WHAT CAUSES OF DEATH ARE DRIVING LIFE EXPECTANCY CHANGES IN MOLDOVA?

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INTRODUCTION

Dynamics of life expectancy in Moldova are quite similar to those observed in other European republics of the former USSR. From the mid-60s to the mid-80s, life expectancy declined continuously to be equal to 62.2 years for males and 69.0 years for females in 1984 compared to 66.6 and 71.9 in 1965. In the 1970s, the situation was particularly unfavorable for women for whom life expectancy decreased substantially. Thus, compared to other European countries of the former USSR, like Russia and Ukraine, which faced the same problems over this period, female Moldovan life expectancy declined more dramatically producing a growing difference with these countries till the end of 1970s: from 1.3 for Russia and 2.9 for Ukraine in 1965 to 4.3 and 5.6 in 1979. At the same time, the health situation for Moldovan males was between Russia and Ukraine. Subsequent very wide fluctuations related to Gorbachev's anti-alcoholism campaign and socio-economic crisis occurred between 1985 and 1997 in all the former European USSR republics, including Moldova. Since 1998, Moldovan life expectancy has been fluctuating without progressing much in the total; however, the most recent years (2006-2008) are marked by an important decline in mortality. Overall, since 1965, men lost 1.2 year of life expectancy and women gained 1.6 year. If we do not take into account this recent upturn, the loss for males is more impressive (-3.0 year) and for females the progress is completely erased. At the same time, life expectancy was constantly progressing in the Western countries. In France, for example, it gained 10.1 for males and 9.7 for females over 1965-2008. These opposite trends created a growing gap between French and Moldovan life expectancies: it was 0.9 for males and 3.2 for females in 1965, 8.0 and 9.2 in 1990 and 12.2 and 11.3 in 2008.

The analysis of causes of death is a useful tool for a better understanding of these long-term trends and recent changes.

DATA AND METHODS

The comparison of cause-specific mortality over a long period encounters the problem of changes in classification of causes of death. In Moldova, from 1959 to 1991, the Soviet classification was revised in 1965, 1970, 1981 and 1988, then after Independence ICD9 and ICD10 were successively applied. To ensure consistency between the classifications, we adapted a method for reconstructing continuous time series of deaths by causes developed for France (***Vallin and Meslé, 1988, Meslé and Vallin, 1996***) to the Moldovan data. As a result, we reconstructed 1965-2008 coherent series of deaths by sex, 5-year age groups and cause, classified according to ICD-10. Before being able to analyse mortality trends, we examined the data quality, especially infant mortality, and proposed some correction of the under-registration of deaths. We had also to deal with a problem of growing number of deaths from ill-defined causes

including senility for which we proposed a specific redistribution. To give an overview of the patterns and trends in causes of death, we grouped the detailed items in seven large groups. Age and sex-specific mortality rates were computed for each broad group of causes of death. Applying Andreev's method (Andreev, 1982), we measured the contribution of each broad group of causes at each age group to the changes in Moldovan life expectancy for different periods.

SOME RESULTS

To try to assess general mortality trends, disregarding the wide fluctuations between 1985 and 1997, we consider two sub-periods: 1965-1984 and 1984-2008. Figure 1 shows the ratio between 1984 and 1965 deaths rates by age groups and the ratio between 2008 and 1984 death rates. The first period is characterized by a sharp increase in mortality at adult ages. Both for males and females death rates around age 40 doubled while infant mortality decreased and mortality at very old age groups rose slightly. For males, an important surge of death rates occurred at young adults around age 20. The situation at older ages (60-80) was less severe but also troubled: deaths rates around age 70 increased by 50%. In the second period, the situation appears to stabilize: infant mortality continued to decline, but deaths rates remained unchanged at adult ages for males and continued to decrease for females.

From 1965 to 1984, men lost 4.7 and women 2.7 years of life expectancy at birth. The highest losses were concentrated between ages 40 and 60. Increase in mortality at adult ages was mainly due to cardiovascular diseases, violent deaths and diseases of the digestive system for males and cardiovascular diseases and diseases of the digestive system for females. The negative influence of diseases of the digestive system was practically equal to that of cardiovascular diseases for females (respectively, -1.8 and -1.9), but for males, it was close to violent deaths (respectively, -1.3 and -1.8). Decline in infectious diseases and diseases of the respiratory system, mainly below age one , had a positive impact on life expectancy.

In the second period, from 1984 to 2008, the increase in life expectancy was 3.4 for males and 4.3 for females; however, an important increase in life expectancy over the last three years (1.8 for males and 1.6 for females) accounts for 53% and 37%, respectively, of the overall changes. To have a better understanding of the recent changes, we divided the second period into two sub-periods: 1984-2005 and 2005-2008. From 1984 to 2005, life expectancy increased by 1.6 for males and 2.7 for females. For males, this progress was a result of two contrary trends. On the one hand, the decline in infant mortality from infectious diseases, diseases of the respiratory system and other diseases and mortality at young ages mostly due to violent death contributed to the increase in life expectancy by 2.8. On the other hand, the uptrend in male mortality after age 35 did not halt, and contributed to the loss of 1.2 years of life expectancy. Cardiovascular diseases, neoplasms and infectious diseases, especially at young adult ages, are the main causes of deaths that worsened male life expectancy in this period. For women, adult mortality dynamics produced positive effects that are almost completely attributable to two causes of deaths: cardiovascular diseases and diseases of the digestive system. The progress observed over the last three years concerns mostly old age groups with a significant impact from the decline in circulatory diseases; although, decline in mortality of male

adults (from different causes) occurred, it is too early to say for certain whether this gain is sustainable.

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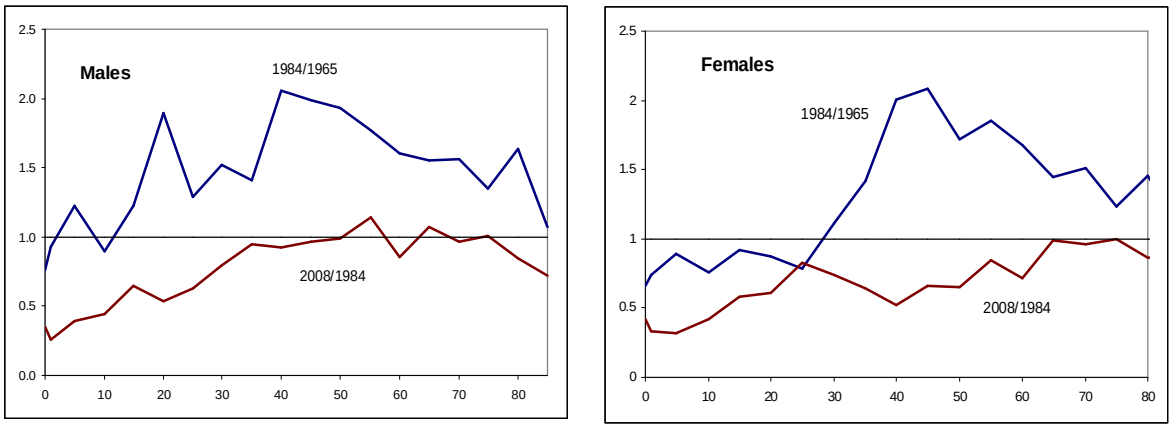

Figure 1: *Changes in mortality age structure over two periods (1965-1984 and 1984-2008), by sex*

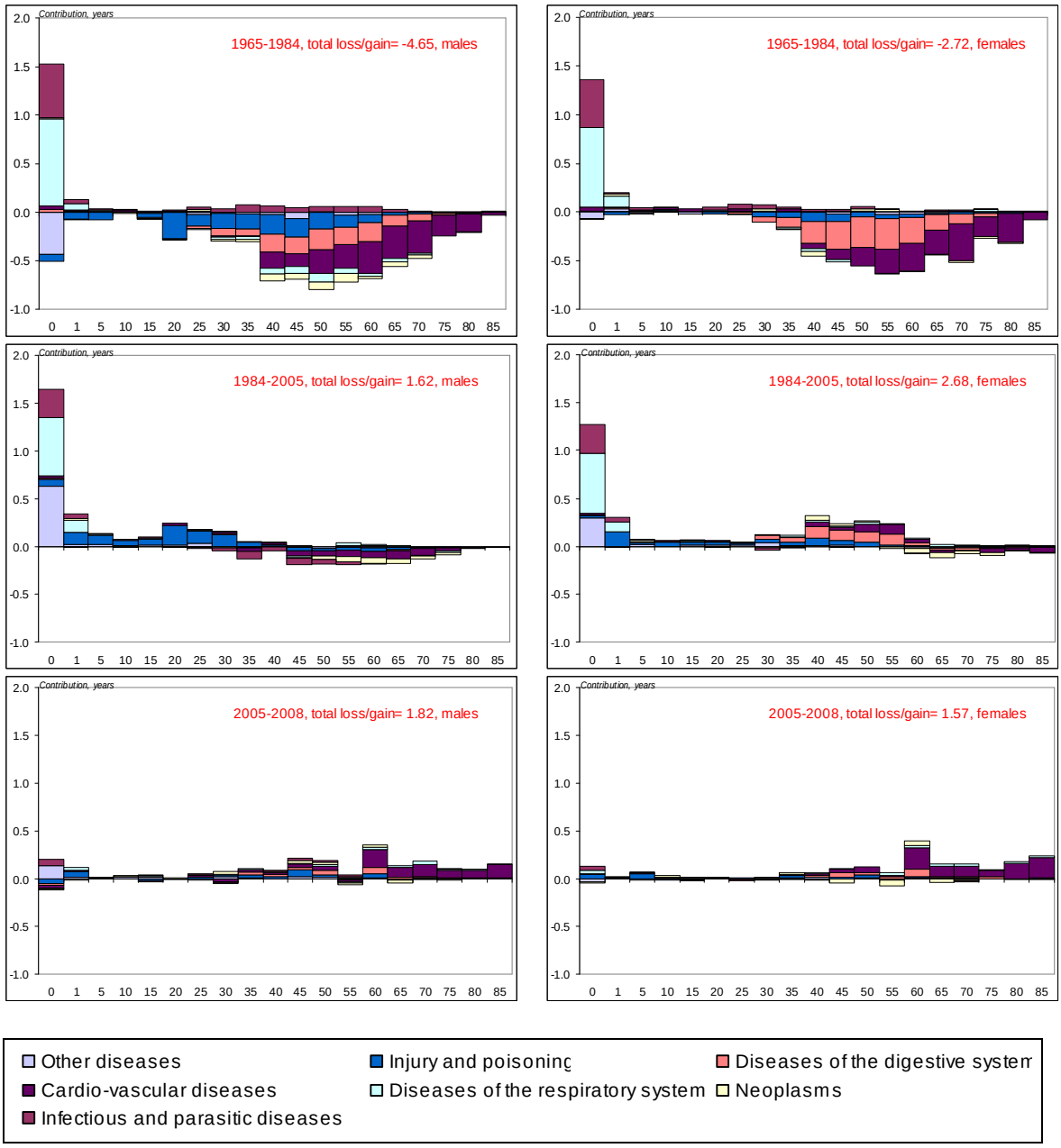

Figure 2: *Contributions by age groups of seven groups of causes to overall changes in life expectancy at birth for three periods (1965-1984, 1984-2005 and 2005-2008), by sex*