman et al., 1996) making the search for the causes of mortality trends in East Germany to a subject of important interest exceeding the borders of Germany.

Since after Reunification East Germany was so distinctly removed from the former Eastern European mortality pattern, the prime candidates for an explanation are expected to be those where conditions in East Germany now are different from what was experienced around and before 1990. This limits the number of possible decisive factors to the progress in medical care, the increased availability of nursing care, and the changes in lifestyles and cardiovascular risk factors of Eastern German women and men connected with the new economic conditions after Reunification. Especially the first factor is by most scholars expected to be mainly responsible for the observed mortality trends in East and West Germany before and after Reunification (Chruszcz, 1992; Dinkel, 1994; Schott et al., 1994; Becker and Boyle, 1997; Gjonça et al., 2000). In the same way medical technology is thought to be responsible for the general West-East mortality gap in Europe (Boys et al., 1991; Mackenbach et al., 1996; Velkova et al., 1997; McKee and Nolte, 2004). Regarding Germany, this explanation is confirmed by the fact that during the whole 1990s mortality was lowest in Eastern German's agglomeration and urban areas where access to medical care is considerably better than in rural areas (Bucher, 2002; Mai, 2004).

However, direct examinations of the impact of the new and improved medical conditions in Eastern Germany do not support this hypothesis. Using Rutstein et al.'s (1976) until today continuously improved concept of causes of death that are considered to be responsive to medical care (the so-called "amenable deaths"), Nolte et al. (2002) and Luy (2004b) independently analysed the impact of those causes on the closing of the West-East German mor-

tality gap in the 1990s. Both studies came to the same result that the changes in medical conditions in Eastern Germany seemed not to influence the steady decline in Eastern German excess mortality. Almost the same holds for lifestyles and cardiovascular risk factors of Eastern German women and men. The analysis of follow-up health survey data showed that health-related behaviours of Eastern German women and men are indeed adjusting the Western German lifestyles and that some of these cardiovascular risk factors in fact do influence survival probabilities. However, the results of deeper event history analysis did not provide any indicator for a significant contribution of cardiovascular risk factors to the mortality differences between Western and Eastern Germany (Luy 2004a). As Luy (2004a) demonstrated in a recent article, the only factor that shows a converging trend between Eastern and Western Germany comparable to the trends in life expectancy is the availability of nursing care. During the 1990s the West-East differences in nursing care diminished being now on almost the same level in the two parts of Germany (figure 1).

The weak point of this hypothesis might be that the absolute number of people being affected by these changes seems to be insufficient to cause an increase in life expectancy at birth as occurring in the East German population. However, following the tempo-approach of Bongaarts and Feeney (2002) I argue that trends in conventional life expectancy at birth are an imperfect base for examining mortality differences between East and West Germany. Sudden increases in average age at death as occurred in different years in West and East Germany lead to severe tempo distortions in unadjusted life expectancy. Once adjusted for tempo effect it turns out that the differences in survival conditions between West and East Germany are still considerably higher than expected and that the survival gap between West and East Germany started to close not before the second half of the 1990s and, moreover, is still far away from an adjustment of survival conditions (figures 2 and 3). Thus, the observed trends in conventional life expectancy at birth might absolutely be consistent with the nursing care hypothesis. This does not mean that all the other discussed factors have no impact at all on mortality differences between Western and Eastern Germany. It is quite sure that mortality differences between Western and Eastern Germany are caused by a various number of different factors like every other phenomenon of differential mortality. Thus, we should not “fall into the trap of trying to find an elusive single ‘ultimate cause’”, as Hobcraft (2004: 81) warned in the context of fertility analysis. But using conventional life expectancy as the base for analysis will lead into the wrong direction and thus to expectations and interpretations.

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*Fig. 1: Number of beds per 10,000 persons in institutions of nursing care  
in Western and Eastern Germany, 1991-2000*

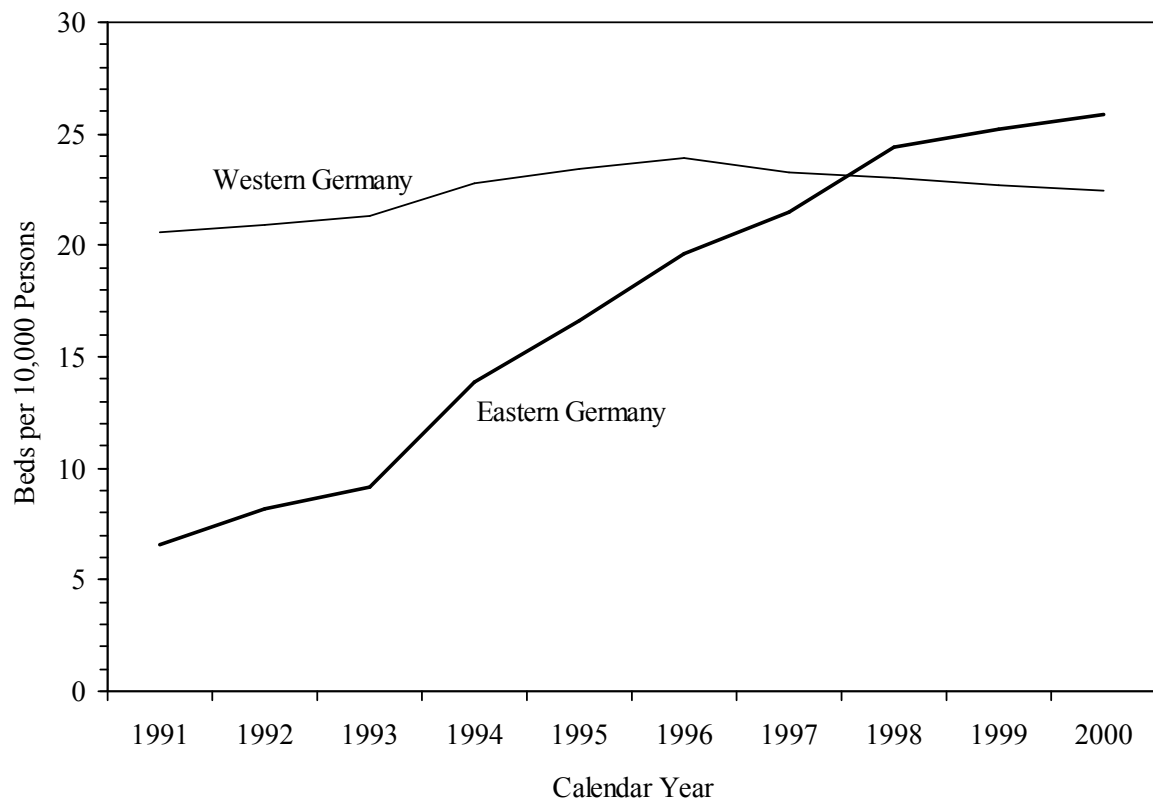


Fig. 2: West-East German difference in life expectancy at birth for conventional life expectancy  $e_0(t)$  and tempo-adjusted life expectancy  $e_0^*(t)$ , Males 1975-2000  
(no mortality under age 30)

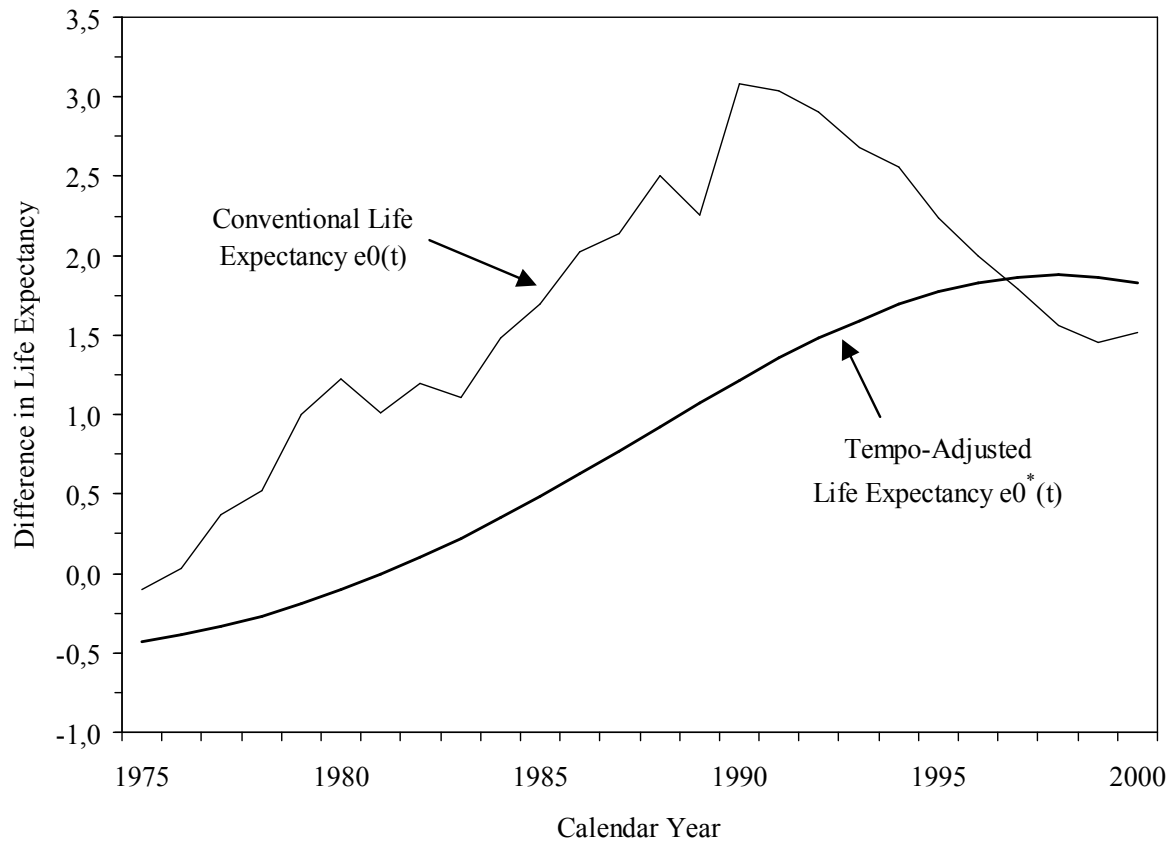


Fig. 3: West-East German difference in life expectancy at birth for conventional life expectancy  $e_0(t)$  and tempo-adjusted life expectancy  $e_0^*(t)$ , Females 1975-2000 (no mortality under age 30)

