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**LIFE EXPECTANCY AND MORTALITY
IN THE CONTEXT OF THE PROCESS OF ESTABLISHMENT
AND DEVELOPMENT OF THE EUROPEAN UNION**

ABSTRACT. The aim of this work is: to present the changes in life expectancy and mortality which took place in Western Europe between 1960 and 2000 plus to investigate the influence of the European integration on life expectancy and mortality of the population of the EU members. We observe positive changes in mortality and life expectancy despite of the ageing process in this region of Europe. Thus, the question arises if the connection with the EU structures brings about the changes in trends of these phenomena or not. If not, the trends in the particular countries are independent of the integration processes. The research tries to examine this problem.

KEY WORDS: life expectancy, mortality, European Union, integration

INTRODUCTION

The aim of this work is to investigate the influence of the European integration on the life expectancy and mortality of the population of the EU members. As we can observe there are positive changes in mortality and life expectancy despite of the ageing process in this region of Europe. Thus, the question arises if the connection with the EU structures brings about the changes in the trends of these phenomena or not. If not, the trends in the particular countries are independent of the integration processes. The research tries to examine this problem.

At the beginning, the history of processes which have led to the creation of the European Union should be presented. After the World War II many Europe-

an leaders were aware that the way to secure peace between the European countries was to unite them economically and politically. On the initiative of the French Foreign Minister Robert Schuman, Belgium, West Germany, Luxembourg, France, Italy and the Netherlands set up the European Coal and Steel Community (ECSC) in 1951. This agreement assumed the creation of an independent, supranational body called the "High Authority" which took decisions about the coal and steel industry in these countries. Six years later in Rome, the Treaties of Rome were signed establishing the European Atomic Energy Community (EURATOM) and the European Economic Community (EEC). The member states set about removing trade barriers between them and forming a "common market".

The first wave of accession was in 1973. At that time Denmark, Ireland and the United Kingdom joined the European Communities followed by Greece in 1981, Spain and Portugal in 1986. The Treaty of Maastricht (1992) brought the European Union into existence. The last wave was in 1995 – the accession of Austria, Finland and Sweden.

The European Union was created by fifteen countries from different parts of Europe which had different climate, life style, social policy etc. These factors exert a strong influence on the ageing of the population, life expectancy and mortality. The EU is not only political and economic union. It also gives an opportunity to increase the level of life of the members' population.

DATA AND METHOD

The analysis is based on data from The Demographic Yearbook 2002 issued by the Council of Europe including information for 1960–2000. According to the purpose of this article all fifteen members of the EU were divided into groups depending on the year of accession:

- Belgium, West Germany, Luxembourg, France, Italy and the Netherlands (1951, 1957) – EC1 (symbol used in figures),
- Denmark, Ireland and the United Kingdom (1973) – EC2,
- Greece (1981) – EC3,
- Spain and Portugal (1986) – EC4,
- Austria, Finland and Sweden (1995) – EC5.

The assumed division enables to illustrate the possible impact of the integration with the EU on the life expectancy and mortality.

In order to describe the life-span and mortality in the member countries the following indicators were chosen: crude death rate, life expectancy at birth, and infant mortality rate.

The crude death rate is counted by dividing the total number of deaths in a given year by the number of total population. Unfortunately, it is not a good

indicator because its level depends not only on mortality but also on the age structure of the population. In this text, however, I would like to show the general picture of the trends during the process of the European integration. Thus, for this purpose the above indicator is sufficient.

Life expectancy presents the average number of additional years a person could expect to live if current mortality trends continue for the rest of that person's life. It is a good indicator of health conditions in particular countries, especially the condition of health services, e.g. the quality of medical services, the access to modern methods of prevention and treatment of diseases.

The infant mortality rate is the number of deaths of infants under age 1 per 1,000 live births in a given year. It is also a good indicator of the health status of a population. It indicates the conditions of obstetrics and treatment of infant diseases.

The analysis of trends of these indicators should give the answer of the research's problem.

TRENDS OF CRUDE DEATH RATE

The changes of crude death rates observed in 1960–2000 in six countries which founded the ECSC, the EURATOM and the EEC are presented on Fig. 1. The decrease of the mortality level is observed as a general tendency. The value of the crude death rates diminished from 10.83 in 1960 to 9.44 in 2000. The group under consideration was not homogenous in this respect. At the beginning of the period CDR varied from 7.65 per thousand inhabitants in the Netherlands to 12.45 in Belgium. In most of the countries the trends were going clearly down throughout the period (Belgium, Germany, France, Luxembourg), except Italy, where it has been fluctuating around 10 deaths per 1,000 inhabitants (thus, it has not changed significantly in years 1960–2000). In the Netherlands, on the other hand, CDR has been rising constantly since 1960. The main regularity should be underlined. The differences in CDR observed at the beginning of the period diminished. The individual trends became similar.

The situation after the first wave of accession (Denmark, Ireland, the UK) that took place in 1973 is presented on Fig. 2. The line of the general trend for members countries raised. It is caused by the higher mortality level in the United Kingdom. The trend for Ireland was similar to the general tendency. Quite different situation was observed in Denmark. The typical tendency for Nordic countries represented by Denmark was an underlying rise in CDR throughout the period until 1996. After 1996 there was a downward tendency.

The changes after next two accessions are presented on Fig. 3. Three Southern European countries were included (Greece, Portugal and Spain). As a consequence in 1981 the number of members of UE increased to ten.

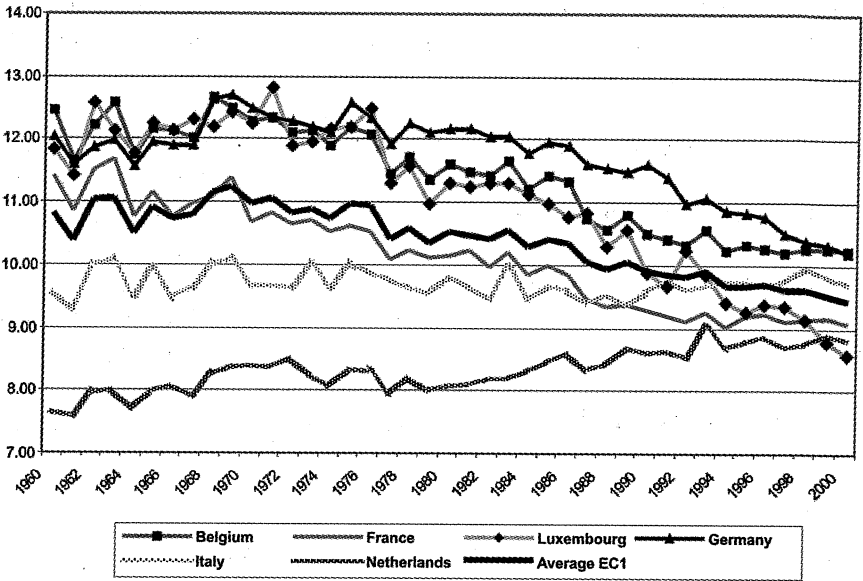


Fig. 1. Crude death rates of the ECSC, the EURATOM and the ECC founders in 1960–2000
 Source: own calculations on the basis of The Demographic Yearbook 2002 (2003)

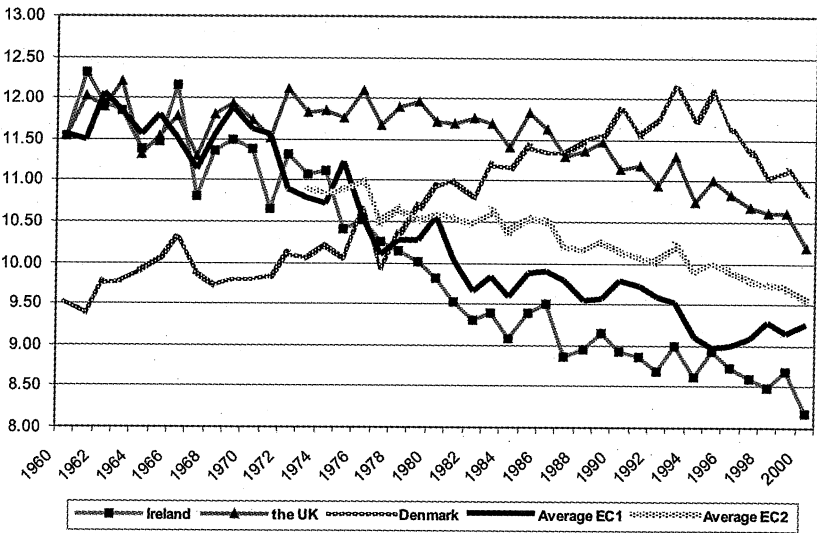


Fig. 2. Crude death rates in the countries of the first wave of accession
 Source: own calculations on the basis of The Demographic Yearbook 2002 (2003)

In 1960, CDR in Greece was equal to 7.27 (the lowest level in Europe). It has been rising throughout the period and in 2000 it reached the level of almost 9.8 (above the average of the UE). In Spain in 1965 CDR was low, namely 8.35. The value of CDR in Portugal in 1960 was equal to 10.6 and it decreased during the next thirty years. After the accession the trend changed and started to rise. At the end of the period CDR for each of three countries approached the average for the EU.

The last accession took place in 1995. Three countries were integrated into EU structures – two from Northern Europe (Sweden and Finland) and one from the Central Western Europe (Austria). The trends of CDR are presented on the Fig. 3. In Austria, during the period under consideration the value of CDR decreased from 12.71 to 9.47 but still it was over the average for the European Communities countries. At the same time the level of CDR in Nordic countries was below the average. However, in contrast to Austria, it had an upward tendency. This wave of accession did not change the average crude death rate for the EU, because the level of these rates for the “newcomers” was similar to the average CDR at the end of the period (the 90s).

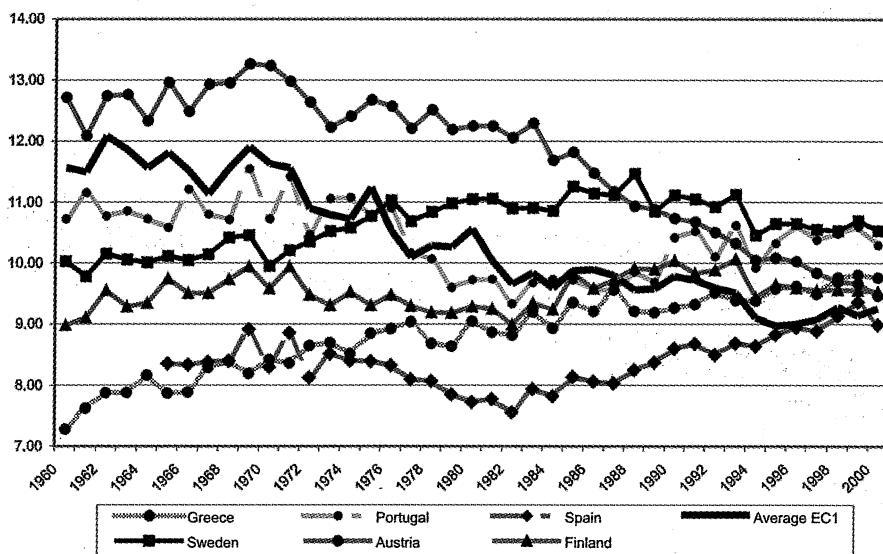


Fig. 3. Crude death rates in the countries of the second, third and last wave of accession
Source: own calculations on the basis of The Demographic Yearbook 2002 (2003)

We have to remember that the trend of CDR depends not only on the health situation, but also on the age structure of the population. So the greater the proportion of elderly people, the greater the number of people dying in a given year, because of the high risk of dying in old age.

To make a valid comparison between populations with different age structure we have to use an indicator which is independent of age structure. In this case we should use another indicator – life expectancy at birth.

LIFE EXPECTANCY AT BIRTH

The trends of life expectancy at birth are presented on Fig. 4. (for males) and Fig. 5. (for females). The common feature is the increase of the duration of life. The tendency is independent of the development of the United Europe. The successive accession to European Communities is not reflected. The most significant progress is observed in Portugal. It should be underlined that it is a country where the life expectancy at birth in 1975 was the lowest in comparison to other members of the EU (65.1 for males and 72.1 for females). In that time the highest values were observed in Sweden (72.2 for males and 77.9 for females). The average for the EU members was equal to 69.3 (males) and 75.7 (females). In 1975–2000 it decreased by 5.8 years for males and by 5.3 for females reaching respectively the level of 75.1 and 81.0 years. The highest values were observed in France (82.7 for females) and in Sweden (77.4 for males).

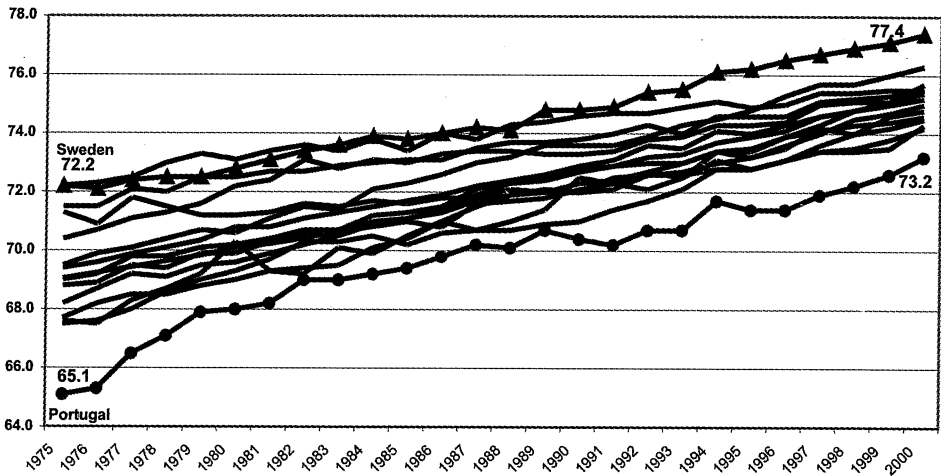


Fig. 4. Trends of males life expectancy in 1975–2000
 Source: The Demographic Yearbook 2002 (2003)

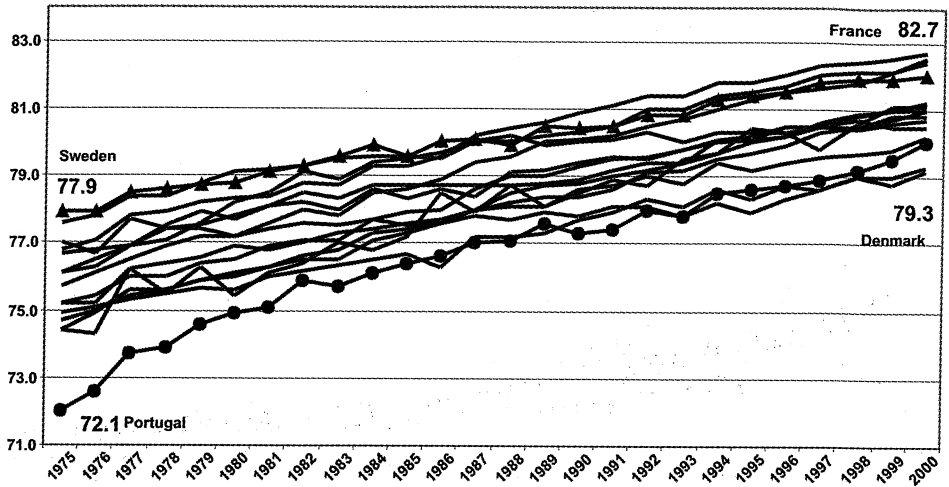


Fig. 5. Trends of females life expectancy in 1975–2000

Source: The Demographic Yearbook 2002 (2003)

INFANT MORTALITY RATE

The systematic decline of the infant mortality in each country under consideration throughout the entire period was observed (Fig. 6). The situation in Portugal differed significantly from the other countries in the first half of the period. In 1961, the infant mortality rate reached the level of 93.5 deaths per thousand live births. After that it gradually decreased to the level of the rest of the EU members. The differences between countries had been diminishing throughout the period. It is reflected by the standard deviation which decreased from 11.07 deaths in 1960 to 0.73 deaths in 2000.

It can be observed that the significant progress in the average infant death rates decreased from 28.8 deaths (without Portugal) in 1960 to 4.9 deaths at the end of the period. This situation could be explained by the improvement in the quality of health services in obstetrics, first of all thanks to the application of the modern medical technology, e.g. incubators, and new types of medicines.

DETERMINANTS OF REGIONAL DIFFERENCES

Figure 7. presents a framework for explaining the differences in regional life expectancies (Vallin, Mesle, Valkonen, 2001). The four groups of factors separated in the model: cause-specific death rates by age and sex, levels of non-medical risk factors, composition of regional populations and underlying determinants of regional differences.

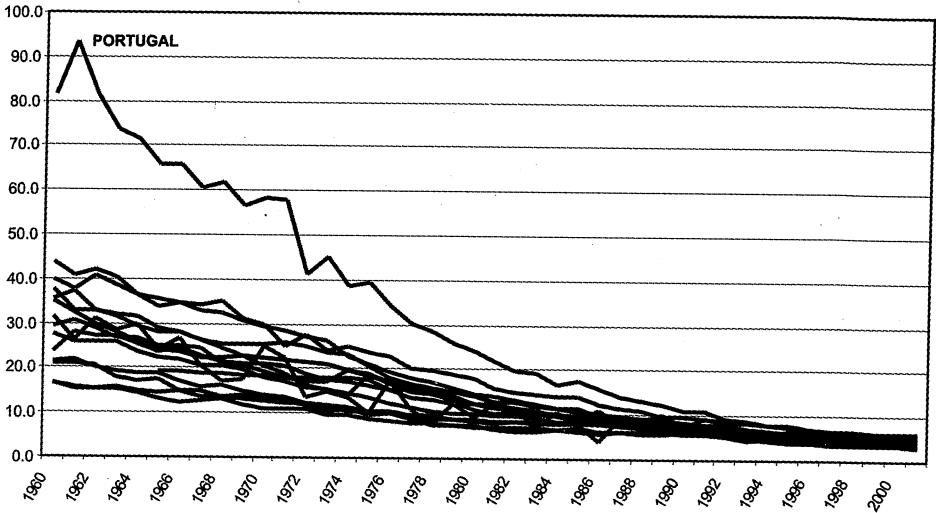


Fig. 6. Trends of the infant mortality rates in 1960–2000 (the number of deaths per thousand live births)
 Source: own calculations on the basis of The Demographic Yearbook 2002 (2003)

According to the foregoing framework the general improvement in living conditions, health conditions, services and economic development had a strong influence on the ageing and mortality in the Western European countries. The life span of this population lengthened significantly.

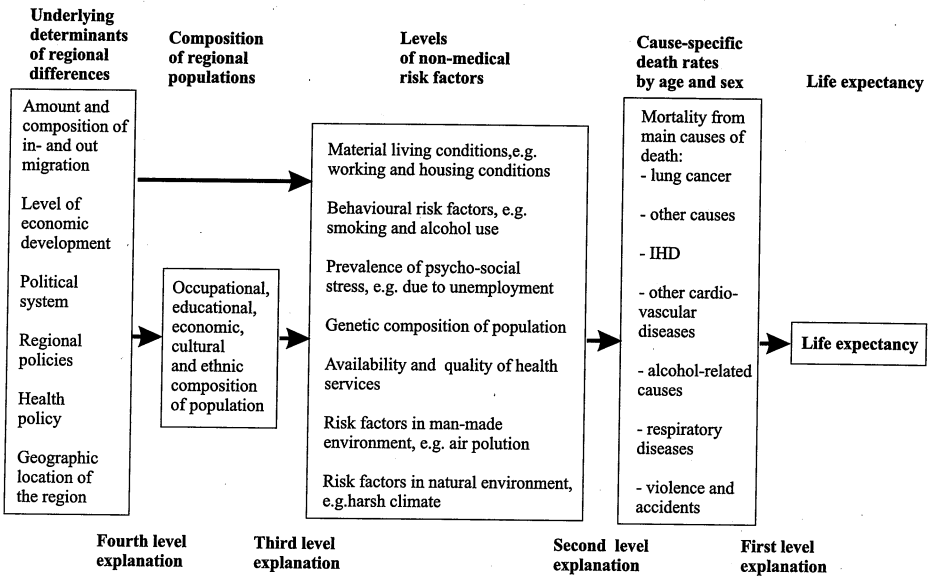


Fig. 7. A framework for explaining the differences in regional life expectancies
 Source: Vallin J., Mesle F., Valkonen T. (2001)

It is a commonly known that developed countries attained their high levels of life expectancy through a two-centuries-long transition from high to low mortality (National Research Council, 2000). The transition continued in the period under consideration. Mortality has continued to decline rapidly (in percentage terms), especially at ages under 40. The chance of reaching age 65 is more than 90 percent for females and more than 80 percent for males. Life expectancy gains depend mainly on reduced mortality over age 65. The processes described above are typical for the fourth stage (National Research Council, 2000). In the developed countries, this reduction is caused by the progress against chronic disease, especially cardiovascular diseases but also cerebrovascular diseases and some cancers (Horiuchi, 1997). The medical development, especially early detection and prevention of chronic diseases, improvements in surgical procedures and refinements of medical therapies, have a significant influence on the extension of life-span among the elderly (National Research Council, 2000).

CONCLUSIONS

The analysis of foregoing indicators shows that differences in mortality, which were observed at the beginning of the period have systematically decreased. For example, it is clearly visible in the infant mortality rate.

Changes of main measures of mortality reflect the progress during the period under consideration. However, the question arises whether the accession with the European Communities had an influence on the trends of the individual countries. It has not been observed. Trends in the individual countries did not change after the accession. The progress was the result of many different causes, but is not directly connected with the integration process. Similar processes were observed both in member and non-member countries.

The analysis presented in the paper is based only on simple indicators which are not sufficient enough to give an accurate and complete answer whether the integration with the European Union structures directly brings about positive changes in the ageing and mortality in the individual countries.

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