

**Mortality in Eastern Europe and the former Soviet Union :
long-term trends and recent upturns**

France Meslé

Institut national d'études démographiques, Paris¹

**Paper presented at IUSSP/MPIDR Workshop
"Determinants of Diverging Trends in Mortality"
Rostock, June 19-21 2002**

Paris, 2002

¹ 133 Bd Davout, 75980 Paris cedex 20. E-mail : mesle@ined.fr

Mortality in Eastern Europe and the former Soviet Union : long-term trends and recent upturns

**France Meslé
INED, Paris**

After World War II health dramatically improved everywhere in Europe with the massive spreading out of antibiotics and the generalisation of immunisation. The largest progress was achieved where life expectancy was the lowest. Countries of Southern Europe, like Italy or Greece, or countries of Central and Eastern Europe, like Russia or Romania, which lagged far behind in the 40s came very close to the most advanced Northern or Western countries (Vallin and Meslé, 2001). In the mid-60s, all European countries had completed the second stage of the epidemiologic transition as defined by Omran (1971) and had got rid of the infectious mortality specially among young children. They were entering the third stage of man-made and degenerative diseases. Indeed, almost everywhere at that time, mortality from circulatory diseases, from traffic accidents, from alcoholism was stagnating or increasing. However, on the Western side, the relative slow down of progress did not last and as soon as early 70s life expectancy resumed its increase, both because of trends reversal in man-made diseases and acceleration of the decrease of circulatory diseases. The success achieved in the West did not reach Central and Eastern Europe. On the reverse, in all Eastern countries, life expectancy began to plateau or even decreased specially for males. This very large divergence between two parts of Europe went on during three decades leading to a profound gap in the mid 90s.

A hierarchical analysis performed on life tables of the main European countries illustrates very clearly how, as regards health, in thirty years Europe was divided into two blocks (Figure 1). This main divergence is not only a matter of trends in the levels of life expectancy, but it resulted from important changes in age structure and cause-of-death structure as well (Meslé and *al.*, 1999). Moreover, looking at the hierarchical tree corresponding to the year 1995, a double cut is clearly visible. The first one corresponds to the opposition between East and West, as already said. But inside Eastern countries, there is also a clear gap between countries of the former USSR and Central European countries. Trends in these two parts of Europe had been very comparable till the mid-80s, but in the most recent years they have become very different from one country to another.

After drawing a general picture of the mortality trends in these different countries since the mid-60s, we will see in a second part what determinants can explain the recent reversal which was observed in Central Europe. The third section will be devoted to the specific case of the European Republics of the former USSR (Baltic countries, Russia, Ukraine) where after decades of very similar mortality trends, life expectancies at birth seem to start to diverge.

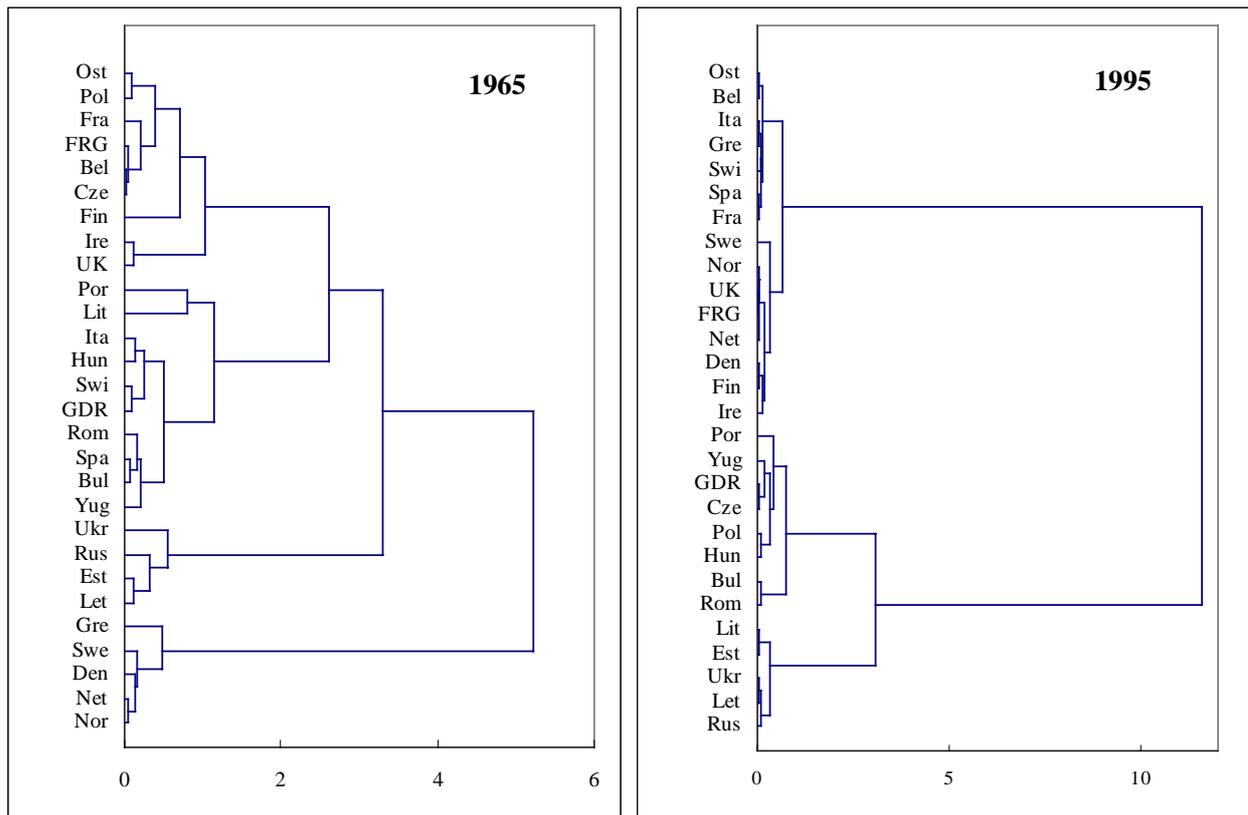


Figure 1. Dendrograms resulting from the hierarchical analysis of male age-specific death probabilities in 28 European countries, in 1965 and 1995.

Source: Meslé and Vallin, 2002

I. The end of unfavourable trends ?

Till mid-80s, general trends in life expectancy were very comparable in all the Eastern European countries (Figure 2). Everywhere, they were unfavourable but the worsening of the situation was more or less acute according to the country and the sex. The worse case was observed for males in the republics of the former USSR. In the five republics here represented (Estonia, Latvia, Lithuania, Russia and Ukraine), male life expectancy decreased from 1.5 to 3 years between 1965 and 1984. For females, the decrease was less pronounced but existed for Russia, the Ukraine and Latvia, while life expectancy was stagnating in Estonia and very slowly increasing in Lithuania. On the side of Central European countries, Hungarian and Bulgarian males registered the worse results with a decrease of respectively 1.6 and 0.8 year while life expectancy was stagnating for males in the other four countries (Czech republic, Poland, Romania and Slovakia) and only slowly increasing for females in all the region.

From the mid-80s, a clear distinction appeared between republics of the former USSR on one side and Central European countries on the other side. In the first ones, trends in life expectancy became very chaotic but in the same time continued to be very similar. After a period of improvement, related to the anti-alcoholic campaign which was launched by Gorbachev in 1985 just after he came to power, life expectancy slowly declined as the campaign effects were fading. The deterioration suddenly accelerated in 1993-1994 (or 1995 for the Ukraine) when all the countries encountered the very hard economic crisis due to the

brutal change to market economy. After the first shock, life expectancy resumed to increase but till the very recent years, it was impossible to distinguish if it was a simple recuperation after a very sharp deterioration or if this progress was the first stage of a more fundamental improvement. As data for 1999 and 2000 are now available, it appears that at least for Russia and the Ukraine, the upturn was short-lived and life expectancy is sinking again. Inversely in Baltic countries, it is still increasing, suggesting that they are entering a new stage of progress.

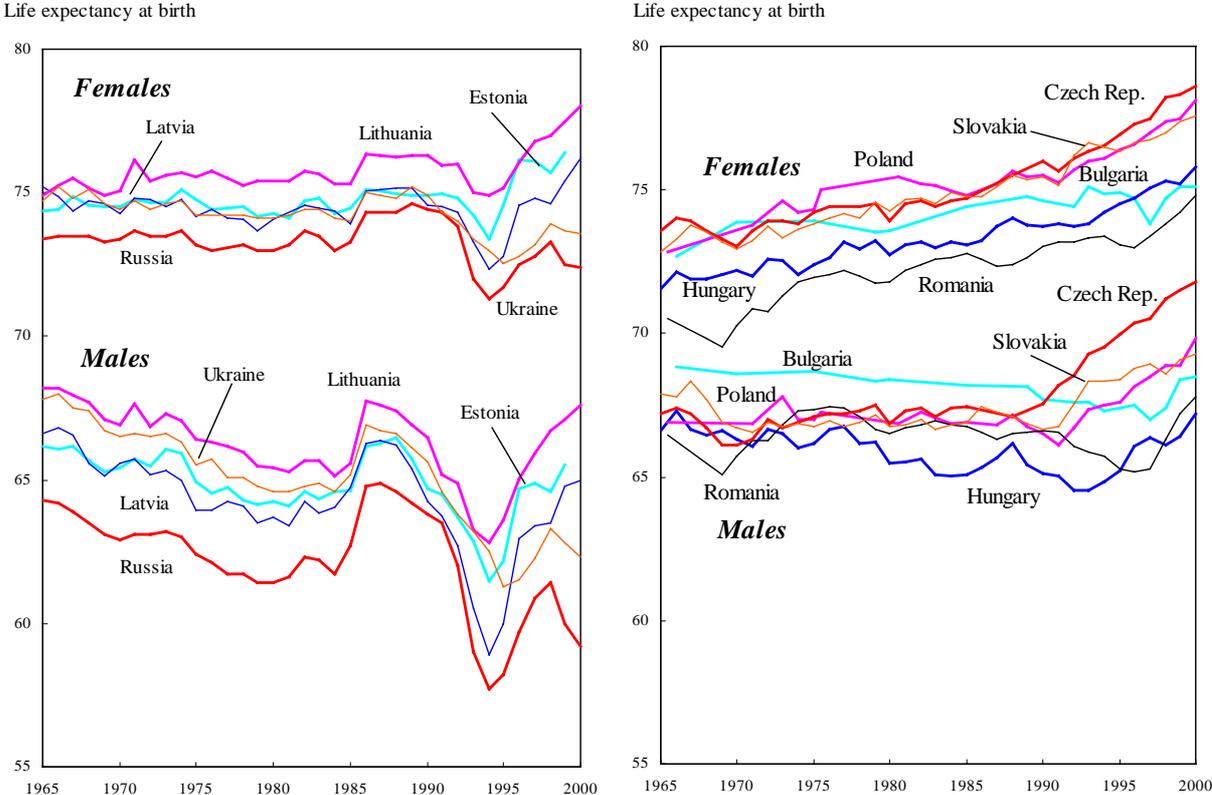


Figure 2. Trends in life expectancy by sex in Central European countries and republics of the former USSR since 1965.

In Central Europe, the situation appears now more favourable. One after the other, each country has taken up with health progress again. As early as 1988, trends in the Czech Republic reversed and life expectancy increased very rapidly. It was the same for Poland and Slovakia in 1992 and for Hungary in 1993. In Bulgaria and Romania, on the other hand, the health situation went on worsening till the late 90s. However, in both countries, since 1997, new progress has occurred. It is too early to be sure that this recent improvement definitely indicates the entry into a long-lasting stage of progress but these recent trends are encouraging.

As the long-term trends were everywhere more unfavourable to men than to women, the upturn is more spectacular for the male life expectancy than for the female one. The progress is yet existing for females with a clear acceleration of the rate of increase in life expectancy in the most recent years.

Coming back to the large divergence which occurred in Europe in the last decades, Figure 3 compares trends in life expectancy in Hungary and the Czech Republic to the French evolution in absolute and relative terms.

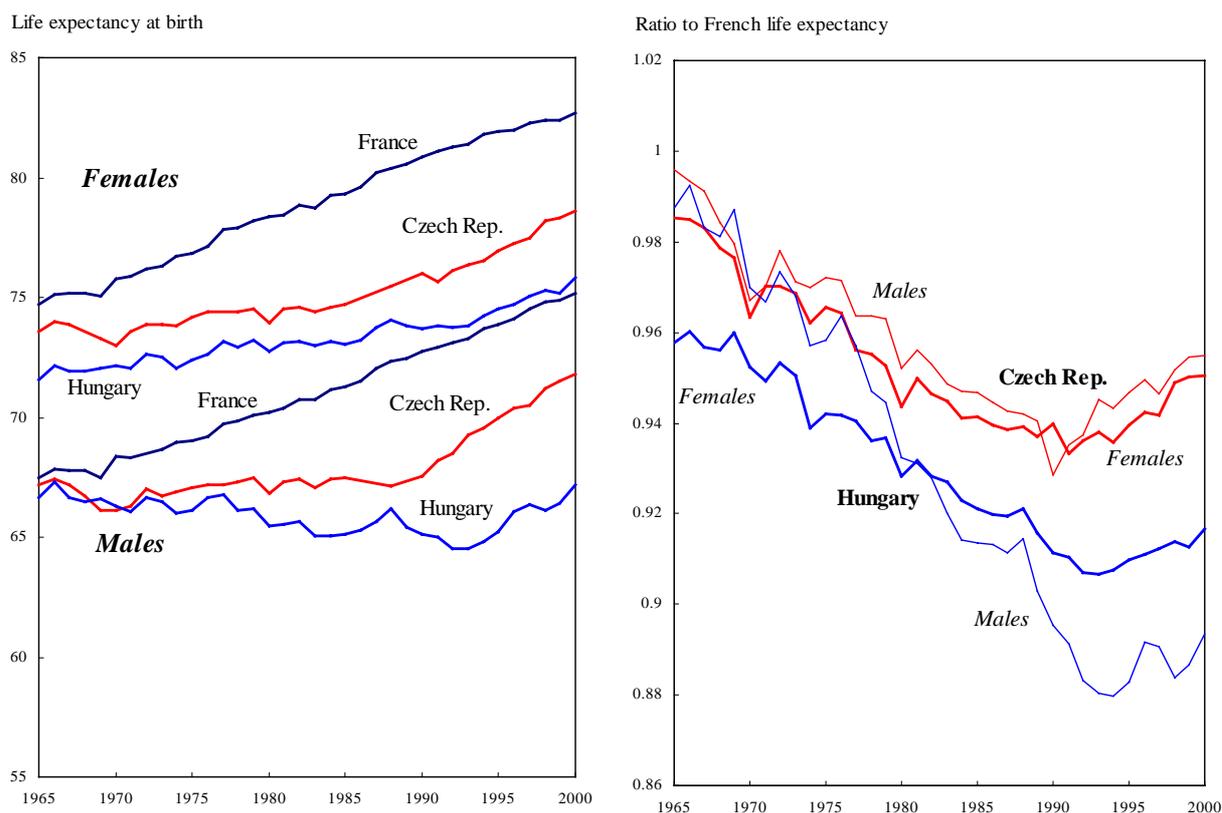


Figure 3. Trends in life expectancy by sex in Hungary and the Czech Republic compared to France in absolute and relative terms

Both for males and females and as well for the Czech republic as for Hungary, the divergence is spectacular. In 1965, the difference in life expectancy between France and the Czech Republic was 0.3 year for males and 1.1 year for females. In 2000, the difference reaches respectively 3.4 and 4.1 years. The divergence is even more impressive for Hungary: from 0.9 year to 8.0 for males and from 3.2 to 6.9 years for females. The divergence has been even larger just before trends reversed in both Central European countries. As shown in the second part of Figure 3, the gap was the biggest at the end of the 80s for the Czech Republic (4.2 for males and 4.9 for females) and in the mid-90s for Hungary (8.8 for males and 7.6 for females). Since then, it has narrowed thanks to a more rapid improvement of life expectancy in the two countries which allow them to partly make up for lost time.

The unfavourable long-term trends in Eastern and Central Europe have already been largely studied (Bourgeois-Pichat, 1985; Meslé, 1991; Okolski, 1993; Meslé and Hertrich, 1997). The large fluctuations of life expectancy which have occurred in the republics of the former USSR since 1985 were also discussed by numerous authors (Shkolnikov and Nemtsov, 1997; Leon *et al.*, 1997; Shkolnikov *et al.*, 1998; Gavrilova *et al.*, 2001, 2002). In two following sections devoted respectively to Central European countries and to the republics of the former USSR, the main features of these trends will be summarized and a particular attention will be paid to the most recent trends to try to make out if the recent improvement observed in most countries corresponds to an actual reversal of long-term trends and what are the determinants of the continuing worsening in Russia and the Ukraine. The analysis will be limited to male trends which, as shown above, are more pronounced than for females.

II. Central Europe: towards a sustainable improvement

To better understand the recent trends in male life expectancy in central European countries, we have systematically compared changes in mortality by age and by cause before and after the upturn. Consequently the reference year varies from one to another country : 1988 for the Czech Republic, 1991 for Poland, 1992 for Slovakia, 1993 for Hungary, 1997 for Bulgaria and Slovenia.

A) Changes in mortality age structure.

In the six Central European countries, the period of worsening is characterised by a sharp distortion of the mortality age structure with an important increase at adult ages, between 25 and 65 (Figure 4).

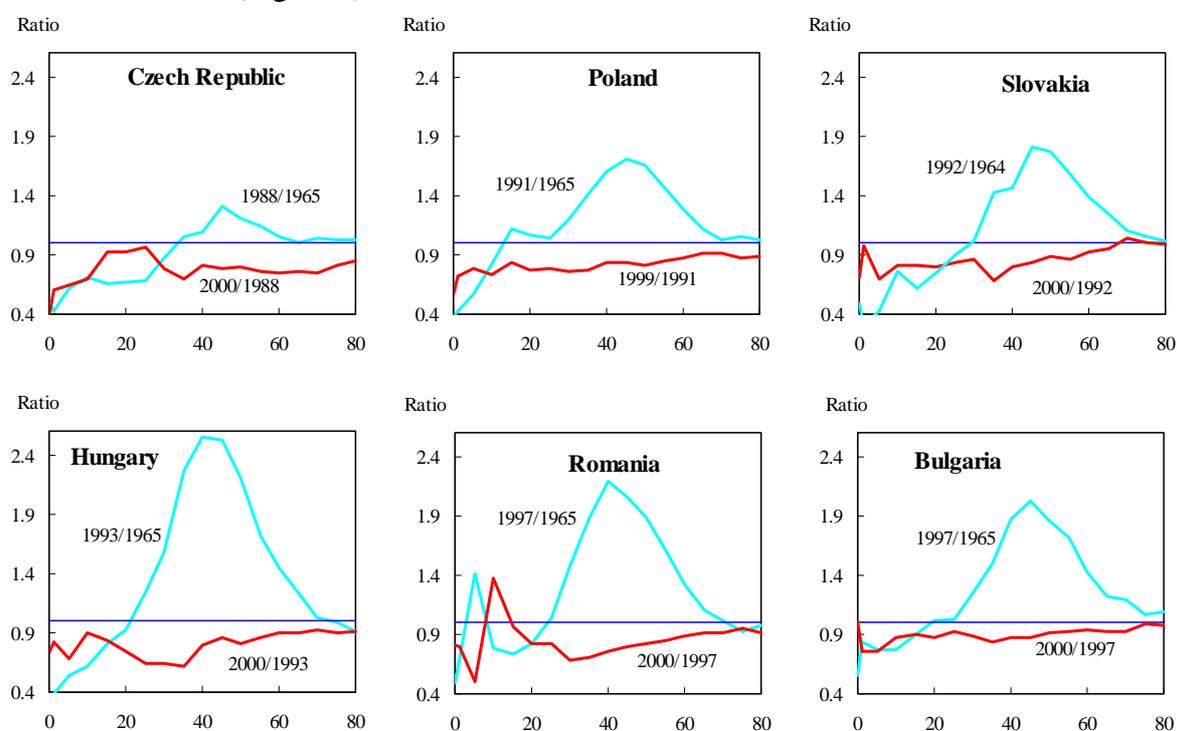


Figure 4. Changes in mortality age structure during a period of deterioration and a period of improvement in six countries of Central Europe. Males

In Hungary, where the phenomenon was the most pronounced, between 1965 and 1993, the male death rate at age 40 was multiplied by 2.5 and the range of the ages concerned by the deterioration was very wide: from age 20 to age 70. On the opposite, the Czech Republic was much less hit : from 1965 to 1988, mortality rates only increased between ages 35 and 65 and the maximum increase at age 45 is only 30%. The mortality rise at adult ages contrasts with a relative stagnation at old ages and a decline at young ages. Infant mortality decreased everywhere during this first period. Trends were also favourable for child mortality except in Romania.

The changes in death rates which occurred since the upturn in all these countries are more equally distributed among all ages. Whatever the country, the progress concerns almost all ages. Of course this progress covers very different periods of time and it is difficult to

compare directly the Czech Republic where life expectancy has now been progressing for 12 years to Romania or Bulgaria where the improvement occurred only in the three most recent years. However the shape of the changes looks rather similar even if some exceptions to this regular pattern can be highlighted : no decrease in mortality around 20 in the Czech Republic, a larger improvement around age 30 in Hungary and Romania, more important progress in the Czech Republic over age 70.

Despite of these specificities, it seems that the new stage these different countries are entering one after the other is characterised by a general improvement of health at all ages and does not any more concern a specific age of the life as it was the case for the degradation which hit specifically adult ages.

B) The impact of circulatory diseases

All these changes in mortality age structure depend on trends in causes of death. To study trends in causes of death, we extracted data from WHO mortality database². Statistics of deaths by cause and by 5-year age groups are available for the whole period 1965-2000 (or 1999) for Bulgaria, Hungary and Poland, since 1969 for Romania, since 1988 for the Czech Republic and since 1992 for Slovakia. The comparison of cause specific mortality over a long period of time comes up against the problem of changes in classification of causes of death. From 1965 to 2000, 4 different classifications were in use from ICD7 to ICD10. To insure coherence between ICD7, ICD8 and ICD9, we used series of deaths by cause reclassified into ICD9 which were reconstructed in the frame of a previous work (Hertrich and Meslé, 1998). For the transition between ICD9 and ICD10, we defined large groups of causes for which medical contents seem to be the same in the two revisions (Table 1). Mortality rates by age and sex were computed for each large group of causes after proportional redistribution of ill-defined causes.

Table 1. Items corresponding to large groups of causes in ICD9 and ICD10

Cause of death	ICD9 List B	ICD10 Detailed list	ICD10 Russian abridged list	1988 Soviet Classification
Infectious diseases	B01-B07	A000-B99	1-55	1-44
Neoplasm	B08-B17	C000-D484	56-89	45-67
Circulatory diseases	B25-B30	I00-I99	115-147	84-102
<i>Heart diseases</i>	<i>B25-B28</i>	<i>I00-I528</i>	<i>115-132</i>	<i>84-97</i>
<i>Other circulatory diseases (incl. stroke)</i>	<i>B29-B30</i>	<i>I600-I99</i>	<i>133-147</i>	<i>98-102</i>
Diseases of the respiratory system	B31-B32	J00-J998	148-164	103-114
Diseases of the digestive system	B33-B34	K000-K938	165-179	115-127
Other diseases	B18-B24, B50-B45	D500-H959, L00-Q999	90-114, 180-225, 227	68-83, 128-157
Violent deaths	B47-B56	V01-Y98	239-255	160-175
TOTAL	B01-B56	A000-R99, V01-Y98	1-228, 239- 255	1-175

As for changes in mortality age pattern, we divided the period 1965-2000 into two sub-periods different for each country, corresponding respectively to the decrease and to the increase of life expectancy at birth. For each sub-period, we calculated the contributions by

² WHO, *Mortality data*, <http://www.who.int/whosis>

age groups of seven groups of causes to changes in life expectancy³. The total contributions are very dependent on the total number of years of each period which are quite different from one country to another. To compare these contributions, we divided the total gains or losses of life expectancy by the number of years of the period and give in Figures 5 and 6⁴ the mean annual contribution for each age group and each cause.

As expected from the previous section on age pattern changes, the decrease in life expectancy was very dependent on the rise of mortality at working ages while, everywhere, progress in infant mortality slowed down the degradation (left panel of graphs at Figure 5). In Poland and Bulgaria, mortality from circulatory diseases was the main responsible for the health worsening at adult ages. In Hungary and Romania, besides the important role of these diseases, the part played by other causes of death, like cancer and digestive diseases, was more important.

Table 2. Contributions of seven groups of causes of death to overall changes in male life expectancy at birth during different sub-periods in 4 Central European countries.

	Infection	Cancer	Circulatory diseases	Respiratory diseases	Digestive diseases	Other diseases	Violent deaths	Total
<i>Hungary</i>								
1965-1993	0.40	-1.19	-1.25	0.61	-1.33	1.07	-0.56	-2.24
1993-2000	0.05	0.01	1.07	0.23	0.38	0.38	0.51	2.63
<i>Poland</i>								
1965-1991	1.14	-0.75	-2.11	1.34	0.20	0.57	-0.88	-0.50
1991-1999	0.07	0.02	1.59	0.06	-0.09	0.52	0.51	2.68
<i>Bulgaria</i>								
1965-1997	0.25	-0.22	-3.74	1.37	-0.19	0.06	-0.15	-2.62
1997-1999	0.00	0.04	0.67	0.26	0.12	0.08	0.08	1.26
<i>Romania</i>								
1969-1997	0.48	-0.35	-1.58	1.81	-0.33	0.34	-0.26	0.12
1997-2000	0.04	-0.01	1.02	0.40	0.28	0.46	0.39	2.57
<i>Czech Rep.</i>								
1988-2000	0.02	0.44	1.97	0.21	0.14	0.77	0.03	3.58
<i>Slovakia</i>								
1992-2000	0.00	-0.04	0.41	0.31	0.08	0.34	0.41	1.50

³ The contributions were computed according to Andreev's method (Andreev, 1982) thanks to a software developed by Vladimir Shkolnikov.

⁴ Because of data availability, the first sub-period starts in 1969 for Romania while for the Czech Republic and Slovakia it was only possible to consider the second sub-period.

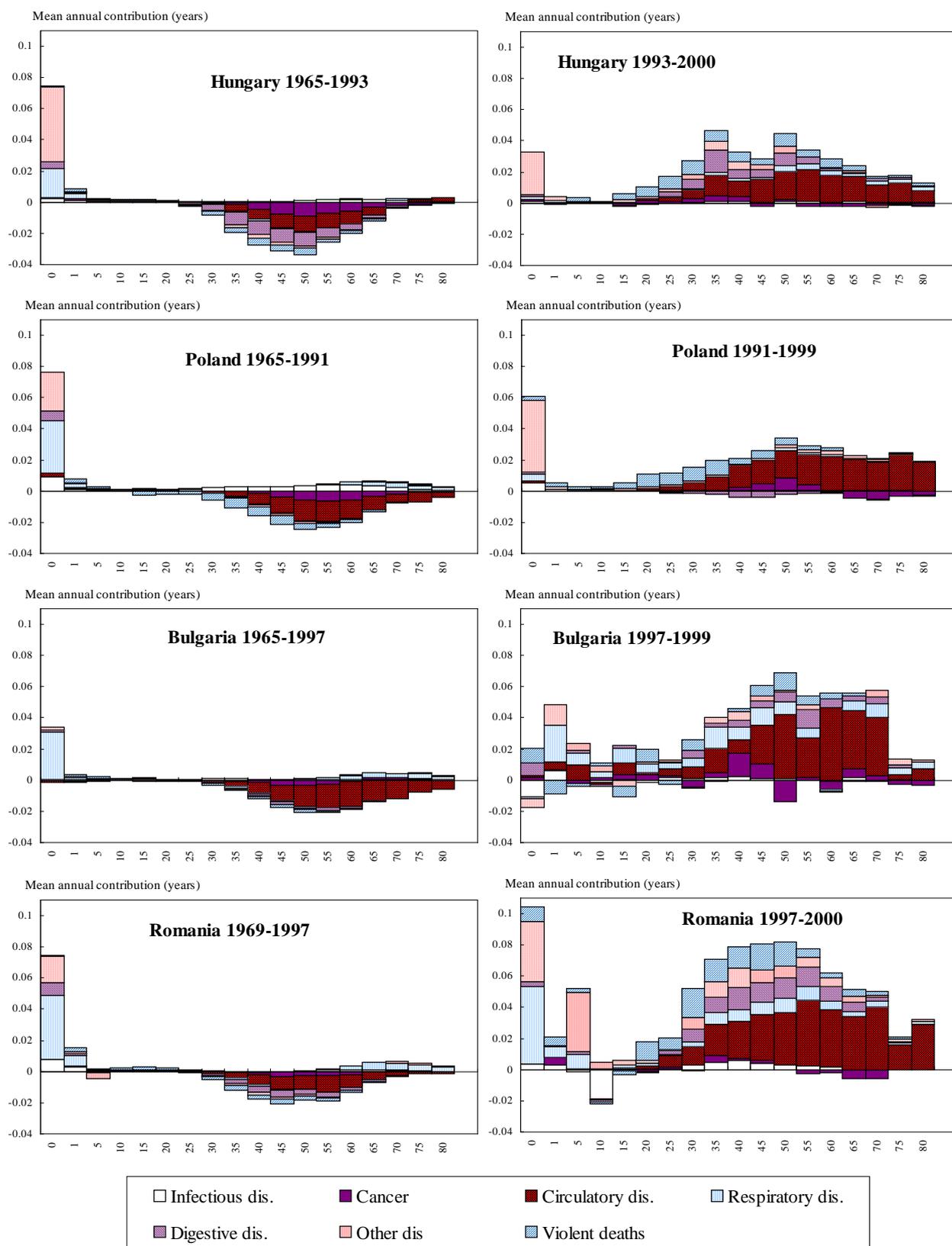


Figure 5. Contributions by age groups of seven groups of causes of death to overall changes in the life expectancy at birth for two periods (worsening and improvement) in 4 Central European countries. Males

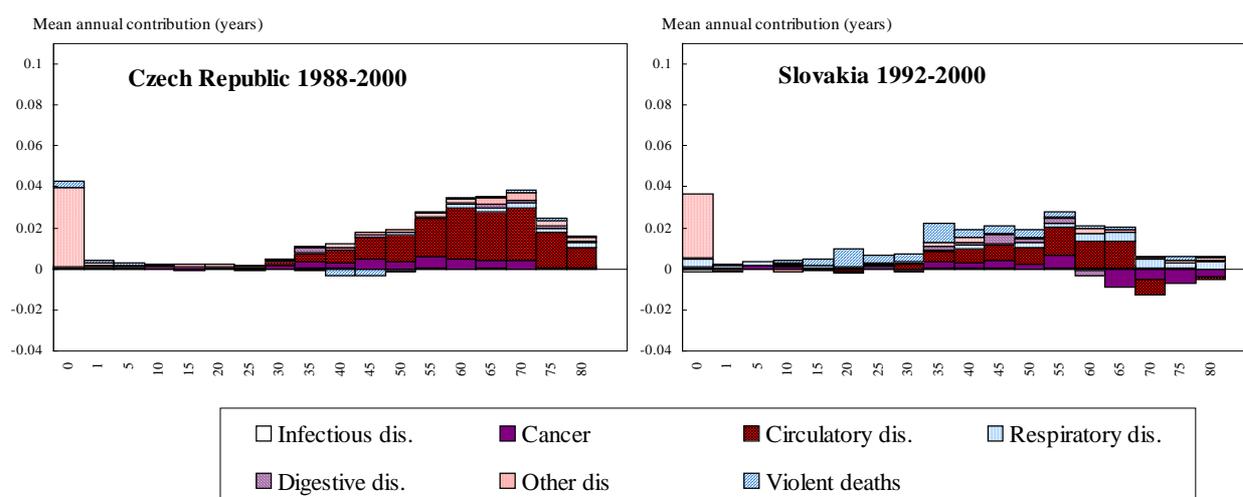


Figure 6. Contributions by age groups of seven groups of causes of death to recent increase in life expectancy at birth in Slovakia and the Czech Republic. Males

When turning to the period of improvement (Figure 6 and right panel of graphs at Figure 5), it is not surprising to notice that mortality from circulatory diseases is the main determinant of the upturn of trends in life expectancy. It is specially obvious for the Czech Republic and for Poland where gains in mortality from this cause accounts respectively for 55 and 59 % of the total. In Hungary and Slovakia, gains are more diversified. In Hungary specially mortality from digestive diseases plays an important role as it was already the case in the previous period but, that time, it is a positive one. The results for Bulgaria and Romania appear much more erratic. Indeed in these two countries, the progress is very recent and the sub-periods considered very short (1997-1999 in Bulgaria, 1997-2000 in Romania). Compared to the other countries the mean annual contributions are more important and concern almost all age groups and all causes of death, with once again an important impact of the decrease of circulatory diseases. It is however too early to conclude in these countries on the sustainability of the improvement.

The impact of trends in mortality from circulatory diseases on the evolution of life expectancy at birth is however incontestable in all these Central European countries. The simultaneity of the trends reversal in life expectancy and in standardised mortality rates⁵ by circulatory diseases is striking (Figure 7). After numerous years of steep increase, mortality from circulatory diseases has started to decline everywhere exactly at the same moment as life expectancy was beginning to increase. This favourable trend has put levels of cardiovascular mortality below 1965 levels in Hungary and in Poland and probably in the Czech republic for which data are lacking for years before 1985. The situation is still less favourable in Bulgaria and Romania where however a spectacular reversal happened since 1997. In Slovakia, the series is too short to really reveal definite trends.

Even if circulatory diseases play obviously the most prominent role in recent trends in life expectancy in Central Europe, the analysis of contributions of causes of death reveal that, at least in some countries, the decline of other diseases was part of the progress. Figure 8 displays annual trends of standardised mortality rates by six other groups of causes as well as for two sub-groups of circulatory diseases in the four countries for which sufficient long-lasting series are available.

⁵ On the basis of the standard European population proposed by WHO (1992)

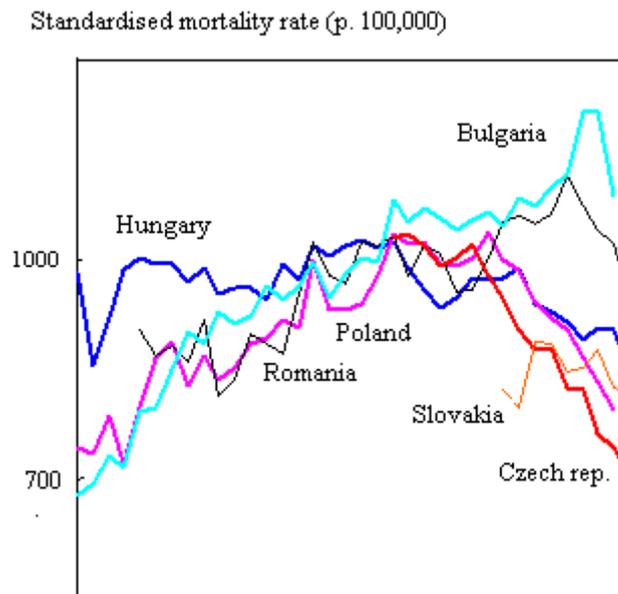


Figure 7. Annual trends in standardised mortality rate from circulatory diseases in Central European Europe. Males

Circulatory diseases are the first cause of death in the four countries but they are much more predominant in Bulgaria and Romania than in Hungary and Poland where cancer is becoming more and more important. In these two countries, cancer mortality has been increasing steadily and more rapidly than cardiovascular mortality all over the period. Moreover, in the most recent years, the reversal of trends in circulatory diseases has favoured the growing importance of cancer. Among circulatory diseases, the decrease is specially pronounced for the group gathering cerebrovascular diseases (stroke) and other circulatory diseases while trends in heart disease are more uncertain. After circulatory diseases and cancer, violent deaths are the most important causes of death in Poland and Hungary. In the latter, mortality from digestive diseases is almost as high as violent deaths, because of a very steep increase all over the period which even accelerated in the 80s. This growth was stopped in the early 90s and the diminution which followed contributed to the progress of life expectancy, concurrently with the decrease of violent deaths.

In Bulgaria and Romania, all causes of death, except cancer, have been decreasing during the recent years of improvement. It confirms the impression given by the analysis of contributions of the groups of causes to the progress in life expectancy. This progress probably corresponds to a general health improvement which follows a specially hard period of health problems linked to the socio-economic crisis that these countries endeavoured after the fall of iron curtain. The increase in mortality by infectious diseases which occurred between 1985 and 1995 witnesses this health crisis which is probably rather similar to that observed in the countries of the former USSR (see below). Next years will tell if the recovery recently started will go on, leading to a new step of progress.

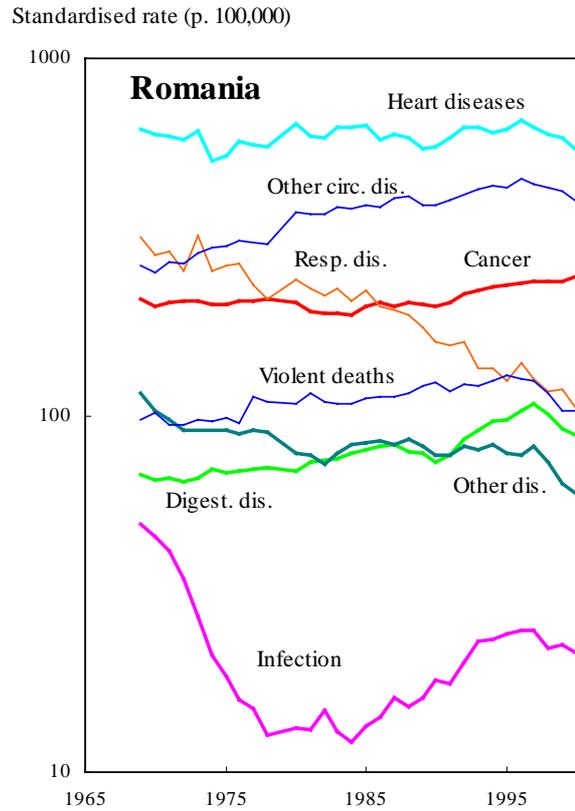
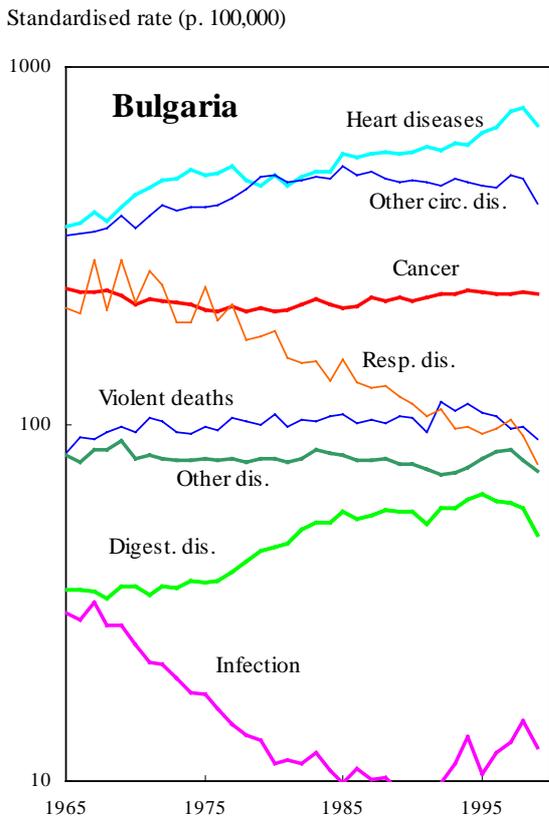
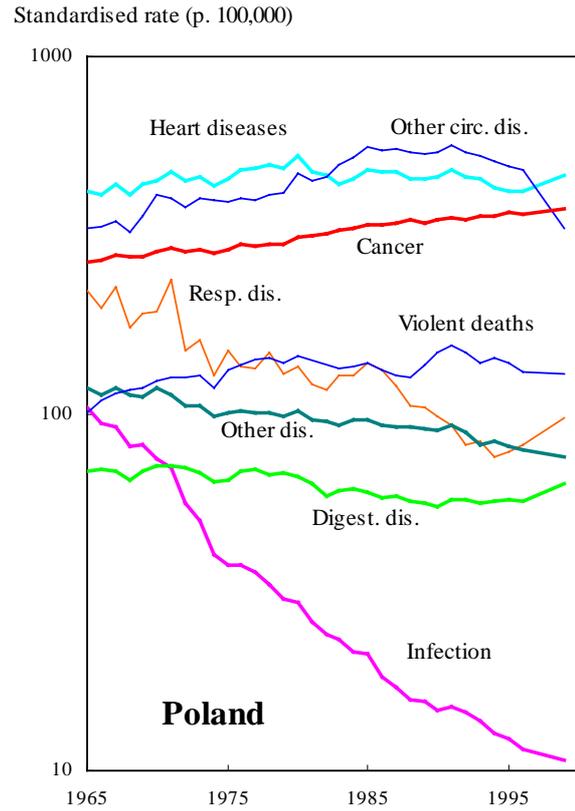
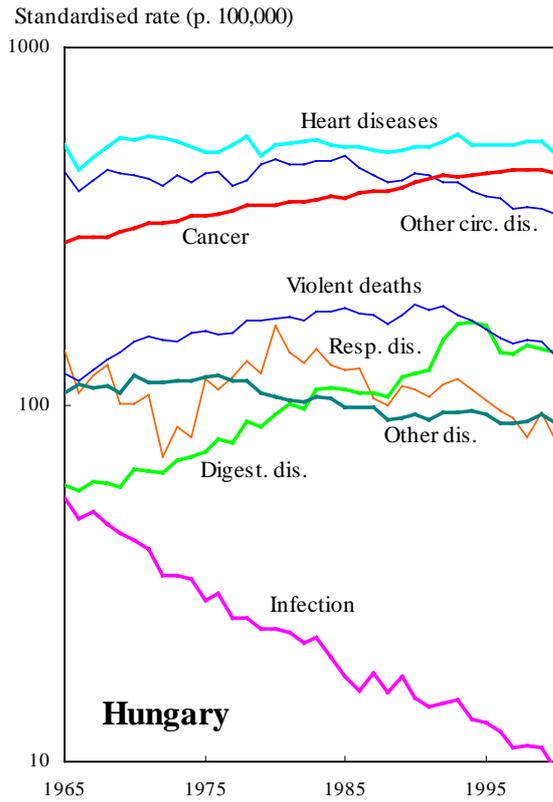


Figure 8. Annual trends in standardised mortality rates for 8 large groups of causes in four Central European countries. Males

III. Former Soviet Union: Russia and the Ukraine are still far behind

If the recent developments of health situation are rather favourable in most countries of Central European countries, the future of health in countries of the former USSR appear much less optimistic, at least for the two most populated European Republics, Russia and the Ukraine.

A) The persisting growth of adult mortality

As already highlighted in the first section of the paper, trends in life expectancy in European republics of the former USSR have been very chaotic since 1985. We will not come back here to the determinants of the large fluctuations which occurred in all these countries between 1985 and 1997 and were already widely discussed. As this very troubled period seems to come to an end, the question is now, disregarding the fluctuations, to assess the general mortality trends to try to detect possible changes which could help to foresee future evolution.

Just as we did for Central European countries, two sub-periods will be considered here for the republics of the former USSR : 1965-1984 and 1984-2000. The year 1984 was chosen because it is the last year before the start of the fluctuations. Figure 9 displays the ratio between 1984 death rates by age groups and 1965 ones and the ratio between 2000 (or 1999 for Estonia) deaths rates and 1984 ones.

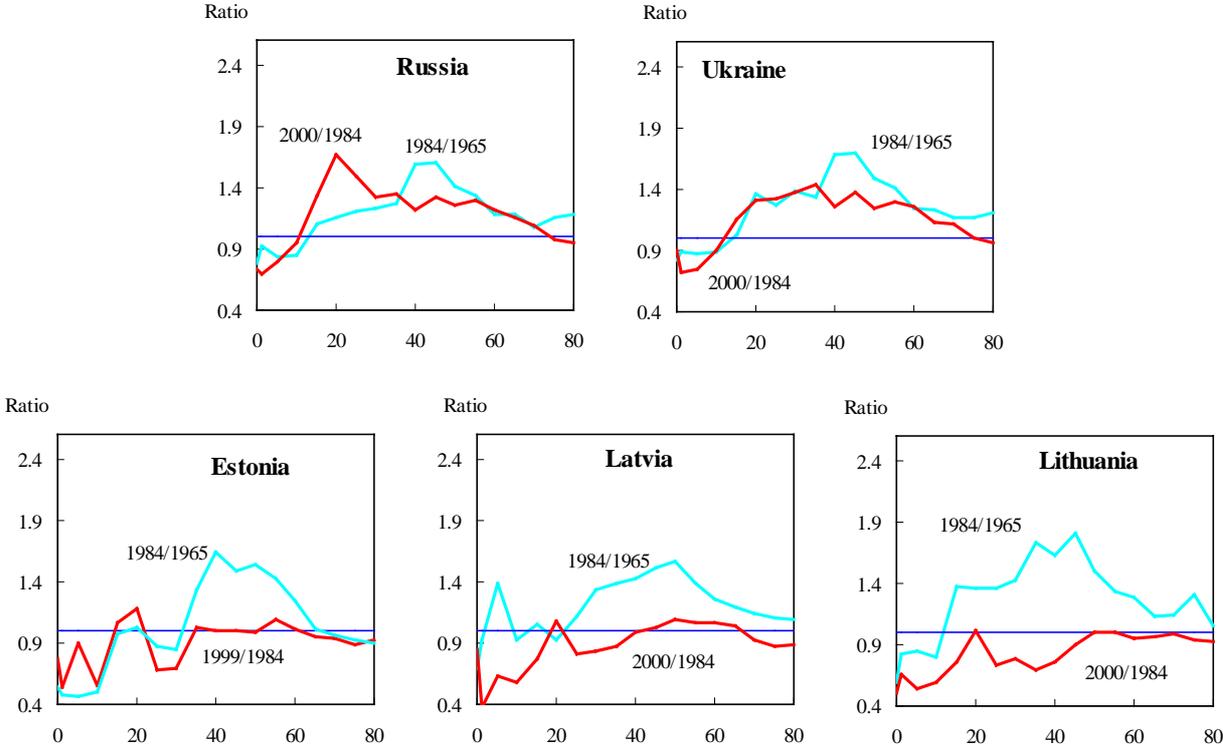


Figure 9. Changes in mortality age structure during two periods of time (1965-1984 and 1984-2000) in five countries of the former USSR. Males

In the first period, from 1965 to 1984, the increase in mortality is specially pronounced for adult ages, as it was the case in Central Europe. In the five countries, death rates around age 40 increased by 40 or 50% while infant mortality decreased and mortality at old ages remained relatively stable or slightly increased. During the second period, conversely to Central European countries, the situation continued worsening in Russia and the Ukraine and just stabilised in Baltic countries. In Estonia and Latvia, the decline of infant mortality went on but there was almost no changes at adult ages, except a slight decrease of mortality around age 30. In Lithuania, the progress at adult ages is more perceptible and concerns a larger range of ages (from 25 to 45). The stopping of the deterioration in Baltic countries and the beginnings of progress at some ages can give hope that these countries, like Central European countries, are close to enter a new stage of sustainable improvement. In Russia and the Ukraine, on the reverse, there is no sign of amelioration and mortality at adult ages continued to increase with a peculiar rise of mortality at young adult ages (around 20) in Russia.

B) Circulatory diseases and violent deaths

Thanks to a project on mortality by cause in the countries of ex-USSR jointly conducted by INED and CDEH (Moscow), continuous series of deaths by cause are available for the five countries examined here since 1965 (see Meslé *et al.*, 1996; Hertrich and Meslé, 2001, Meslé and Vallin, forthcoming). Continuous series of deaths by cause, reclassified into the Soviet Classification of 1988, are available till 1998 in Russia and till 2000 in the Ukraine. They were gathered into 7 large groups of causes as indicated in Table 1. Since 1999 in Russia, an abridged version of ICD10 is in use and a comparable grouping has been performed for these years (see Table 1). For the three Baltic countries, continuous series of deaths by cause according to ICD9 have been reconstructed for all the period covered by Soviet classifications or by ICD9 : 1965-1996 for Estonia, 1965-1995 for Latvia, 1965-1997 for Lithuania⁶. Each country turned to ICD10 at a different moment. We used both ICD9 and ICD10 groupings already defined in section II for Central European countries (Table 1). Contributions to the changes in life expectancy were calculated according to Andreev's method (1982) and Figures 10 and 11 display mean annual contributions by age and causes for the two periods 1965-1984 and 1984-2000 (or 1999 in Estonia).

In Russia and the Ukraine, the two periods are marked by an increase of mortality for all adult ages. From 1965 to 1984, men lost respectively 2.7 and 3.2 years of life expectancy and, from 1984 to 2000, 2.5 and 2.4 more (Table 3). During the first period, the losses were maximum between age 40 and 60 while, in the second period they are more equal over all adult ages (Figure 10). In Russia specially, the maximum loss corresponds to age 20-24. Whatever the period, two groups of causes, circulatory diseases and violent deaths, explain the main part of the losses. The negative impact of violent deaths has even grown in Russia in the last period and their increase explains the important deterioration of health at young adult ages. From 1965 to 1984, the decline of mortality by infection was still playing a positive role on life expectancy but from 1984 to 2000 the role of this pathology inversed and they had a non negligible impact on the decrease of life expectancy, specially in the Ukraine (– 0.4 year).

Russia and the Ukraine are obviously not yet on the way of sustainable progress. Inversely health situation is going on to worsen for a large range of ages and causes.

⁶ Indeed data are available since the mid-50s for the three countries but we did not use them in the frame of this paper.

Table 3. Contributions of 7 groups of causes of death to changes in male life expectancy at birth during the periods 1965-1984 and 1984-2000 in 5 countries of the former USSR.

	Infection	Cancer	Circulatory diseases	Respiratory diseases	Digestive diseases	Other diseases	Violent deaths	Total
<i>Russia</i>								
1965-1984	0.39	0.01	-1.80	0.14	-0.02	0.05	-1.42	-2.65
1984-2000	-0.15	0.09	-1.24	0.29	-0.12	0.02	-1.44	-2.55
<i>Ukraine</i>								
1965-1984	0.53	-0.34	-2.03	0.45	-0.21	-0.34	-1.28	-3.23
1984-2000	-0.38	-0.02	-1.11	0.18	-0.19	-0.07	-0.82	-2.40
<i>Estonia</i>								
1965-1984	0.55	-0.27	-1.22	0.07	-0.18	0.03	-0.76	-1.77
1984-1999	-0.09	0.21	0.94	0.12	-0.02	0.38	-0.25	1.30
<i>Latvia</i>								
1965-1984	0.51	-0.27	-1.68	0.03	-0.05	-0.10	-1.01	-2.57
1984-2000	-0.01	0.05	0.58	0.37	-0.10	0.02	-0.01	0.90
<i>Lithuania</i>								
1965-1984	0.70	-0.41	-2.29	1.01	-0.03	-0.44	-1.87	-3.33
1984-2000	0.02	-0.18	1.03	0.55	-0.06	0.80	0.33	2.49

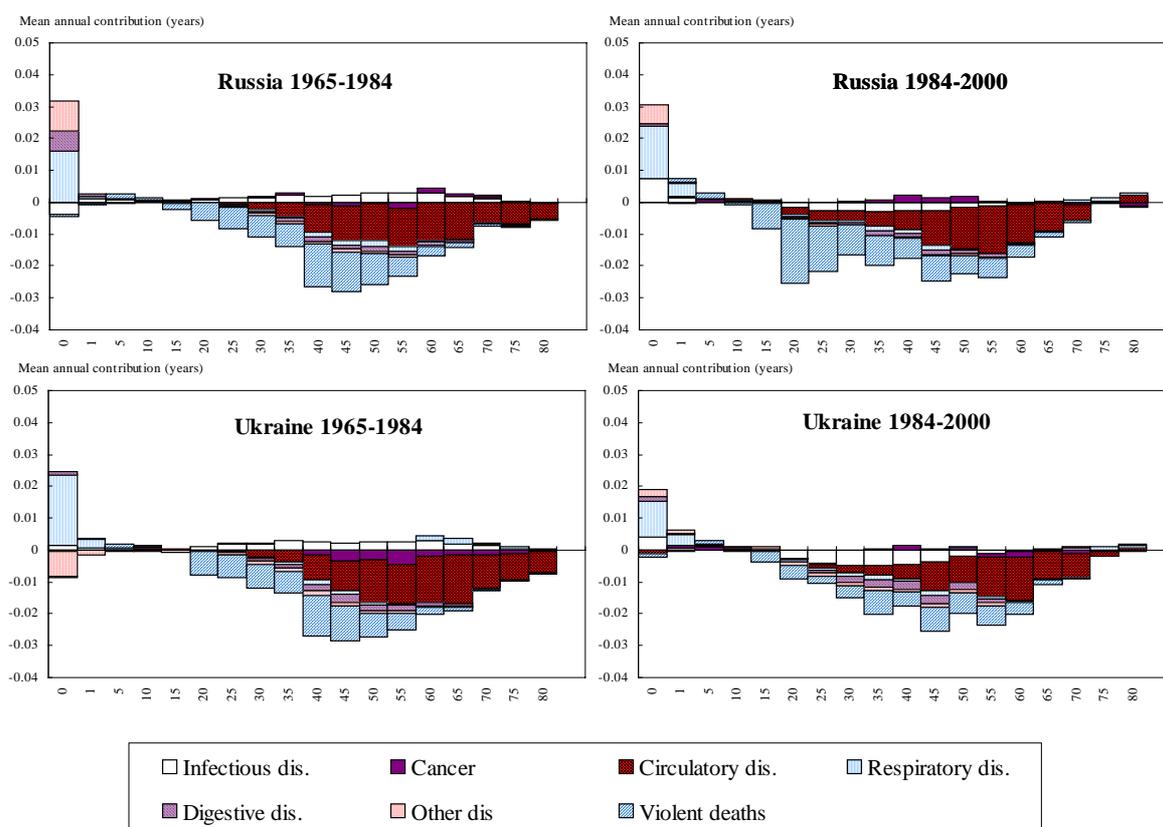


Figure 10. Contributions by age groups of seven groups of causes of death to overall changes in life expectancy at birth for two periods (1965-1984 and 1984-2000) in Russia and the Ukraine. Males

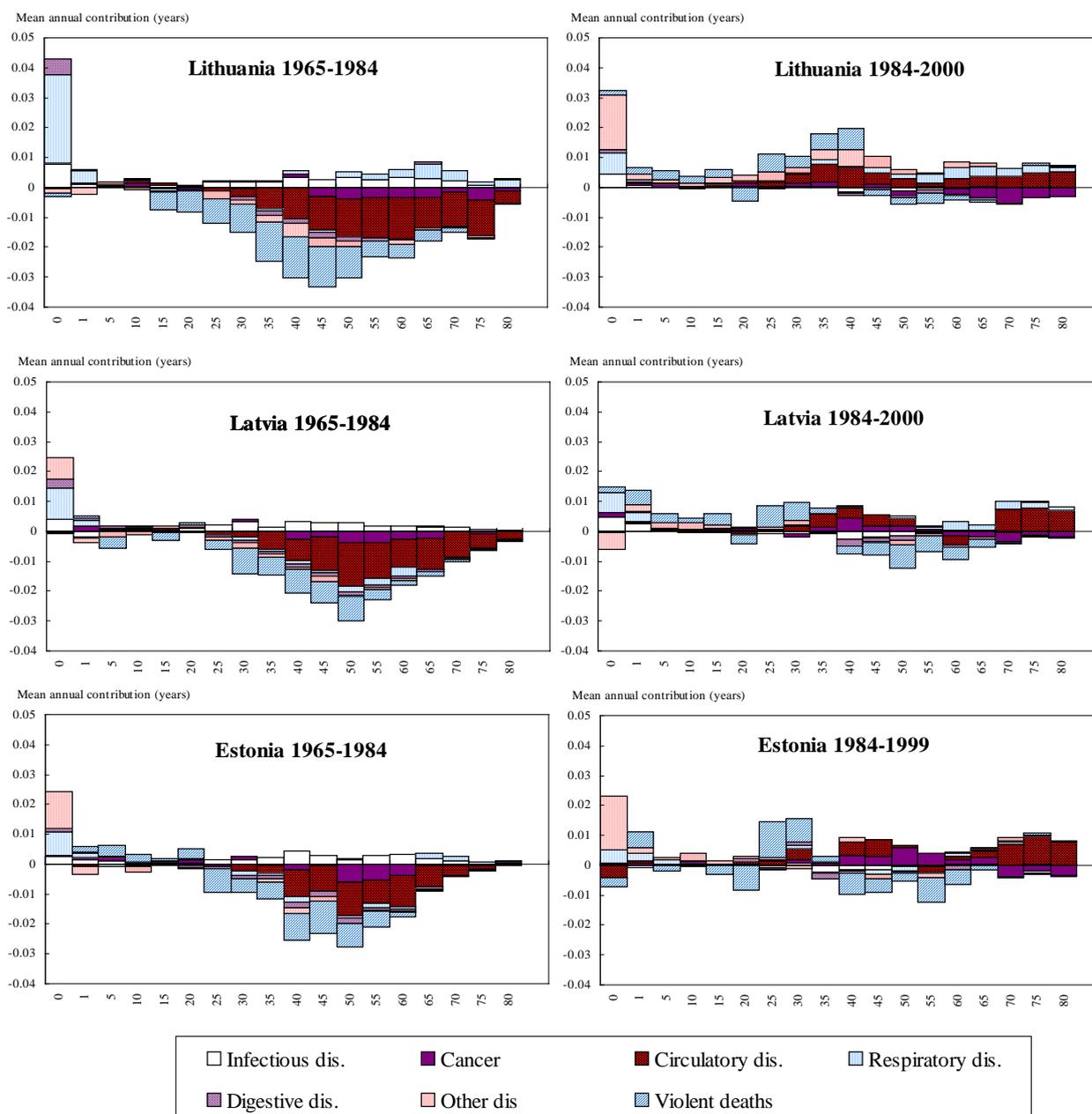


Figure 11. Contributions by age groups of seven groups of causes of death to overall changes in life expectancy at birth for two periods (1965-1984 and 1984-2000 or 1984-2000) in Baltic countries. Males

As already highlighted above, the situation of Baltic countries can be considered as more optimistic. From 1965 to 1984, life expectancy in the three countries declined exactly for the same reasons as in Russia or the Ukraine : increase of mortality at adult ages mainly due to the rise of mortality from circulatory diseases and from violence (Table 3 and Figure 11). But from 1984 to 2000 (or 1999 for Estonia) trends appear more favourable, as it was the case for Bulgaria and Romania in Central Europe. The progress is the largest in Lithuania where life expectancy at birth increased by 2.5 years but exists also in Estonia (+1.3) and in Latvia (+0.9). In this progress, circulatory diseases play the major part while violent deaths are still contributing to the decrease in life expectancy (at least at some ages). In the total, for these countries current changes appear rather unsystematic as well as for ages

as for causes. It seems however that they succeed to stop the long-term worsening process which has been hitting the republics of the former USSR since the mid-60s. Like Bulgaria and Romania, they are perhaps not far to enter an actual stage of improvement.

Russia and the Ukraine, on the other hand, are still facing a serious health crisis which specially strikes young adults. In Russia, at age 15-29, all forms of violent deaths are dramatically increasing (Figure 12). This group of causes of death was the most sensitive to the large fluctuations of the last fifteen years. With Gorbachev's anti-alcoholic campaign, mortality declined for the four main components of violent deaths, but specially for accidental poisoning (which includes alcohol poisoning) and suicide. The increase which followed the economic crisis of 1992-93 concerned more homicide and again accidental poisoning. The improvement observed between 1994 and 1998 was mainly linked to a decline of mortality by homicide and by traffic accidents but in the most recent years all types of violent deaths resumed to increase with a particular sharp rise of accidental poisoning. This rise is very probably due to a new augmentation of alcohol consumption among young cohorts and makes short-term future very uncertain.

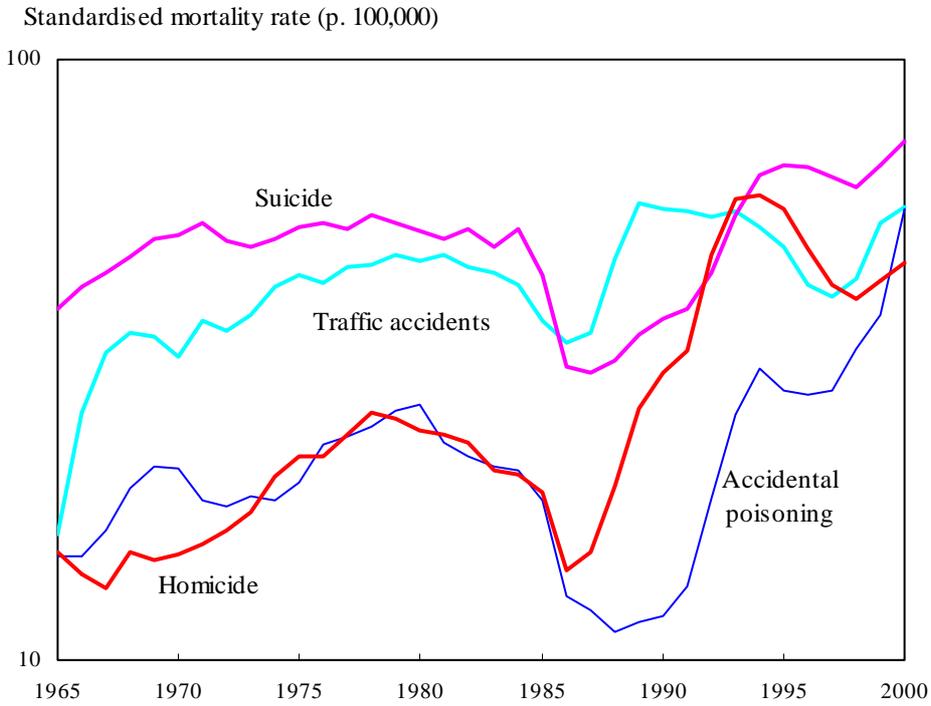


Figure 12. Annual trends in standardised mortality rates at age 15-29 for main causes of violent deaths in Russia. Males

Another emerging health problem in the two countries is related to the growing importance of the increase of mortality by infectious diseases. Figure 13 displays trends in standardised death rates at age 30-44 for the main infectious conditions in the Ukraine. Infectious mortality is completely ruled by tuberculosis. TB mortality accounts at this age for 90% of total mortality from infection and it is because decreasing trends have reversed in the 90s that infection is now contributing to the fall of life expectancy. It is possible that a part of the deaths registered as due to tuberculosis should be attributed to AIDS which is also increasing sharply in the 90s, as shown on Figure 13 by trends in mortality from viral diseases in which AIDS is included. But the recent increase in mortality from tuberculosis, like that of accidental poisoning observed in Russia, reflects above all the serious social crisis that Russia

and the Ukraine have now been facing for ten years and which conducts to a dramatic increase of precarious situations.

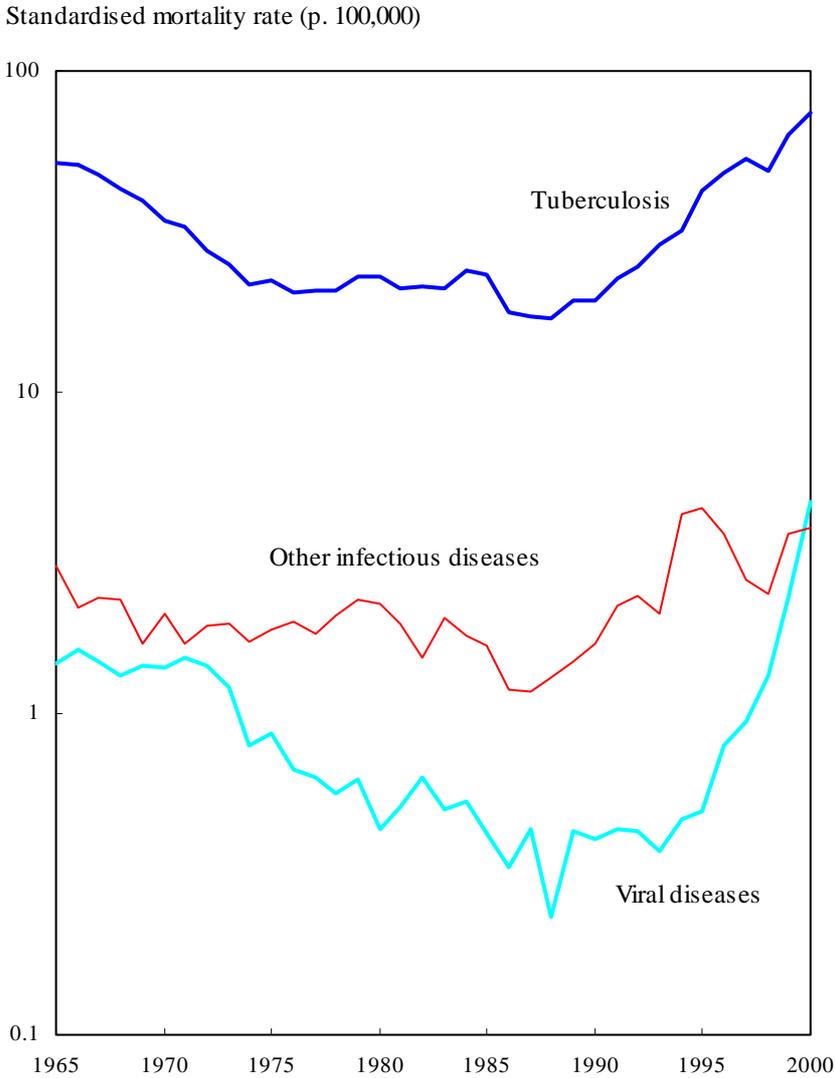


Figure 12. Annual trends in standardised mortality rates at age 30-44 for main infectious diseases in the Ukraine. Males

**

*

During a long time, unfavourable trends in mortality, quite similar in Central Europe and in the former USSR, contributed to enlarge the gap between these countries and the rest of Europe. Since the mid-80s however, mortality in the two groups of countries have developed very differently. One after the other, from the late 80s to the late 90s, Central European countries have reversed long-term negative trends and, at least for the Czech Republic, Slovakia, Hungary and Poland, progress seems well under way, particularly thanks to a clear decline of mortality from circulatory diseases. In the same time, countries of the former USSR have faced very sharp fluctuations of mortality, related to the social and

economic disruptions which occurred in these countries in the last fifteen years. While in Baltic countries the crisis could be coming to an end and mortality trends could follow soon the example of Central European countries, Russia and the Ukraine, which are experiencing a new increase in mortality from circulatory diseases and violence, did not yet succeed to get out of the slump.

References

- ANDREEV Evgueni, 1982. – Metod komponent v analize prodolzhitelnosti zhizni, *Vestnik Statistiki*, n° 3, p. 42-47.
- BOURGEOIS-PICHAT Jean, 1985. – Recent chances in mortality in industrialized countries, in : Jacques VALLIN and Alan LOPEZ (ed.), *Health policy, social policy, and mortality prospects*, p. 507-539. – Liège, Ordina Éditions, 557 p.
- GAVRILOVA Natalia S., EVDOKUSHKINA Galina N., SEMYONOVA Victoria G. and GAVRILOV Leonid A., 2001. – *Economic crises, stress and mortality in Russia*. – Chicago, Center on Aging, University of Chicago, 28 p. (Paper presented at the 2001 PAA meeting, Washington).
- GAVRILOVA Natalia S., SEMYONOVA Victoria G. and EVDOKUSHKINA Galina N., 2002. – *Mortality crisis in Russia: new health threats*. – Chicago, Center on Aging, University of Chicago, 29 p. (Paper presented at the 2002 PAA meeting, Atlanta).
- HERTRICH Véronique and MESLE France, 1998. – Mortalité et politiques socio-économiques : le cas de 4 pays d'Europe centrale et orientale, in : *Morbidité, mortalité : problèmes de mesure, facteurs d'évolution, essai de prospective. Colloque international de Sinaia (2-6 septembre 1996)*, p. 395-412. – Paris, AIDELF, 737 p.
- HERTRICH Véronique and MESLE France, 2000. – *Analysing long term trends in mortality by cause. The case of the the Baltic countries*. – Paris, INED. (Communication présentée au séminaire "Population Development and Emerging Requirements for Data Comparability : Focus on Baltic and Caucasian Region", Tallinn, 2-4 novembre 2000).
- LEON David A., CHENET Laurent, SHKOLNIKOV Vladimir M., ZAKHAROV Sergei, SHAPIRO Judith, RAKHMANOVA Galina, VASSIN Sergei and MCKEE Martin, 1997. – Huge variation in Russian mortality rates 1984-94: artefact, alcohol, or what ?, *The Lancet*, vol. 350, August 9, p. 383-388.
- MESLE France, 1991. – La mortalité dans les pays d'Europe de l'Est, *Population*, vol. 46, n° 3, p. 599-650.
- MESLE France and HERTRICH Véronique, 1997. – Évolution de la mortalité en Europe : la divergence s'accroît entre l'Est et l'Ouest, in : *Congrès international de la population. Beijing 1997*. p. 479-508. – Liège, UIESP, 1532 p.
- MESLE France, SHKOLNIKOV Vladimir, HERTRICH Véronique and VALLIN Jacques, 1996. – *Tendances récentes de la mortalité par cause en Russie, 1965-1994*. – Paris, INED, 140 p. + 2 disquettes. (Données statistiques n°2).
- MESLE France and VALLIN Jacques, 2002. – Mortality in Europe: the Divergence Between East and West, *Population-E*, vol. 57, n° 1, p. 157-198.
- MESLE France and VALLIN Jacques, forthcoming. – *Mortalité et causes de décès en Ukraine au XXe siècle*. – Paris, INED, 243 p. (with contributions of Vladimir Shkolnikov, Serguei Adamets and Serhiy Pirozhkov).
- OKOLSKI Marek, 1993. – East-West mortality differentials, in : Alain BLUM and Jean-Louis RALLU (ed.), *Démographie européenne. II. Dynamiques démographiques*, p. 165-189. – Paris, John Libbey/INED
- OMRAN Abdel R., 1971. – The epidemiologic transition : a theory of the epidemiology of population change, *Milbank Memorial Fund Quarterly*, vol. 49, n° 4, p. 509-538.
- SHKOLNIKOV Vladimir, CORNIA Giovanni, LEON David and Meslé France, 1998. – Causes of the Russian mortality crisis : evidence and interpretations, *World Development*, vol. 26, n° 11, p. 1995-2011.
- SHKOLNIKOV Vladimir and NEMTSOV Alexander, 1997. – The anti-alcohol campaign and variations in Russian mortality, in : Jose Luis BOBADILLA, Christine A. COSTELLO and Faith MITCHELL (eds), *Premature death in the New Independent States*, p. 239-261. – Washington D.C, National Academy Press, 404 p.
- VALLIN Jacques and MESLE France, 2001. – Trends in mortality in Europe since 1950 : age-, sex- and cause-specific mortality, in : *Trends in mortality and differential mortality*, p. 31-186. – Strasbourg, Council of Europe Publishing, 334 p. (Population Studies n° 36).
- WHO, 1992. – *Annuaire de statistiques sanitaires mondiales*. – Genève, OMS