

# **Changes in life expectancy in the European Union since 1995: similarities and differences between the 25 EU countries**

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## Summary

European countries experienced a marked convergence in their life expectancy figures in the aftermath of the Second World War from a different but generally increasing trend in life expectancy but during the 1960s European life expectancies began to diverge. In one group of countries, the growth in life expectancy hardly slowed during the 1960s, and continued to converge towards higher values. These are high convergence countries. A second group, where growth in life expectancy slowed more in the late 1950s and early 1960s, converged to a level of around two years from the highest European values. These are low convergence countries. The third group includes those European countries that at some time ceased to follow the trend of the highest European values. These are divergent countries. It is in this third group that the Baltic and Eastern Europe countries are found as their life expectancies ceased to follow the trend of the highest European values from the 1960s onwards. Denmark is also included though its life expectancy trend varied from the mid-1970s, whilst trends in Norway and the Netherlands diverged from the mid-1980s onwards. These divergences coincided with health crises in Europe but their impact varied tremendously from one country to the next.

In 1995, life expectancy at birth in the Baltic countries differed from the highest values in Europe by nine years for women and sixteen for men. These differences narrowed in 1996 or 1997, but the Baltic countries have still not embarked on a phase of convergence towards the highest European values. The Eastern European countries show greater heterogeneity but again have not yet fully entered a convergence phase. In Northern Europe, the gap between the highest European life expectancies and that for Danish women remains relatively constant although the same gap for women in the Netherlands and Greece continues to widen and is currently three years. For other European countries life expectancies at birth are generally within one to three years of the highest values with no major change in the observed trends.

In total in 2002-2003, the differences in life expectancy at birth between European countries vary enormously, reaching a maximum of twelve years for men and seven years for women. Out of the 25 member States, fifteen have life expectancies at birth for both men and women that lie within three years of the highest European values. Elsewhere, for women, we observe differences with the highest European value of around four years in Denmark, five years in the Czech Republic and Poland, six years in Slovakia, Lithuania and Estonia and finally seven years in Hungary and Latvia. For men, the same differences are observed of around four years in Portugal, five years in Slovenia, six years in the Czech Republic, eight years in Poland and Slovakia, ten years in Hungary and twelve years in Latvia, Lithuania and Estonia. Not only are these major differences, but the current trends do not suggest that life expectancies at birth are converging. These figures pose a colossal challenge for the European Union as it wishes to offer all its citizens means towards better health.

## **Introduction**

The European Health Expectancy Monitoring Unit (EHEMU) is a project funded by the EU Public Health Programme. The main aim of EHEMU is to provide a central facility for the co-ordinated analysis and synthesis of life and health expectancies. This joint analysis of health and life expectancies adds a quality dimension to the quantity of life lived by the European populations. The results will provide evidence of inequalities between MS in terms of health gaps and highlight potential targets for public health strategies both nationally and at a pan-European level.

EHEMU will contribute to improving and developing the European health monitoring system through collaboration with initiatives aimed at improving the quality and comparability of EU data, through its specific objectives to:

- undertake analysis of health expectancies from current harmonized data;
- co-ordinate the dissemination of results, through paper and web-based reports;
- act as repository for past and current data on EU health expectancies;
- undertake regular transfers of meta-information to European databases;
- develop web-based training material for interpreting and calculating health expectancies for a wide audience;
- promote harmonization of practice.

In particular, EHEMU is contributing to the development of a new EU Structural Indicator: « *Healthy Life Years* » (HLY).

This report on changes in life expectancy in the 25 European Union countries, c, financed by the Institute of Health Sciences (ISS), complements the work of EHEMU. It attempts to examine in detail the differences and similarities in life expectancy in Europe prior to the first disability-free life expectancy calculations for the 25 Union countries based on a new survey of European households (SILC - Survey on Income and Living Conditions).

## **Material and methods**

Two data sources were used for this work - the Human Mortality Database (HMD) and the Eurostat database. EHEMU is currently developing its own database on life expectancy in Europe for use ultimately in calculating health expectancies for the 25 countries in the Community.

The Human Mortality Database contains information on the population and mortality of eighteen European countries spread across the entire continent ([www.mortality.org](http://www.mortality.org)). The chronological series go back to the mid-18<sup>th</sup> century for Sweden and the mid-19<sup>th</sup> century for Denmark, England and Norway. This database is therefore ideal for studying the growth and convergence of life expectancies in Europe throughout the 20<sup>th</sup> century. It is particularly useful in placing the turning point of the 1960s. We have kept Switzerland and Norway in these first analyses. We have, however, excluded Germany, as the statistical series for this country are divided into two for the majority of the period.

The Eurostat database contains more recent information on the population and mortality in the 25 countries currently part of the European Union (<http://epp.eurostat.cec.eu.int>). We have

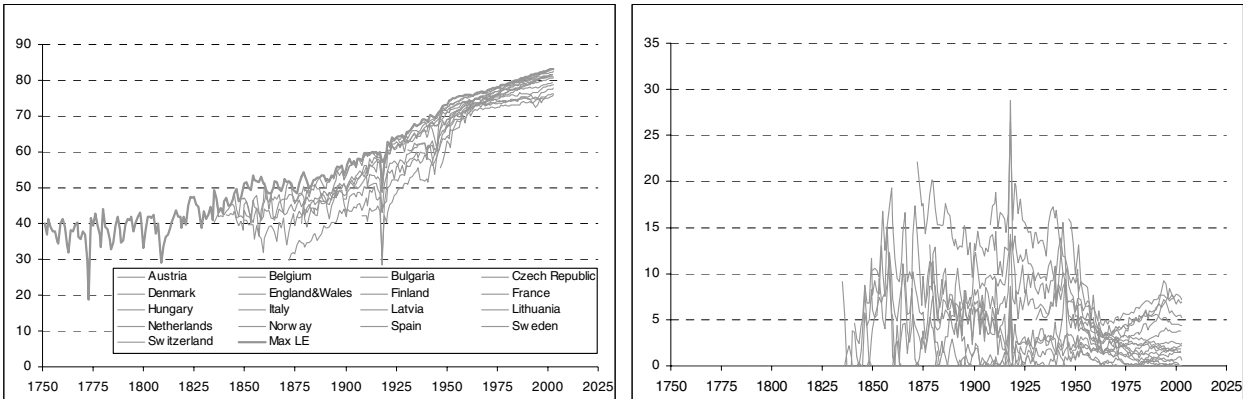
used this information from 1995, the date when EHEMU commenced studying recent changes in life expectancy in Europe.

We will study three issues in this report: (1) the growth and convergence of life expectancies in Europe during the 20th century; (2) the turning point in the 1960s, when a period of stagnation was followed by a period of divergence of life expectancies; and lastly, (3) the most recent trends for the European Union, and whether these suggest convergence or continued divergence.

All results are presented for women first and, then for men with most detail for life expectancies at birth, then age 65 and age 85 in less detail. The first discussions on the changes in life expectancy for women at birth are therefore more detailed than the final comments on changes in life expectancy for men at age 85.

The graphs in the first and second sections group the eighteen European countries listed in the HMD, except for those of West and East Germany. The graphs in Section 3 group the current 25 European Union countries. The graphs represent systematically the absolute value of life expectancies expressed in years in the left hand panel and the deviation from the highest European value calculated annually, also expressed in years, in the right hand panel, as for example in Graph 1 which groups all the life expectancy values at birth for women since 1750 contained in the HMD.

**Graph 1: Life expectancies at birth in the various European countries since 1750 and deviations from the maximum values calculated annually, females**



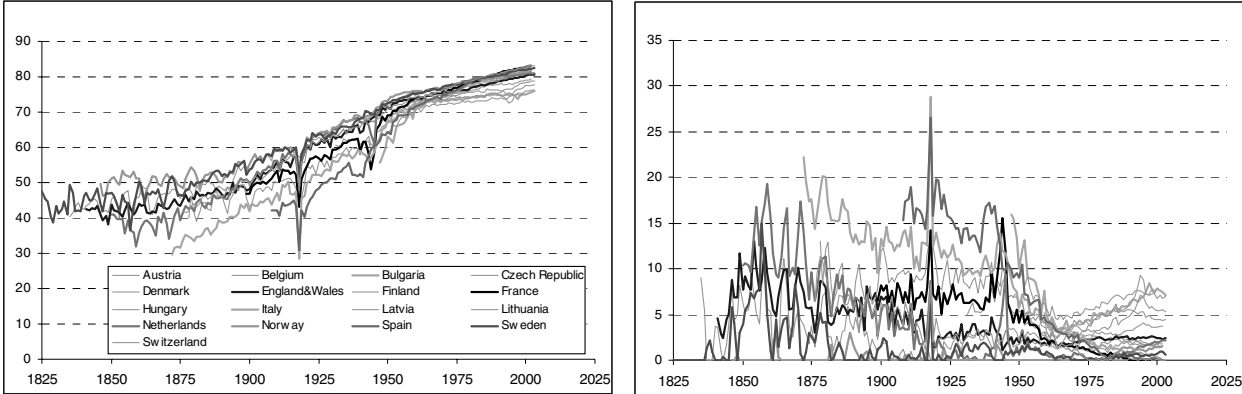
The graphs begin in 1825 in Section 1, 1945 in Section 2 and 1995 in Section 3 and are in colour to focus the attention on the countries of interest. Several groupings are suggested during the analysis: high convergence, low convergence and divergence in Section 2 of the text, Northern, Central and Southern Europe in Section 3. The Central region is also divided into East and West. These groupings were necessary for the purposes of the analysis and because of the number of European countries. They are far from clear cut and there is always some subjectivity in including the Netherlands in Northern Europe, Poland in the Centre and France in the South but the ultimate aim is to better understand the trends in life expectancy within the European Union.

**Results**

**1. Growth and convergence of life expectancy in Europe in the 20<sup>th</sup> century**

Mortality data are rare prior to the 20th century and it is difficult to fix a common starting point for the epidemiological transition in Europe. Serious uncertainty surrounds both the initial mortality levels and the starting point of the transition for each country. The oldest data series assembled in the Human Mortality Database go back to 1751 (Sweden), 1835 (Denmark), 1841 (England and Wales), 1846 (Norway), 1850 (Netherlands), 1872 (Italy), 1876 (Switzerland), 1878 (Finland) and 1899 (France). The Swedish data reveal a life expectancy at birth in the order of forty years in the mid-18<sup>th</sup> century with little difference between men and women and which, beyond major annual fluctuations, varied relatively little before the mid-19<sup>th</sup> century. Could this be a value transposable to the other European countries? Norwegian data dating back to 1846 reveal a life expectancy nearer to fifty years, only slightly different between the two sexes and without significant variation before the end of the 19<sup>th</sup> century. Graphs 2 and 3 suggest clearly that the starting point for the epidemiological transition in Europe was spread extensively over time from one country to the next.

**Graph 2: Life expectancies at birth in the various European countries since 1825 and deviations from the maximum values calculated annually, females**

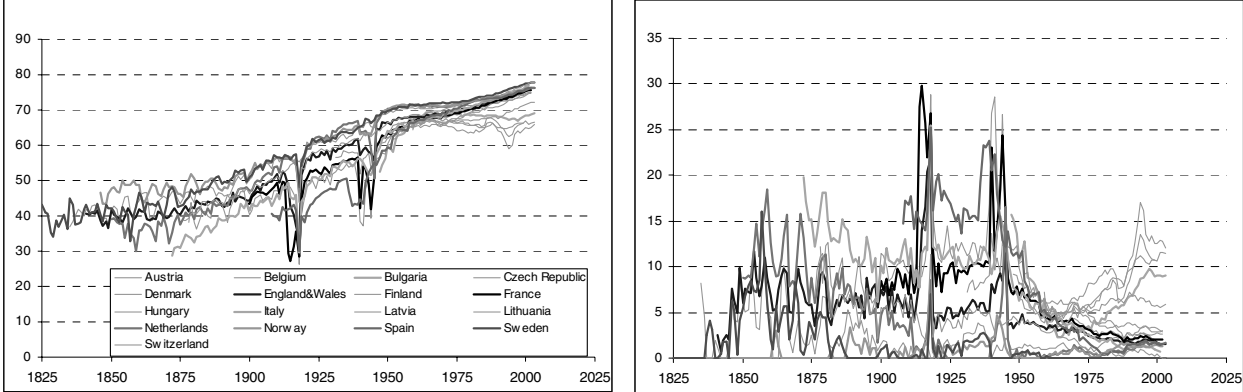


Thus life expectancy at birth for women seems to move away from forty years definitively towards 1850 in England and Sweden, 1875 in the Netherlands, 1895 in Italy and beyond 1900 in Spain, i.e. a difference of over fifty years between England or Sweden and Spain (Graph 2). Similarly, fifty years life expectancy at birth for women is achieved towards 1880 in Sweden, 1895 in England and the Netherlands, 1914 in Italy and 1927 in Spain, once more a difference of fifty years or so between Sweden and Spain. Graph 3 shows a similar situation for life expectancy at birth for men.

These two graphs show, over and beyond the two world wars, a pronounced convergence of life expectancies at birth in Europe at least until the early 1960s. Remember that the left hand panel shows the absolute value of the life expectancies in years, whereas the right hand panel shows the deviations in years from the maximum value calculated annually. Note however that before the end of the 19<sup>th</sup> century, the size of the annual fluctuations, and perhaps the quality of the available data, blur the trends. The convergence is nevertheless very clear for female life expectancy from 1885 to 1916, between the wars and after 1945. The graph

suggests that this continued after 1960 in several countries (Graph 2). For women, the outbreak of Spanish 'flu in 1918 is far and away the main disturbance to the convergence under way before the end of the 19<sup>th</sup> century. For men, the '14-'18 and '39-'45 wars disturbed far more the convergence of life expectancies at birth, also under way at the end of the 19<sup>th</sup> century, and the period between the two wars does not appear to have been a convergence period for them. Convergence for both sexes, on the other hand, is massive after 1945, at least until the early 1960s.

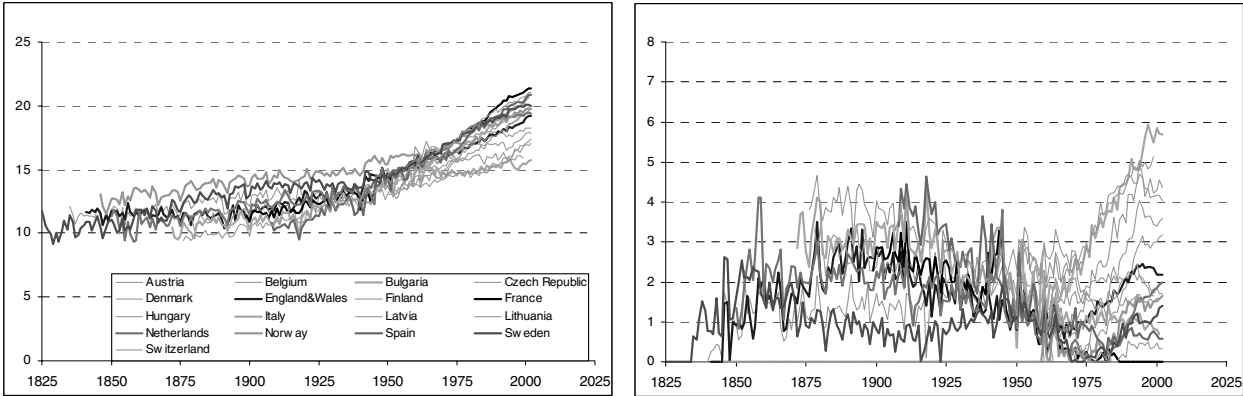
**Graph 3: Life expectancies at birth in the various European countries since 1825 and deviations from the maximum values calculated annually, males**



Italy is a good illustration of the general trends: for Italian women, the deviation in life expectancy at birth from the highest European values is in the order of twenty years in 1875, ten years in 1930 and six years in 1960. This convergence of life expectancy in Italian women is only seriously disturbed by the outbreak of Spanish 'flu in 1918 and to a lesser degree by the Second World War. The picture is different for Italian men: the gap in life expectancy at birth from the highest European values, also in the order of twenty years in 1875, is reduced to ten years as early as 1900 but beyond that it fluctuates and stagnates up to 1945, strongly disturbed by the '14-'18 and '39-'45 wars. Nevertheless, in 1960, the deviation is no more that around five years. Note also in this general overview of convergence of life expectancies at birth, particularly for women, that the deviation from the highest European values is relatively constant at around seven to eight years, for French women between 1900 and 1945.

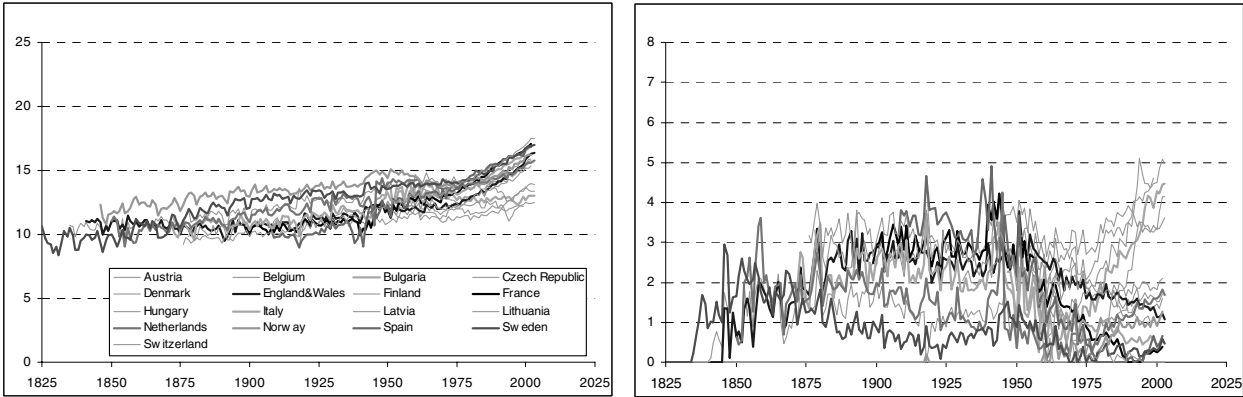
This strong growth and convergence of life expectancies in Europe since the end of the 19<sup>th</sup> century are largely due to the fall in infant mortality. But what about the oldest-old, at age 65 or at age 85 for example? Graphs 4 and 5 thus illustrate the growth and convergence of life expectancy at age 65 for men and women.

**Graph 4: Life expectancies at age 65 in the various European countries since 1825 and deviations from the maximum values calculated annually, females**



For European women, life expectancy at age 65 fluctuates between ten and fifteen years depending on the country, with a slight upwards trend noted for about a century prior to 1920. After this date, the increase becomes more pronounced and is accompanied by converging life expectancies that are concentrated in a value interval of about 2.5 years around the fifteen years of life expectancy towards 1960. This short convergence period is greatly disturbed by the Second World War and appears very low when compared with the divergence period that was established in the 1960s (see Section 2). The changes are similar for men, although the increase in life expectancy is less pronounced. Thus towards 1960, life expectancy for 65-year old men is concentrated in a range of values of between eleven and fourteen years.

**Graph 5: Life expectancies at age 65 in the various European countries since 1825 and deviations from the maximum values calculated annually, males**

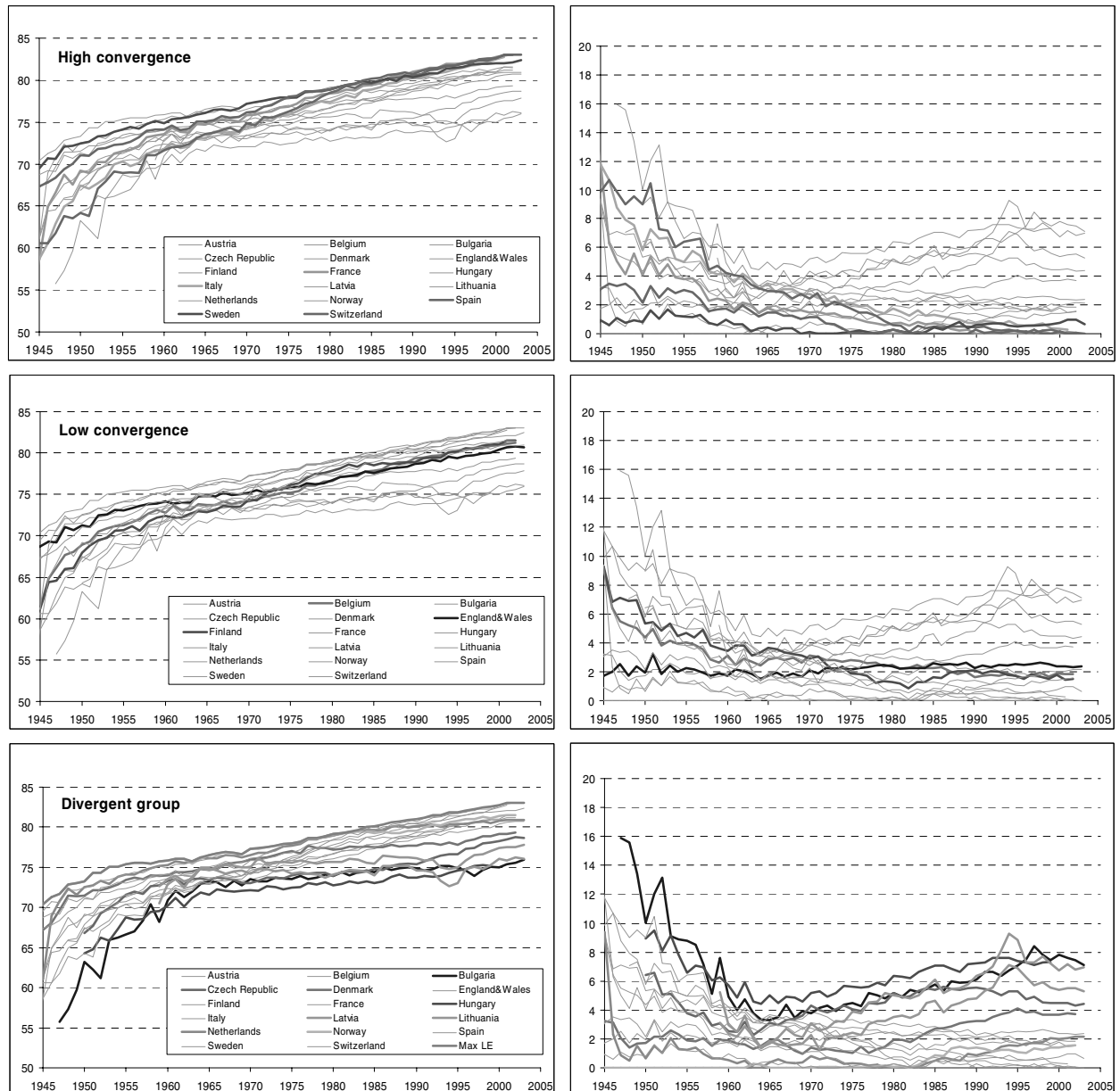


At age 85, there is little change in the value of life expectancies calculated before 1960 and no apparent convergence (see detailed graphs in the appendix). The post-war period then bears witness to the varied trends leading to a marked divergence of life expectancies in Europe that we shall address in the next section, limiting ourselves to changes recorded since 1945.

## 2. Stagnation and divergence of life expectancy: turning point of the 1960s

The graphs presented in Section 1 illustrate that after a long convergence phase, particularly noticeable for life expectancies at birth for women, a new phase began from the 1960s onwards, characterised by an increasing divergence of life expectancy values in Europe. Nevertheless, close examination of the curves suggests the existence of three major groupings as shown in graphs 6 and 7 for women and men at birth respectively.

**Graph 6: Life expectancies at birth in the various European countries since 1945 and deviations from the maximum values calculated annually, females: high convergence, low convergence and divergent group**



The seventeen European countries in the Human Mortality Database represented on the graphs almost all experienced a period of high convergence of their life expectancy at birth in the post-war years. For women, the maximum deviations dropped from fifteen to five years over about twenty years. Nevertheless, this convergent trend was interrupted abruptly in the

early 1960s, giving way to a phase of diverging life expectancy values that set in at the end of that decade and.

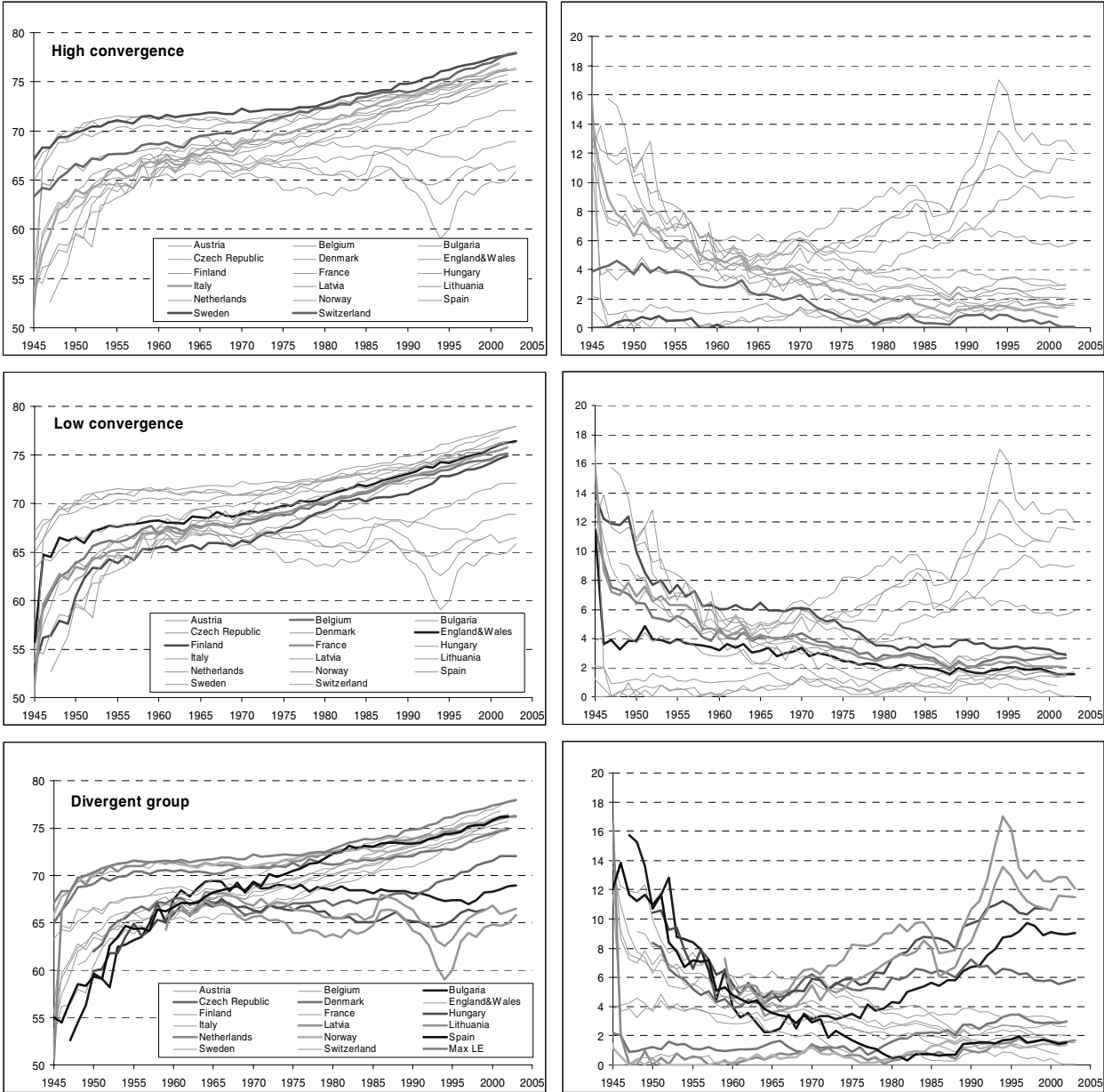
The first group of countries involves those that retain their position of having the highest European life expectancies, together with those that have converged or are continuing to converge towards this group. We have called these high convergence countries. In order of the time they begin to converge, they are Sweden, Switzerland, France, Italy and Spain for women and Sweden, Switzerland and Italy only for men. Most of the convergence took place before 1990. Since then the growth in life expectancy in this group of countries, which has already exceeded 82-83 years of life expectancy at birth for women and 78 years for men, seems strong and regular.

The second group includes those countries that converged in the 1970s to a level some two years behind the maximum values and which have since maintained this deviation overall, evolving in parallel with the first group. These are called low convergence countries and they are England and Wales, Belgium and Finland for women, with the addition of France for men. The growth in life expectancy for this group of countries, which has already reached 81 years life expectancy at birth for women and 75-76 years for men, appears to have been strong and regular since the mid-1980s, but the discrepancies with the first group are not being reduced. Note in particular the case of women in England who have maintained a virtually constant deviation of two years of life expectancy at birth behind the highest European values.

The third group includes those countries that at one time or another have moved away from the trend of the highest European values. These are called divergent countries and the group comprises the Eastern European and Baltic countries (Hungary, Bulgaria, Czech Republic, Latvia and Lithuania) where the divergent phase began in the 1960s, Denmark where divergence began in the mid-1970s and Norway and the Netherlands divergent since the mid-1980s. It should be noted that, for men, Spain also began a divergent phase in the mid-1980s, but there pattern was a very different in Norway and the Netherlands. These divergences coincide with health crises in Europe, the Eastern crisis and in the Baltic states firstly, but also health crises in some Northern European countries (Denmark, Netherlands and Norway).

The impact of these crises varies tremendously from one country to another. In 1995, gaps with the highest life expectancy values at birth were recorded for women of between nine years in Latvia and seven years in Bulgaria, Hungary and Lithuania, five years in the Czech Republic, four years in Denmark, 1.5 years in the Netherlands and one year in Norway. However the most recent trends (see Section 3) are for deviations to narrow in the Eastern and Baltic countries, remain relatively constant in Denmark and widen in the Netherlands and Norway. For men, deviations were recorded in 1995 of between sixteen years in Latvia and thirteen years in Lithuania, eleven years in Hungary, nine years in Bulgaria, 6.5 years in the Czech Republic, three years in Denmark and from 1.5 to two years in the Netherlands, Norway and Spain. Here also recent trends vary between the Eastern and Baltic countries and the other countries in this group, with the former tending more towards a lessening of gaps, whereas the other countries show a more constant deviation (Denmark, Norway, Netherlands and Spain).

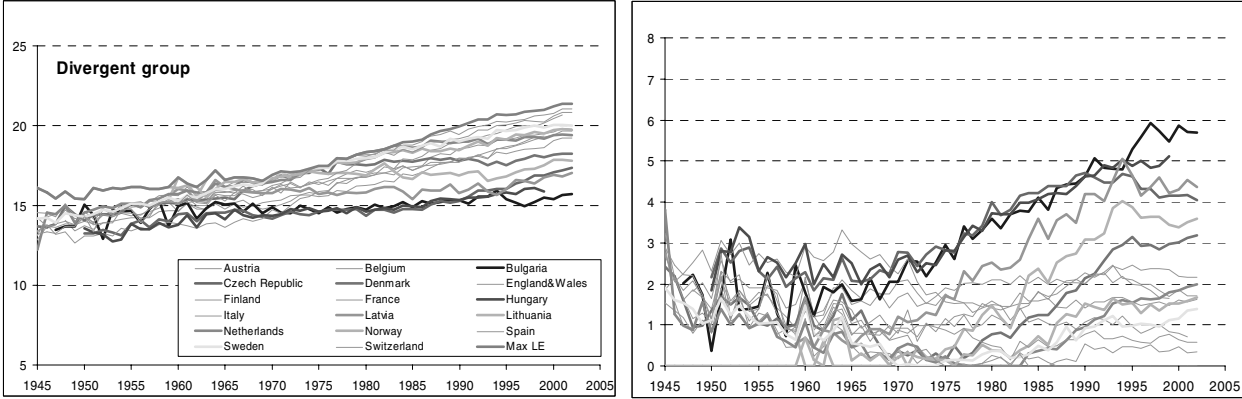
**Graph 7: Life expectancies at birth in the various European countries since 1945 and deviations from the maximum values calculated annually, males: high convergence, low convergence and divergent group**



The same graphs at age 65 (graphs 8 and 9 for women and men respectively) are ideal for appreciating the impact of mortality in the oldest-old on the divergences noted since the 1960s (see appendix for detailed graphs). From the mid-1960s, life expectancy at age 65 calculated for women diverged from the highest values for the Eastern European countries (Czech Republic, Hungary and Bulgaria) as well as for Latvia which only showed a very small deviation from the highest values in the 1960s. Lithuania began a divergent phase only in the mid-1970s as did Denmark. Sweden, on the other hand, joined Norway and the Netherlands in beginning the divergent phase in the mid-1980s. In total, in 1995, for a life expectancy at age 65 which barely went beyond fifteen years for women in Bulgaria, the highest values achieved exceeded twenty years, leading to a deviation of five years for the Eastern countries and Latvia, four years for Lithuania, three years for Denmark and one to 1.5 years for Sweden, Norway and the Netherlands. The trend recently has been a narrowing in deviation

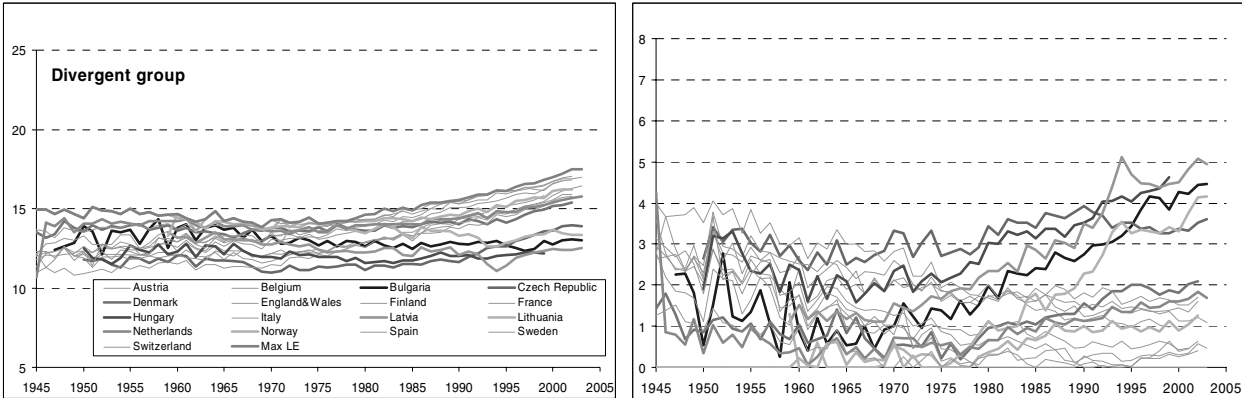
for some countries (Czech Republic, Latvia and Lithuania) but a widening for the majority (Bulgaria, Hungary, Denmark, Netherlands, Norway and Sweden).

**Graph 8: Life expectancies at age 65 in the various European countries since 1945 and deviations from the maximum values calculated annually, females: divergent group**



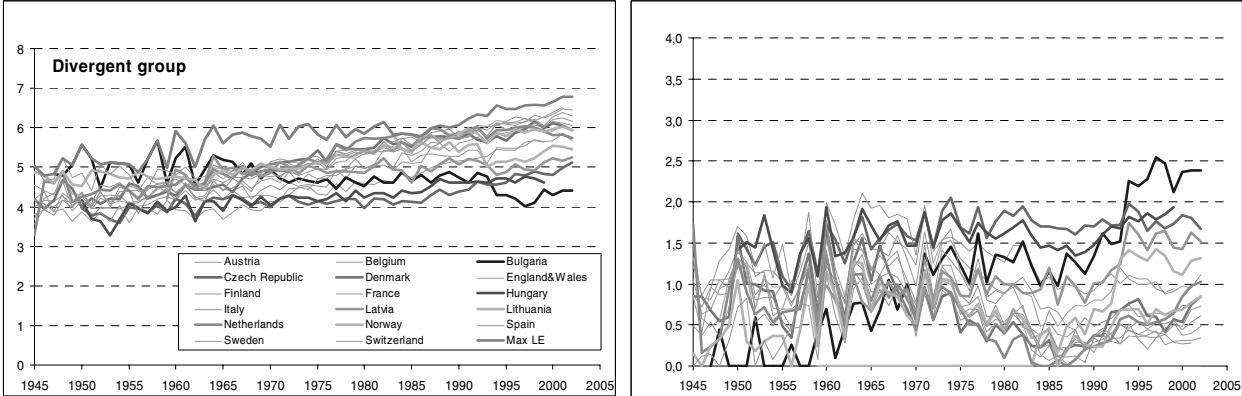
For men, changes in life expectancy at age 65 seem different from those for women. Note in particular that life expectancy at age 65 did not apparently increase in men until the mid-1970s. A slight downwards trend was noted even for the maximum values before that date. In terms of deviations, the general trend seems to have been a slight reduction before 1960, then stagnation from 1960 to 1980. Since then deviations have increased strongly, from around three years maximum in 1980 to five years today. This increase is applicable as much to the Eastern countries (Hungary and Bulgaria) as to the Baltic States (Latvia and Lithuania) and the Northern European countries (Denmark, Netherlands and Norway). Note that the Czech Republic, which has never reached close to the highest European values, has maintained a more or less constant deviation of three years from these values since 1945. In 1995 the deviation reached five years for Latvia, four years for Hungary, between three and four years for Lithuania and Bulgaria, two years for Denmark, 1.5 years for the Netherlands and one year for Norway. All these deviations suggest a further widening for the most recent period.

**Graph 9: Life expectancies at age 65 in the various European countries since 1945 and deviations from the maximum values calculated annually, males: divergent group**

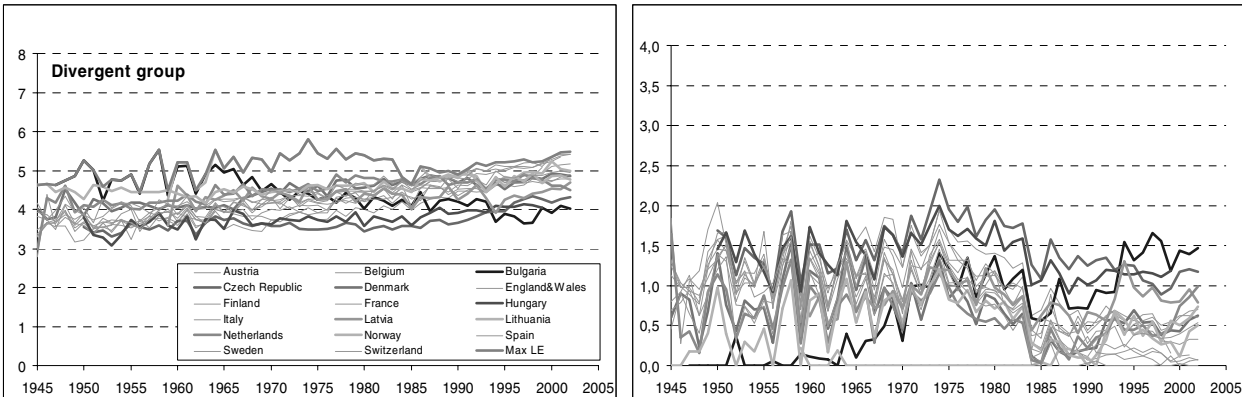


At age 85 we still find the three groups of countries of high convergence, low convergence and divergent life expectancies (see detailed graphs in the appendix). The deviations do not appear to become any wider for women until the 1990s, particularly under the effect of changes in life expectancy at age 85 in France (see Graph 10). For European men, the increase in life expectancy at age 85 continues to be a marginal phenomenon and the deviations between countries vary little during the period studied (see Graph 11).

**Graph 10: Life expectancies at age 85 in the various European countries since 1945 and deviations from the maximum values calculated annually, females: divergent group**



**Graph 11: Life expectancies at age 85 in the various European countries since 1945 and deviations from the maximum values calculated annually, males: divergent group**



**3. Recent changes in life expectancy in European Union countries**

To summarise, by 1995 major differences in life expectancy were established in Europe. At birth, deviations from the highest European values reached nine years for women and sixteen years for men in some Baltic countries. They reached seven years for women and eleven years for men in some Eastern European countries. Thankfully, all the deviations seem to have been dropping since 1995. In Denmark, however, the more-recently established, lower deviations (four years for women and three years for men) do not appear to be dropping. Lastly, although minor, deviations appearing even more recently in the Netherlands and Norway and in Spain for men which seem to be increasing in the most recent period. In 1996, deviations in life expectancy at 65 in Europe reached five years for both men and women. Recent trends show a drop in these deviations for a few countries and for women only. Deviations in life expectancy at 85 seem to widen for women and from the 1990s only. For European men, the increase in life expectancy at 85 continues to be a marginal phenomenon.

This then is a summary of the divergences in life expectancy in Europe and their changes, at birth as well as at age 65 and 85. The view of many is that this situation gives cause for concern and fully justifies the introduction by the European Union of a health expectancy indicator for its residents into its structural indicators. This indicator is based firstly on life expectancy calculations in the Community countries and it is hoped that chronological series of health expectancy can be reconstructed as far back as 1995.

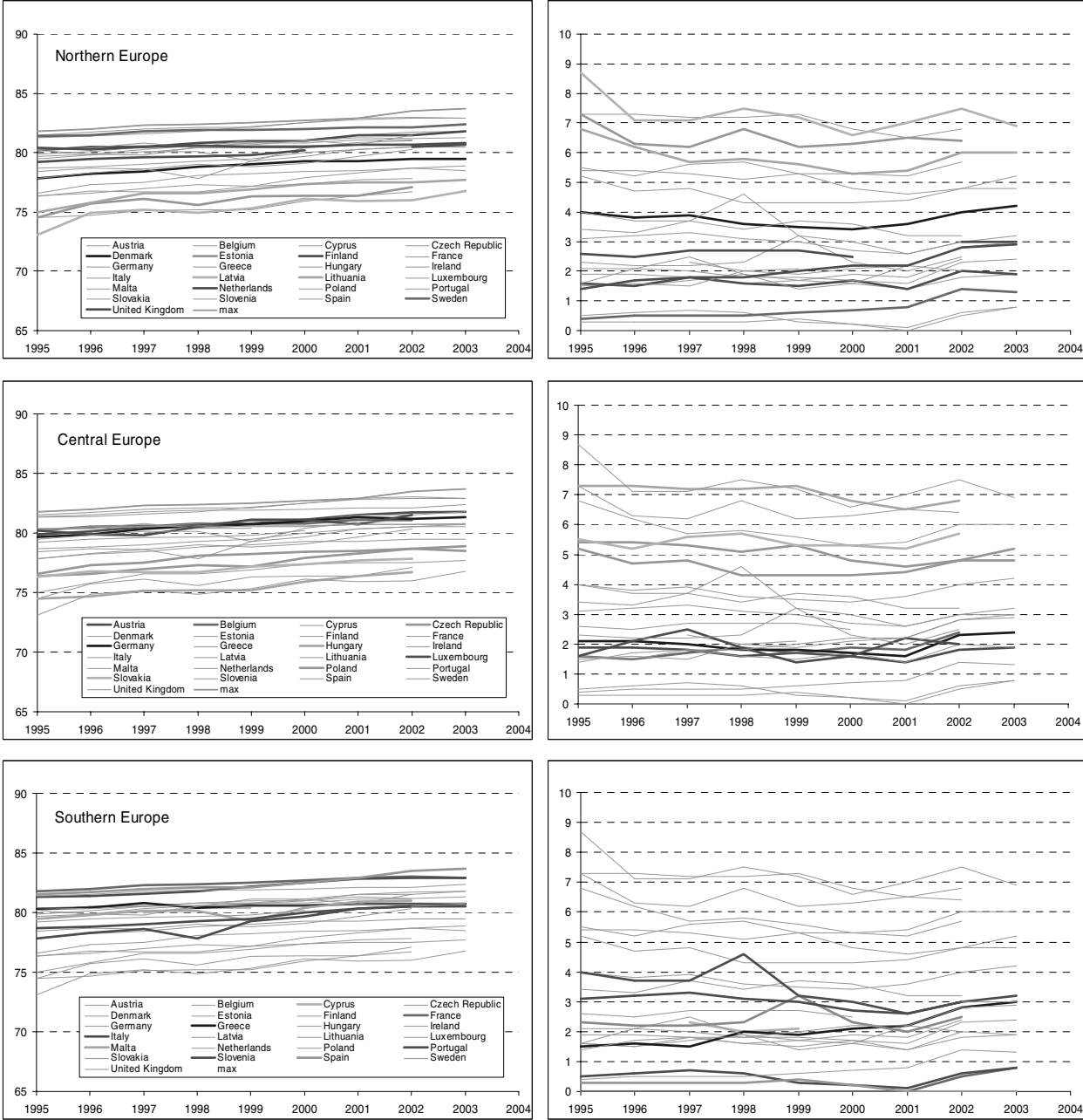
Graphs 12 and 13 therefore present, for women and men respectively, the life expectancies at birth of the 25 European Union countries since 1995 as entered in the Eurostat database. Deviations from the highest European values narrowed slightly between 1995 and 2003, the last year of available figures, for life expectancy at birth for European women. The maximum deviation, whilst in the order of nine years in 1995, narrowed to seven years in 1996, a value that was maintained until 2003. Overall the life expectancy for women increased by about two years during the period in all the Union countries with the exception of the Netherlands and Greece, where life expectancy at birth for women only increased by 0.4 years between 1995 and 2003. France and Sweden also experienced fairly modest progress during the period in the order of one year.

In 1995, the large deviation in life expectancies in the three Baltic States (Estonia, Latvia and Lithuania) was noted as converging towards the highest European values. The bulk of the reduction occurred in 1996 and 1997 but since then a deviation in the order of 6-7 years from the highest European values has been maintained. Thus there has been an interruption in the divergence phase with women in the Baltic States experiencing an identical growth in their life expectancy at birth as the reference European trend although at a lower level. We have yet to see whether the Baltic States will converge further towards the highest European values.

Denmark is another in this group of Northern European countries that has maintained at four years its deviation with the highest European values. The Netherlands continues to widen its deviation which has now reached three years, as does Sweden to a lesser degree, which is moving away from the group of countries with the highest life expectancies at birth. Finally, England and Finland continue to progress in line with the highest values, with an unchanged deviation of about three years for England and about two years for Finland.

In Central Europe, the Western countries (Belgium, Luxembourg, Germany and Austria) show tremendous homogeneity. All life expectancies increase in parallel with the reference European trend and deviations against the highest values remain unchanged at about two years. Conversely, those countries to the East (Poland, Hungary, Slovakia and Czech Republic) show far greater heterogeneity with deviations in 1995 ranging from seven years in Hungary to about five years for the other countries. These significant deviations dropped slightly at the end of the period, moving to less than seven years for Hungary and less than five years for Poland, but remained steady for Slovakia and the Czech Republic. It is difficult to talk of convergence of life expectancies at birth towards the highest European values for the women in these countries.

**Graph 12: Life expectancies at birth in the European Community countries since 1995 and deviations from the maximum values calculated annually, females: Northern Europe, Central Europe and Southern Europe**



The Southern European countries show less diversity. Two groups stand out in particular. On the one hand, Italy, France and Spain, who join Sweden in producing the highest values for life expectancy at birth for women during the period 1995-2003, and on the other hand, Greece, Portugal, Slovenia, Cyprus and Malta, where life expectancies at birth for women converge during the same period to within about three years of the highest European values in 2003. Whereas this convergence means little change for Portugal, Cyprus and Malta who all maintain their gaps, it means a clear narrowing for Slovenia and a widening for Greece. In Slovenia, the four-year deviation noted in 1995 is no more than three years by 2002, whereas in Greece the deviation increases from less than two years in 1995 to three years in 2003.

In total, in 2002-2003, the deviation with respect to the highest values for life expectancy at birth for European women is:

- about one year for France, Italy and Sweden;
- about two years for Belgium, Luxembourg, Germany, Austria and Finland;
- about three years for England, Netherlands, Portugal, Greece, Slovenia, Cyprus and Malta;
- about four years for Denmark;
- about five years for the Czech Republic and Poland;
- about six years for Slovakia, Lithuania and Estonia;
- about seven years for Hungary and Latvia.

Life expectancy at birth for European men has followed a fairly similar evolution pattern to women since 1995 (see Graph 12). Overall, life expectancy increased by two years during the 1995-2003 period, reducing slightly the discrepancies between the European countries.

Nevertheless, the very large deviations noted in the Baltic states hardly varied between 1996 and 2003, remaining at around twelve years. Throughout this period, the best life expectancy at birth for men was found in Sweden with the other Northern European countries (England, Denmark, Finland and the Netherlands) maintaining a two- to three-year deviation from the Swedish values from 1995 to 2003.

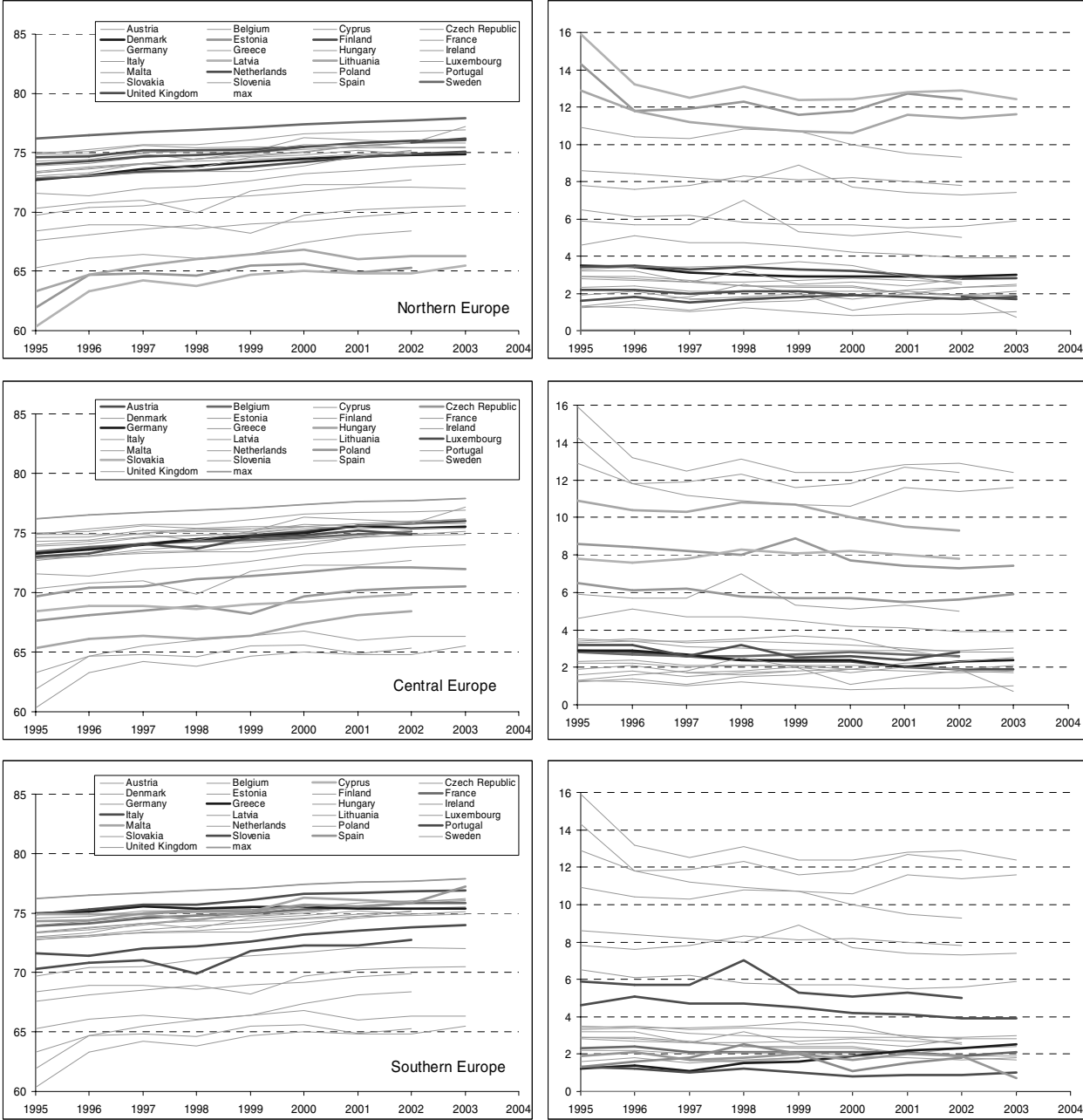
In Central Europe, those countries in the West (Belgium, Luxembourg, Germany and Austria) showed tremendous homogeneity as they did for women, and also maintained a deviation in the order of two to three years. Among those countries to the East, Hungary and Poland narrowed their deviation by approximately one year, narrowing to below ten and eight years respectively, whilst Slovakia and the Czech Republic maintained a deviation in the order of eight to six years respectively over the entire period.

In Southern Europe, Spain, France, Italy, Greece, Malta and Cyprus life expectancy of men at birth increased in parallel with the highest European values and kept a deviation in the order of one to two years throughout the period. The larger deviations noted in Portugal and Slovenia, however, narrowed by about one year.

In total, in 2002-2003, the deviation with respect to the highest values for life expectancy at birth for European men is:

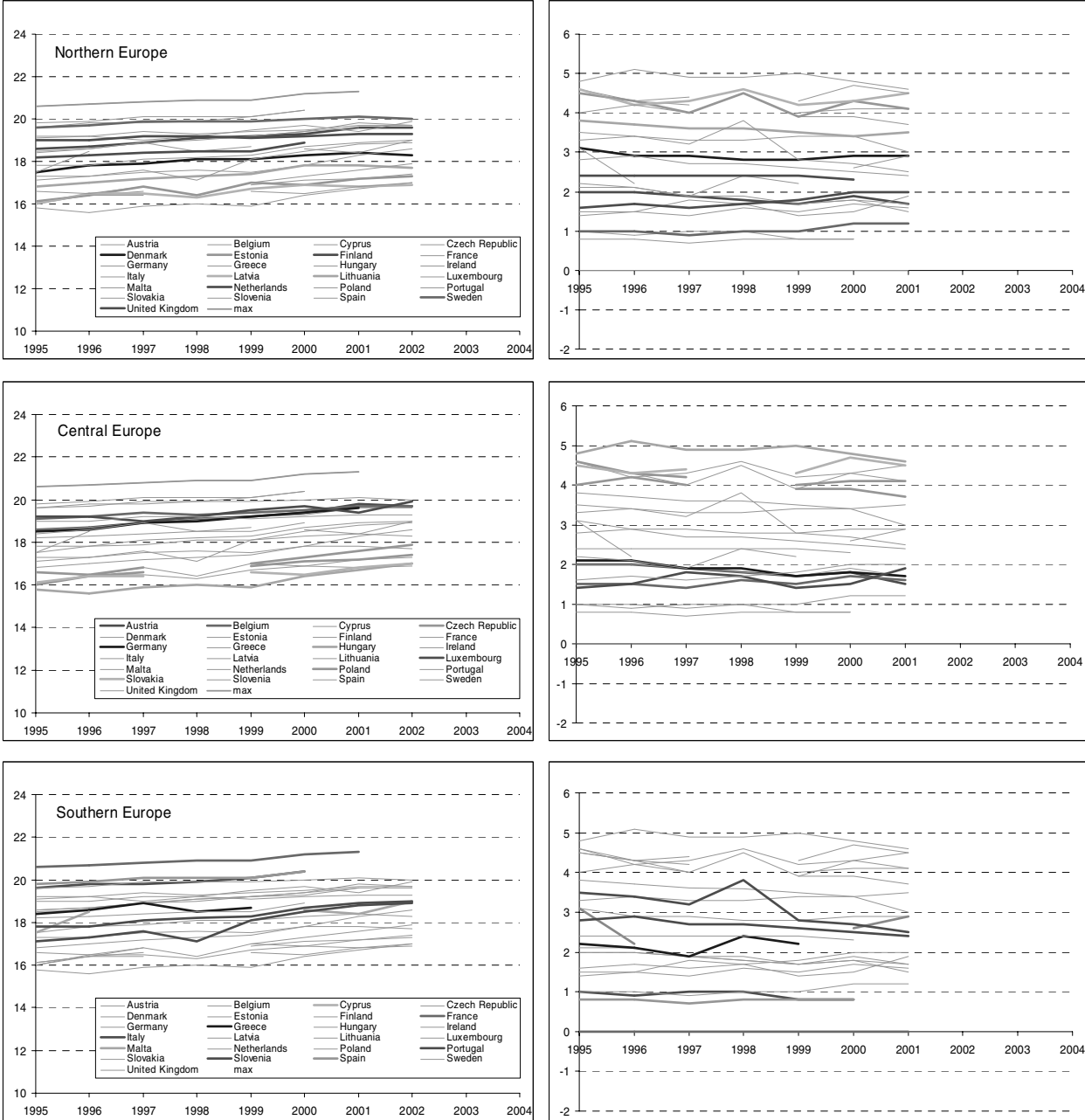
- between one and three years for the majority of the Union countries (Spain, France, Italy, Greece, Malta, Cyprus, Belgium, Luxembourg, Germany, Austria, England, Denmark, Finland and the Netherlands);
- about four years for Portugal;
- about five years for Slovenia;
- about six years for the Czech Republic;
- about eight years for Poland and Slovakia.
- about ten years for Hungary;
- about twelve years for Latvia, Lithuania and Estonia.

**Graph 13: Life expectancies at birth in the European Community countries since 1995 and deviations from the maximum values calculated annually, males: Northern Europe, Central Europe and Southern Europe**



Recent changes in life expectancy at age 65 for women shows relatively little convergence (see Graph 14), with each country more or less maintaining its position whilst increasing its life expectancy in parallel with the highest European values. In total, the rise between 1996 and 2002 was in the order of one year for both women and men (see Graph 15). Deviations in the order of zero to five years do not narrow although there has been a slight narrowing in deviations in life expectancy at age 65 against the highest European values for women in Estonia, Czech Republic, Poland, Germany, Austria, Portugal and Slovenia. Conversely, note a half-year widening in the deviation in the Netherlands and Luxembourg.

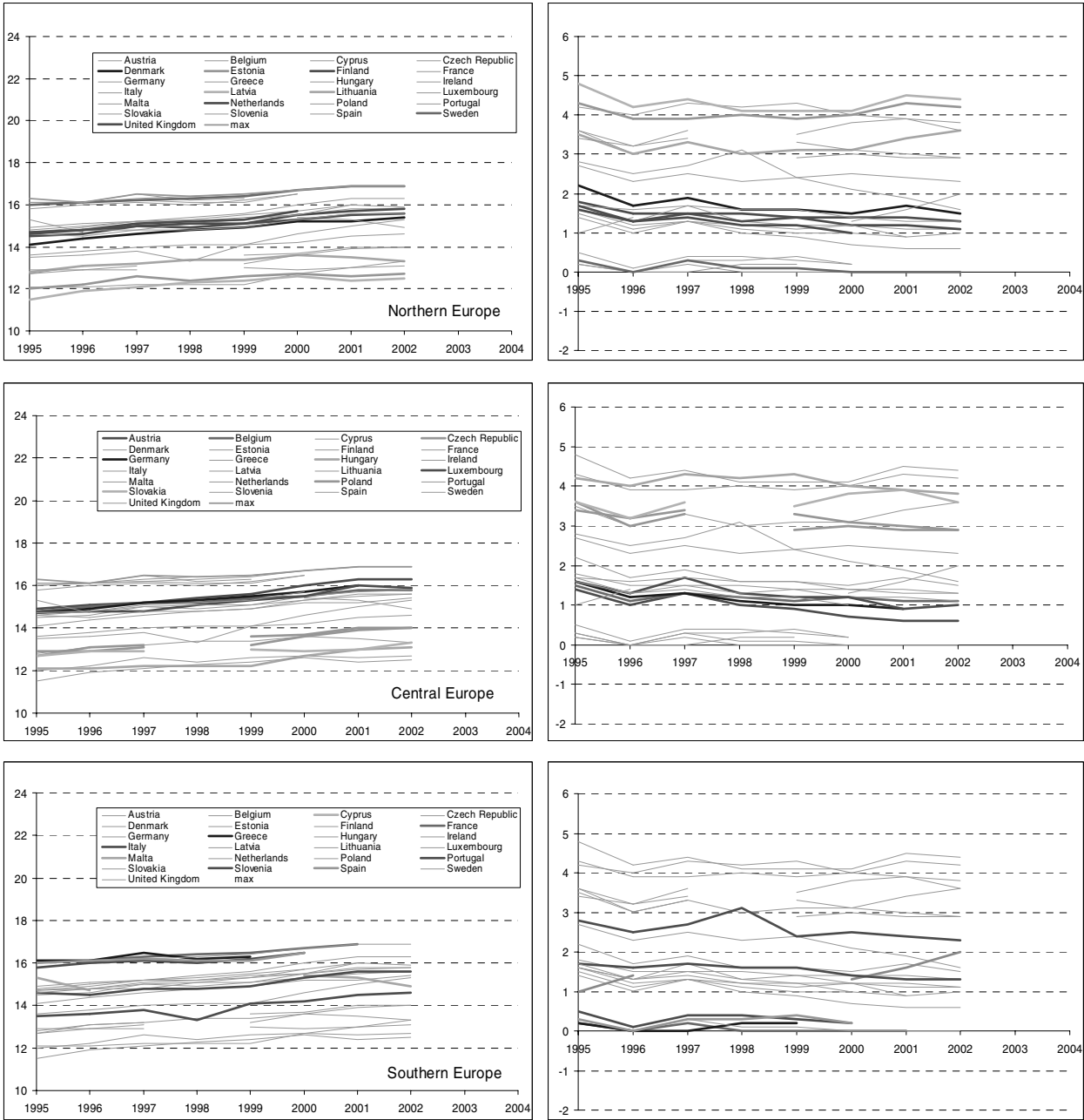
**Graph 14: Life expectancies at age 65 in the European Community countries since 1995 and deviations from the maximum values calculated annually, females: Northern Europe, Central Europe and Southern Europe**



For men, there has been a narrowing of the deviations in life expectancy at age 65 for nearly all countries with the exception of Estonia, Lithuania and Slovakia only. Malta appears to have widened its deviation of one year against the highest life expectancy values, but numerous values are missing for this country.

For the oldest-old, at age 85, the very small increases in life expectancy between 1995 and 2003 and the quality of available data make it impossible to monitor the convergence of life expectancies in Europe. The deviations are less than two years for females and one year for males (see detailed graphs in the appendix).

**Graph 15: Life expectancies at age 65 in the European Community countries since 1995 and deviations from the maximum values calculated annually, males: Northern Europe, Central Europe and Southern Europe**



**Discussion**

European countries experienced a marked convergence in their life expectancy figures in the aftermath of the Second World War from a different but generally increasing trend in life expectancy but during the 1960s European life expectancies began to diverge. In one group of countries, the growth in life expectancy hardly slowed during the 1960s, and continued to converge towards higher values. These are high convergence countries. A second group, where growth in life expectancy slowed more in the late 1950s and early 1960s, converged to a level of around two years from the highest European values. These are low convergence

countries. Note that French men are part of this group for their life expectancy at birth. The third group includes those European countries that at some time ceased to follow the trend of the highest European values. These are divergent countries. It is in this third group that the Baltic (Latvia and Lithuania) and Eastern European countries (Hungary, Bulgaria, Czech Republic) are found as their life expectancies ceased to follow the trend of the highest European values from the 1960s onwards. Denmark is also included though its life expectancy trend varied from the mid-1970s, whilst trends in Norway and the Netherlands diverged from the mid-1980s onwards. In Spain the men generally moved away from the highest life expectancy values at birth from the mid-1880s onwards. These divergences coincided with health crises in Europe but their impact varied tremendously from one country to the next.

By 1995 deviations from the highest European life expectancy values at birth reached up to nine years in the Baltic States for women and sixteen for men. The deviations have since narrowed but the bulk of the reduction occurred in 1996 and 1997 and since then a deviation in the order of six to seven years for women and twelve years for men has been maintained against the highest European values. Although the divergent phase was interrupted, the Baltic States have yet to enter a true convergence phase with the highest European values.

The Eastern European countries show far greater heterogeneity. The significant deviations noted in 1995, of five to seven years for women and six to eleven years for men, have narrowed slightly for Hungary and Poland, but are maintained for Slovakia and the Czech Republic. Whereas the divergence phase was interrupted, the Eastern Europe countries have similarly yet to enter a clear convergence phase with the highest European values.

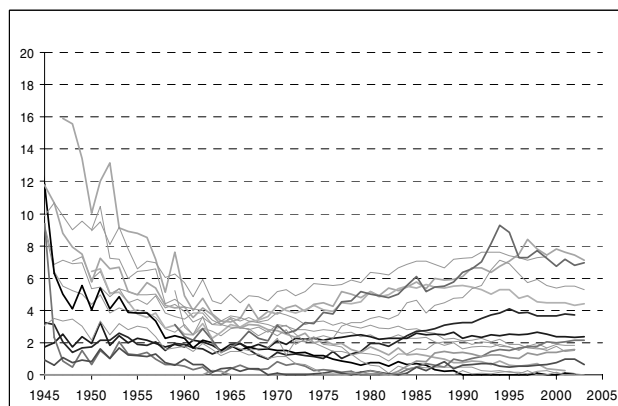
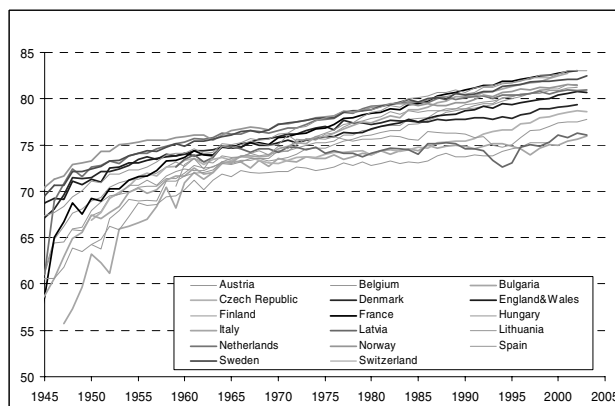
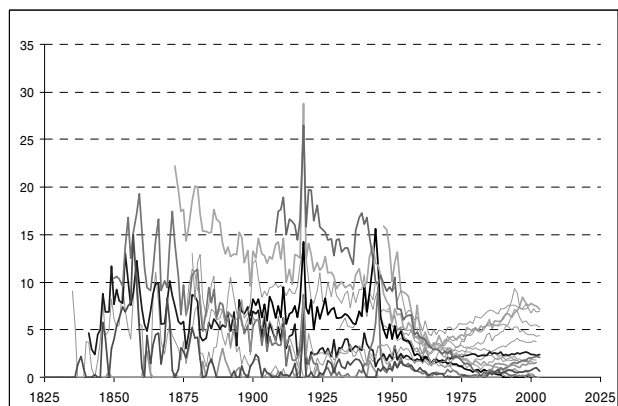
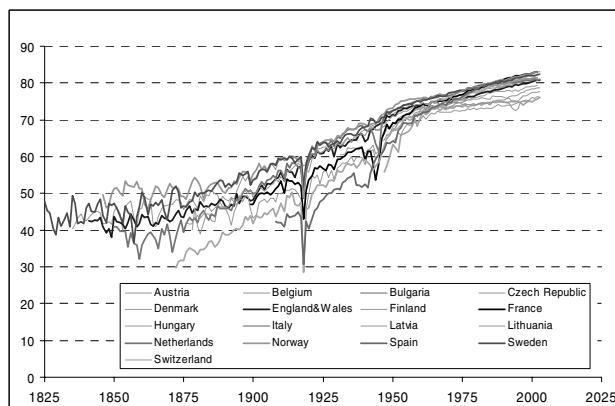
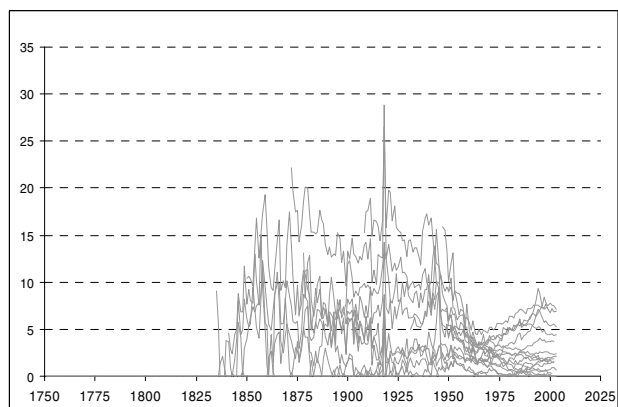
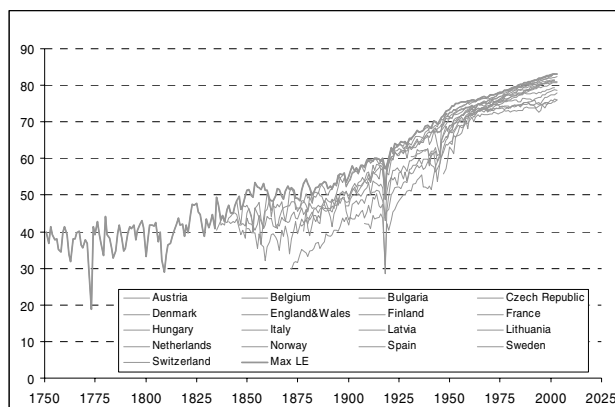
In Northern Europe, Danish women are also not widening their four-year deviation established previously against the highest European values, but neither is it narrowing. Women in the Netherlands and Greece on the other hand are still experiencing a widening of the deviation which now stands at three years behind the highest life expectancy at birth.

For other European countries the deviations with the highest European values lie within one to three years for life expectancy at birth, without major change in the observed trends.

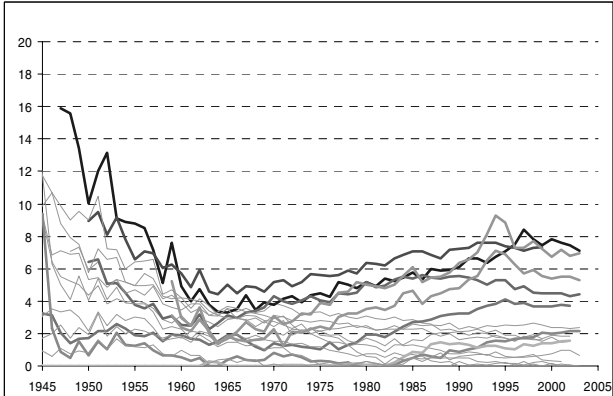
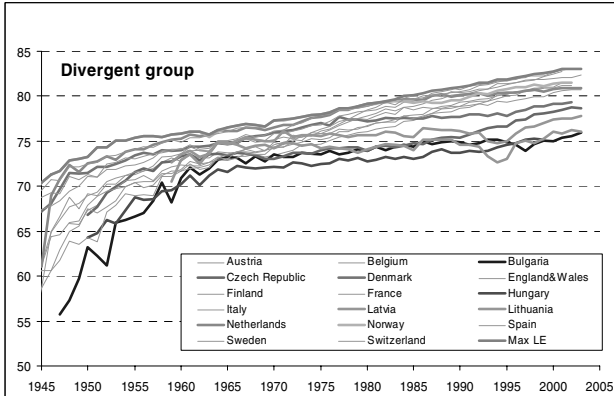
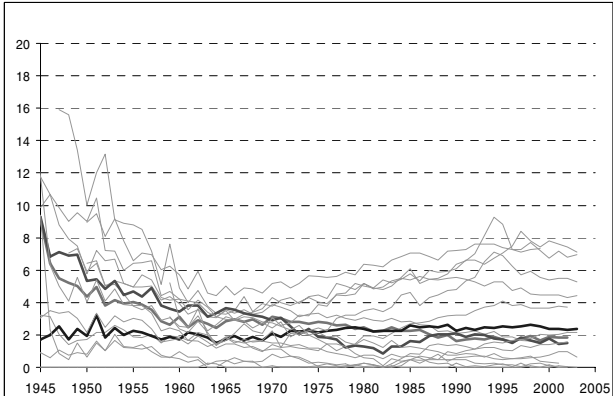
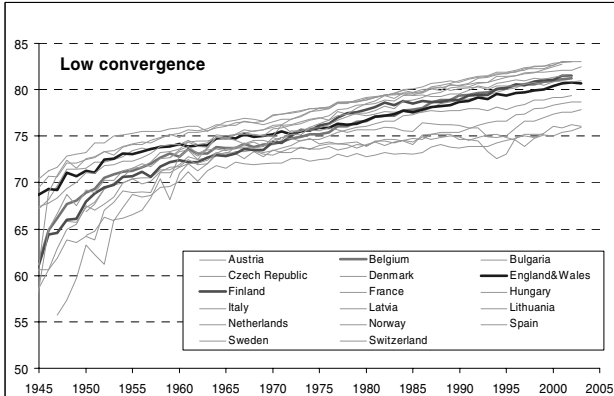
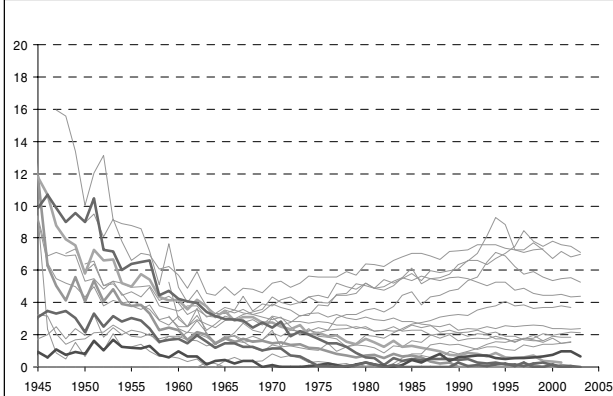
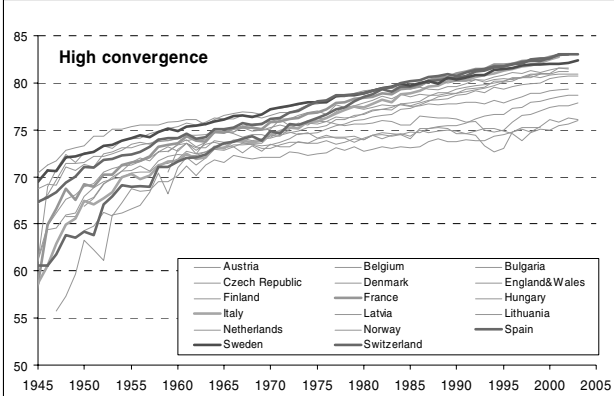
In total in 2002-2003, the deviations in life expectancy at birth are considerable within the European Union, reaching a maximum of twelve years for men and seven years for women. Out of the 25 member States, fifteen have life expectancy at birth figures for both men and women that do not deviate more than three years from the highest European values. Elsewhere are noted, for women, deviations of around four years in Denmark, five years in the Czech Republic and Poland, six years in Slovakia, Lithuania and Estonia and finally seven years in Hungary and Latvia. For men, deviations are around four years in Portugal, five years in Slovenia, six years in the Czech Republic, eight years in Poland and Slovakia, ten years in Hungary and twelve years in Latvia, Lithuania and Estonia. Not only are these major deviations, but the current trends do not suggest that life expectancies are converging. The challenge is colossal for the European Union, which wishes to offer its citizens means towards better health.

**Appendices: Life expectancies for men and women at birth, at age 65 and at age 85 in various European countries and deviations from the maximum values calculated annually**

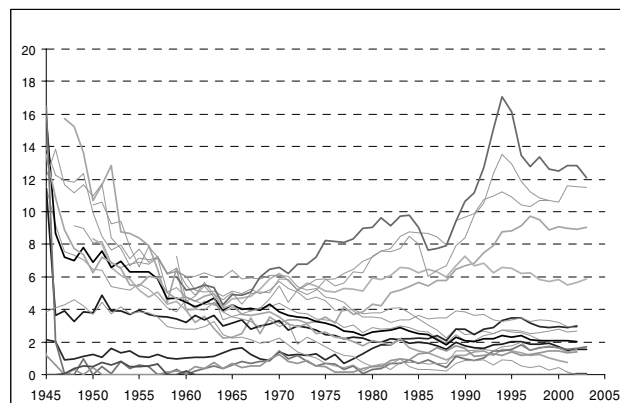
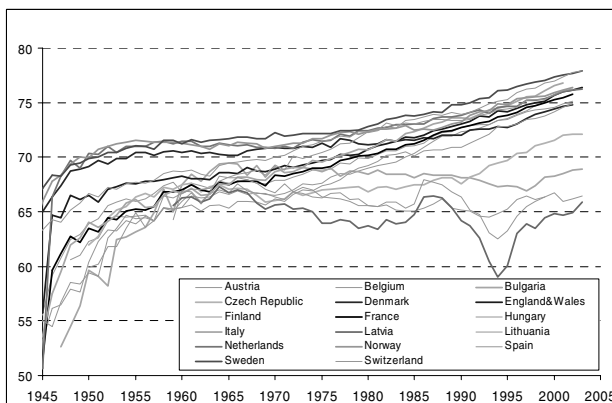
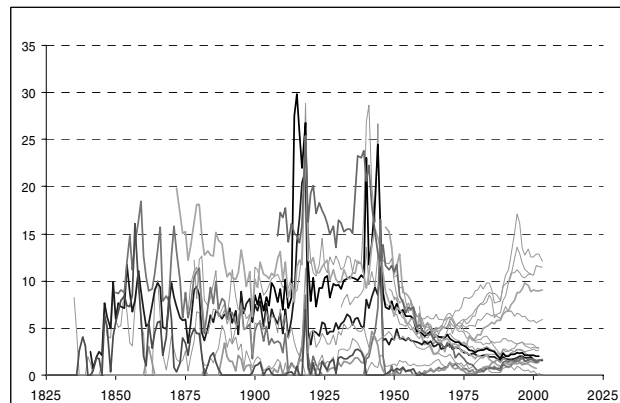
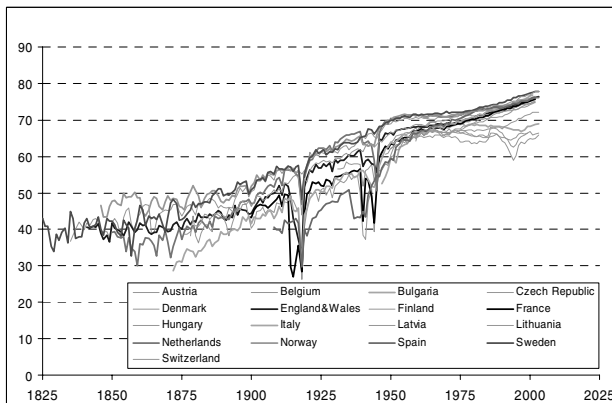
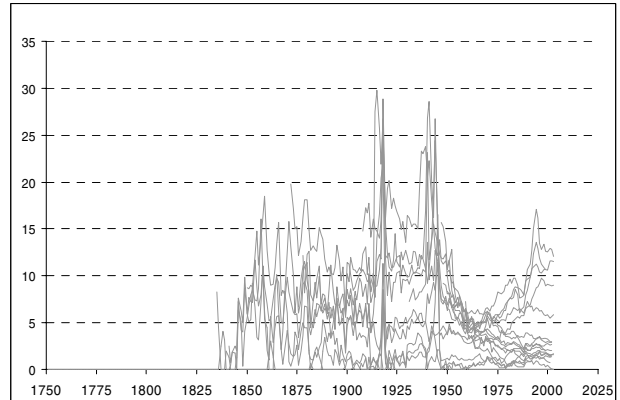
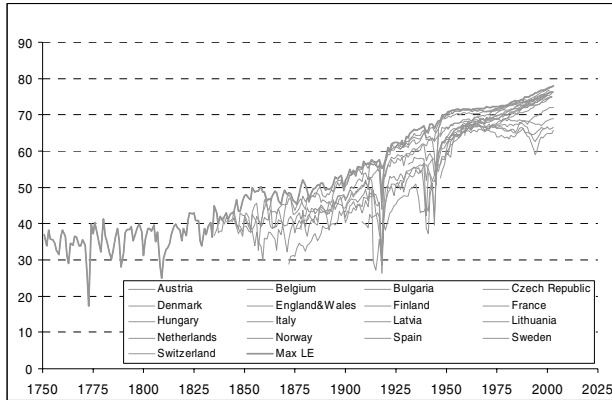
**Life expectancies at birth in the various European countries since 1750, 1825 or 1945 and deviations from the maximum values calculated annually, females**



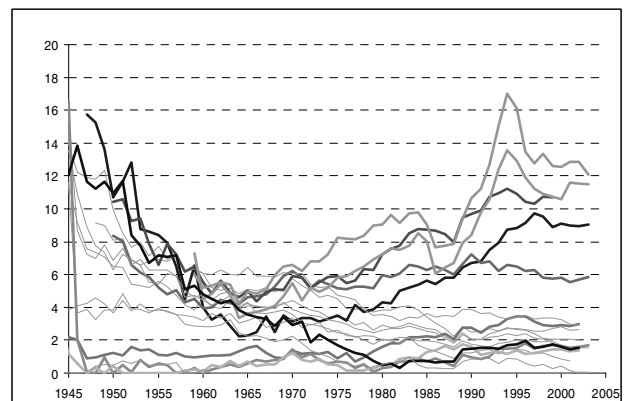
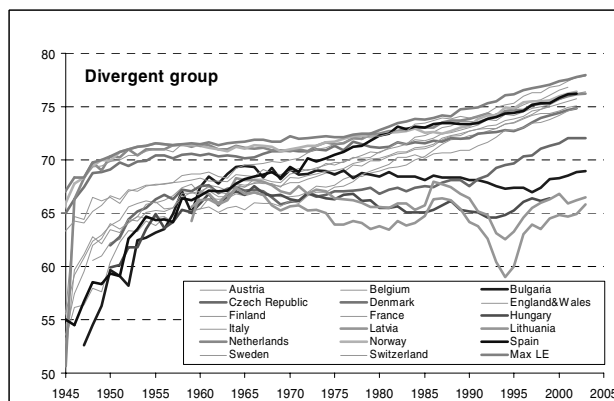
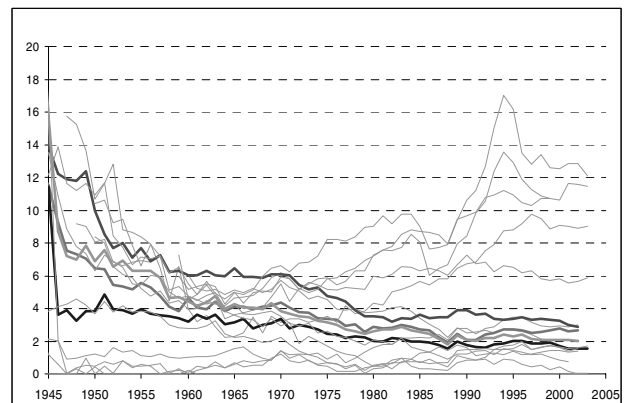
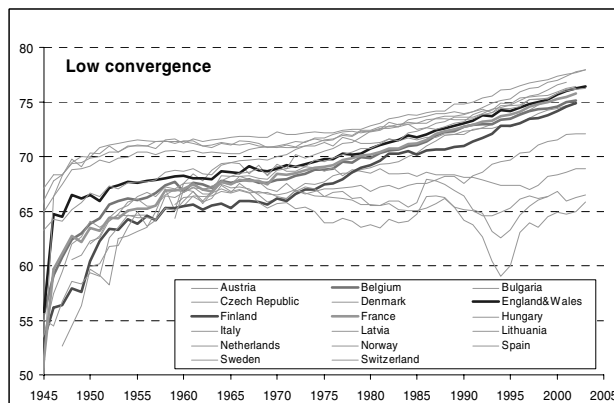
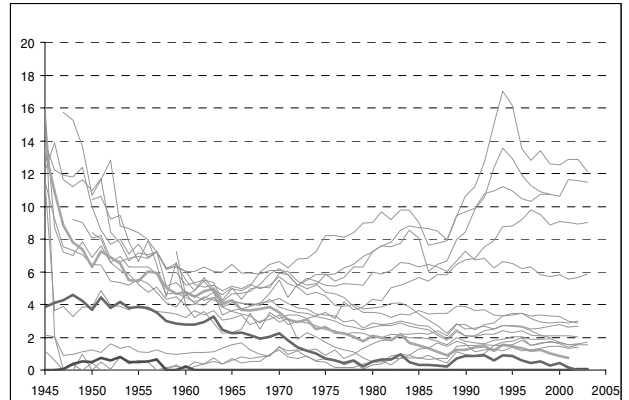
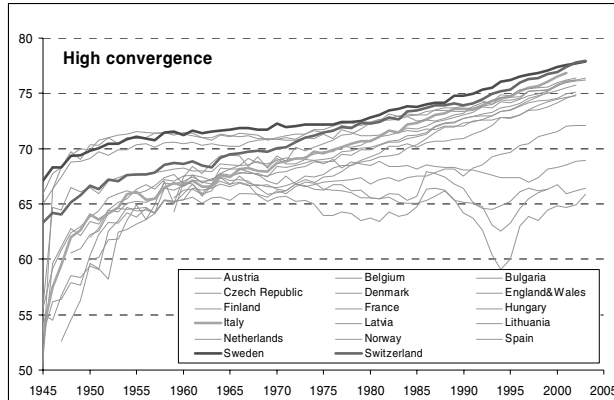
**Life expectancies at birth in the various European countries since 1945 and deviations from the maximum values calculated annually, females: high convergence, low convergence and divergent group**



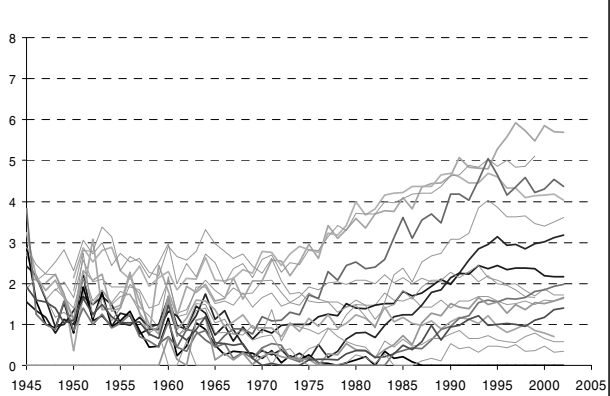
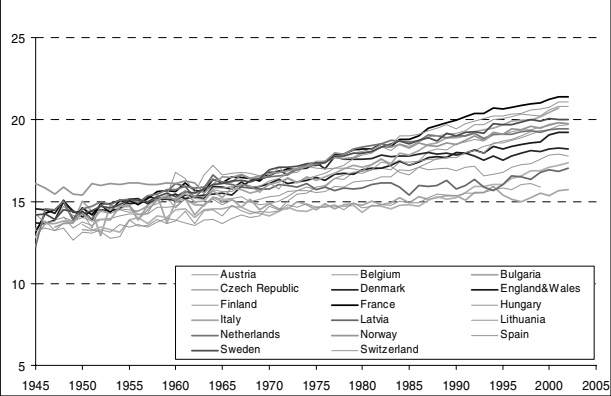
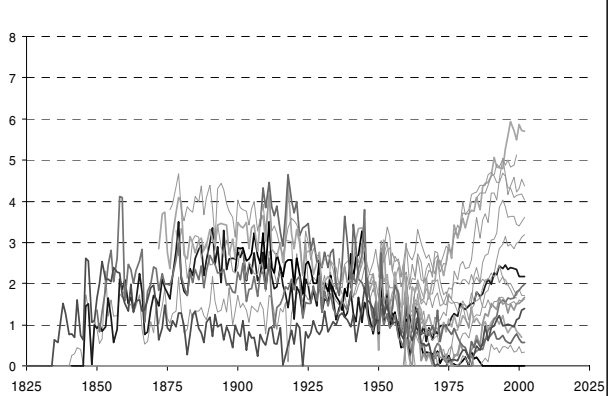
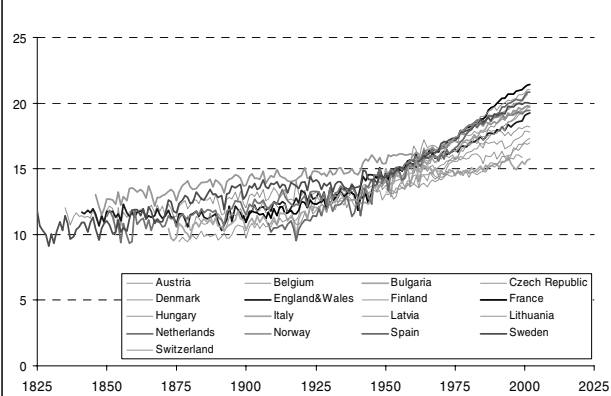
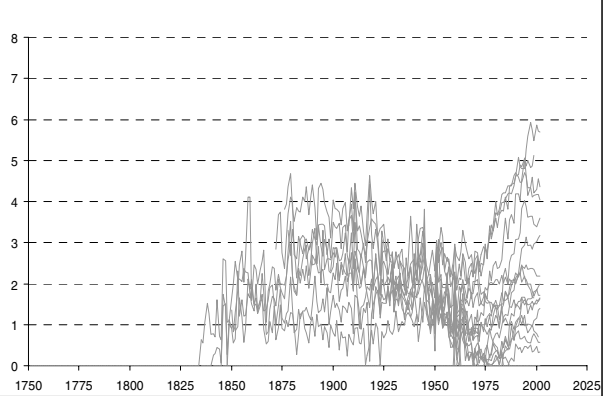
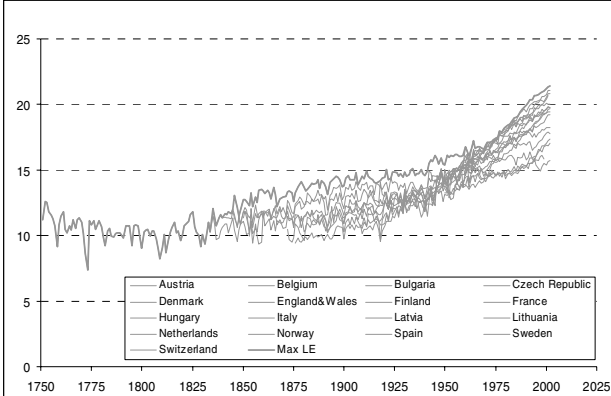
**Life expectancies at birth in the various European countries since 1750, 1825 or 1945 and deviations from the maximum values calculated annually, males**



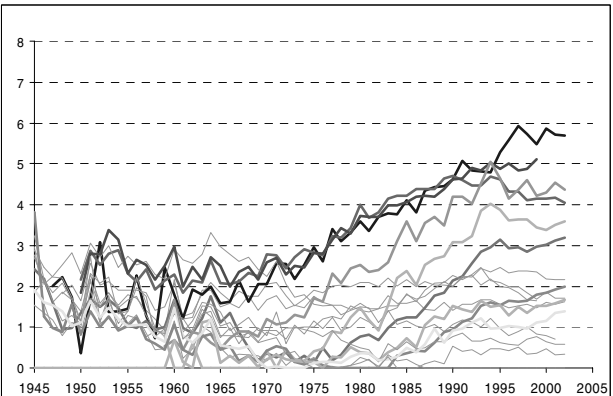
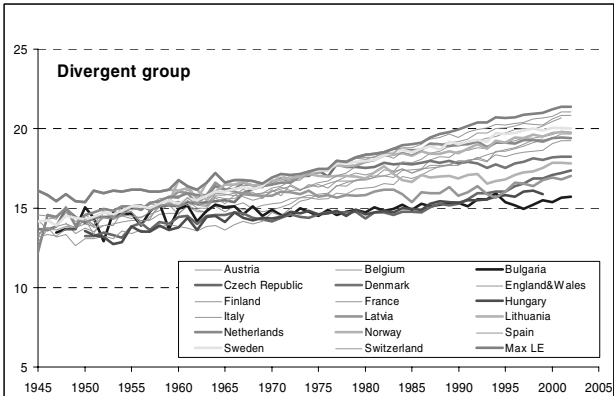
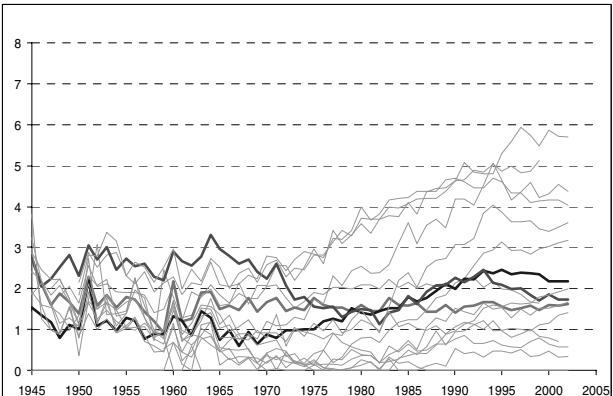
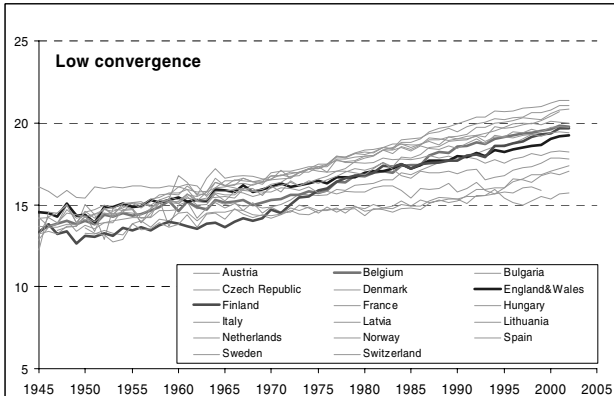
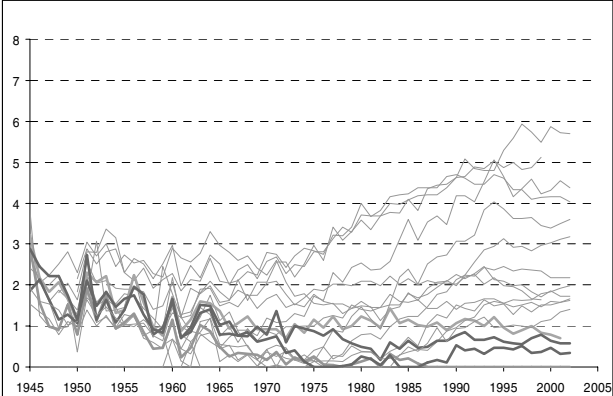
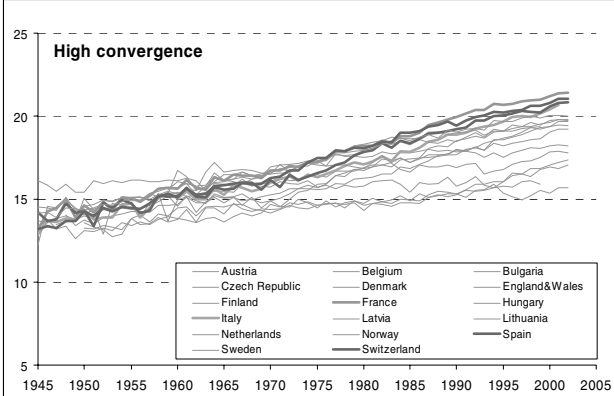
**Life expectancies at birth in the various European countries since 1945 and deviations from the maximum values calculated annually, males: high convergence, low convergence and divergent group**



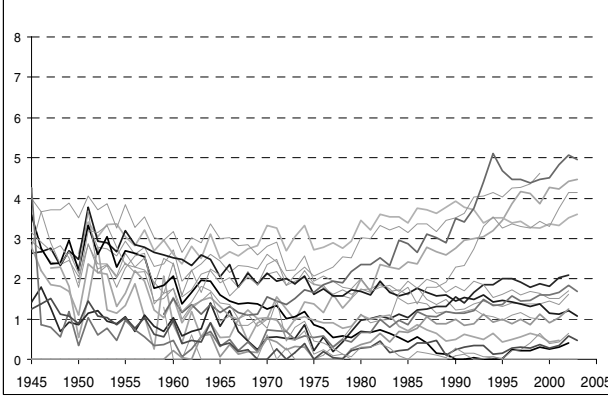
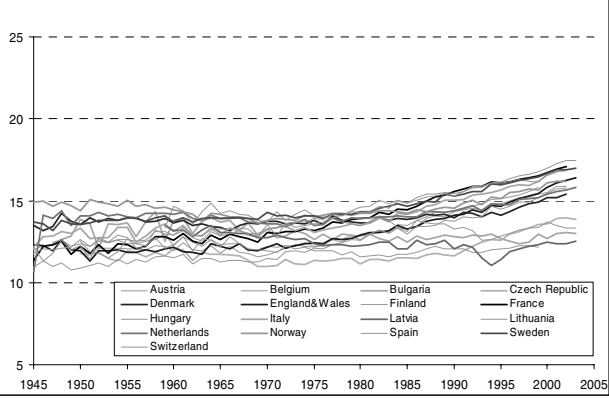
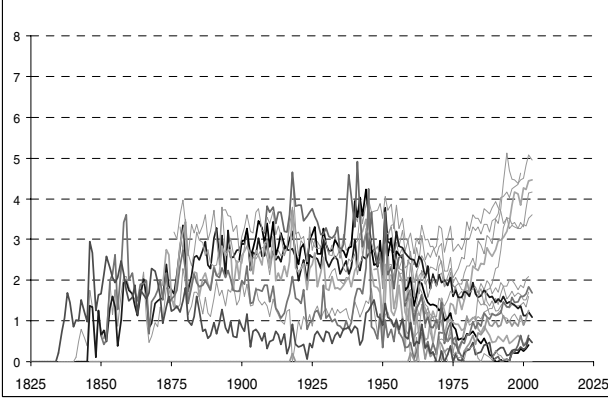
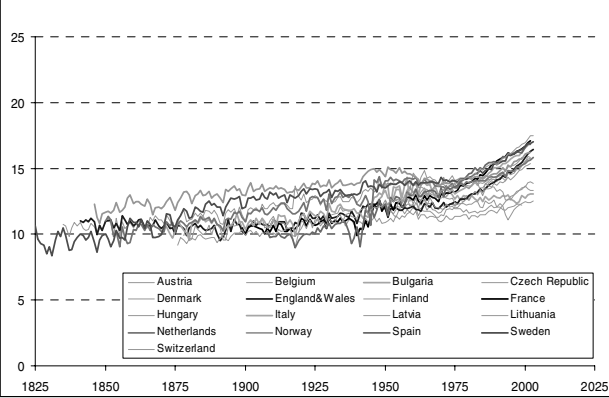
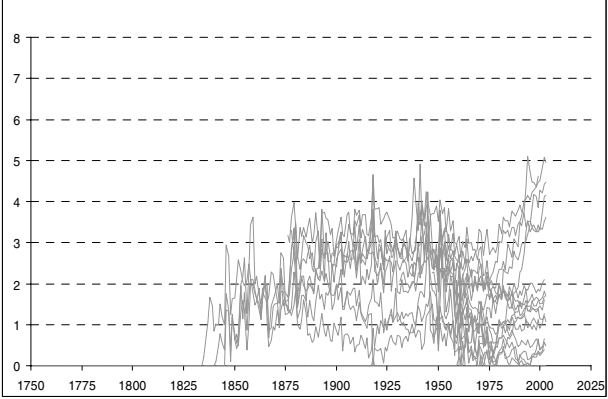
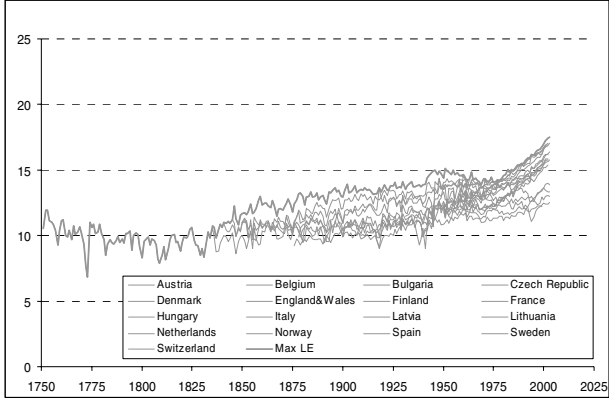
**Life expectancies at age 65 in the various European countries since 1750, 1825 or 1945 and deviations from the maximum values calculated annually, females**



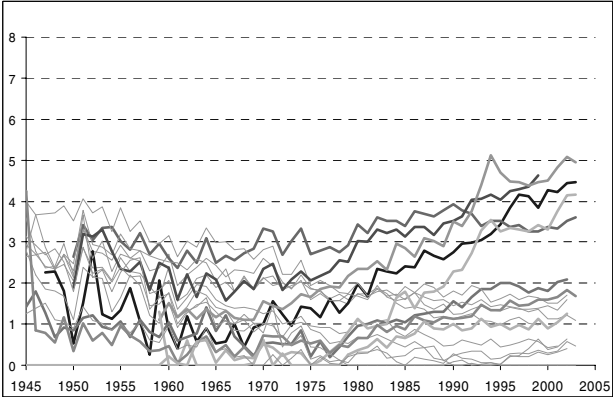
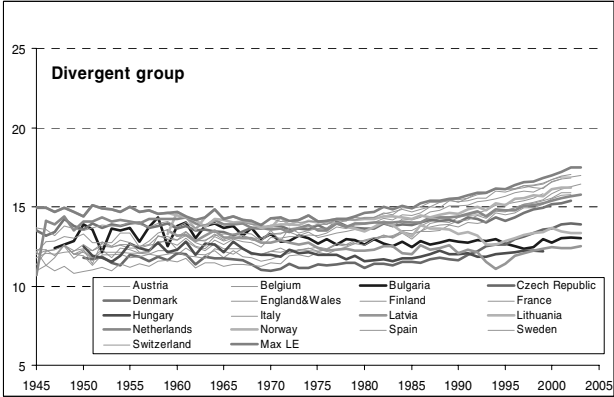
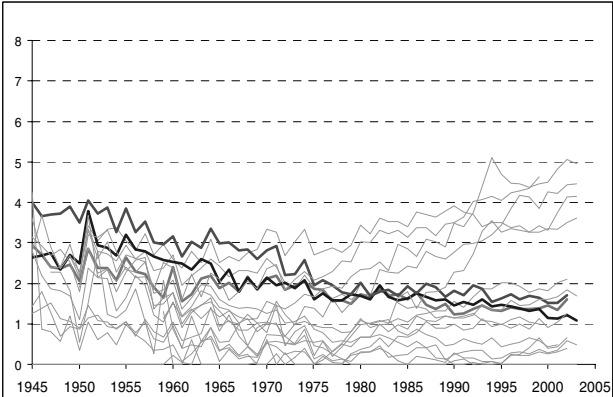
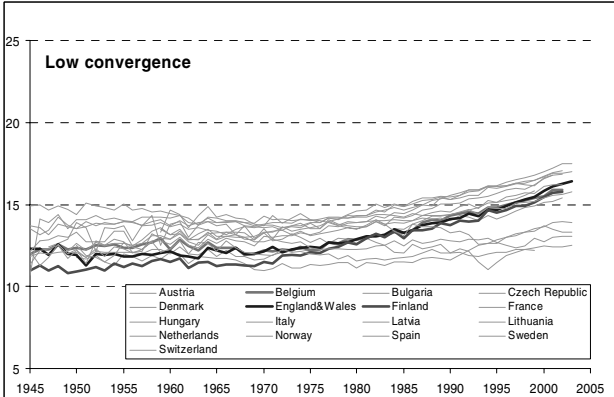
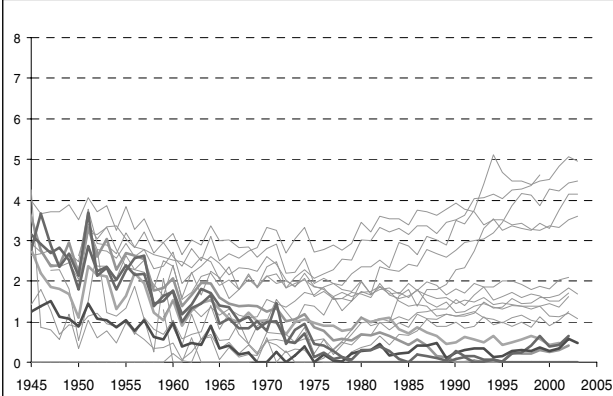
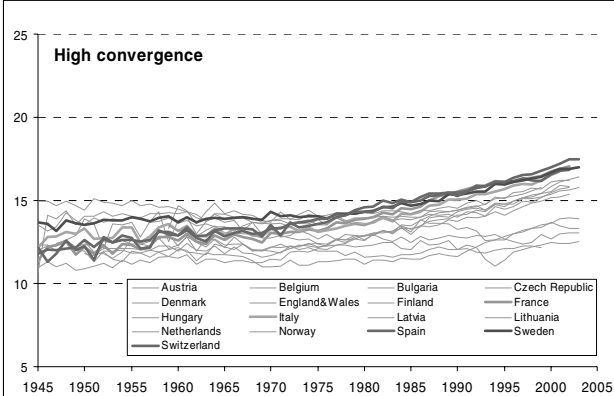
**Life expectancies at age 65 in the various European countries since 1945 and deviations from the maximum values calculated annually, females: high convergence, low convergence and divergent group**



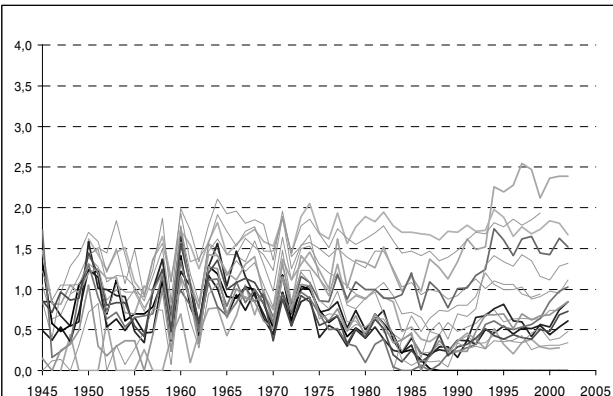
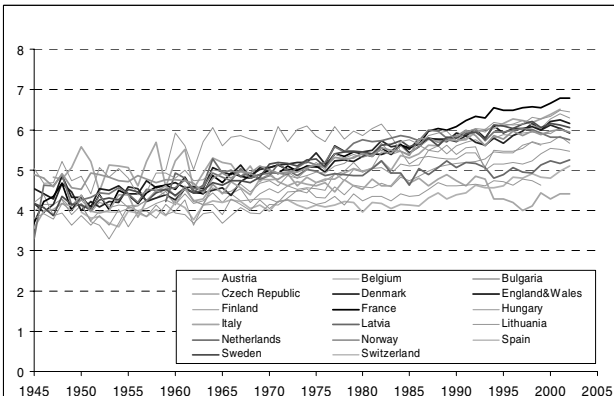
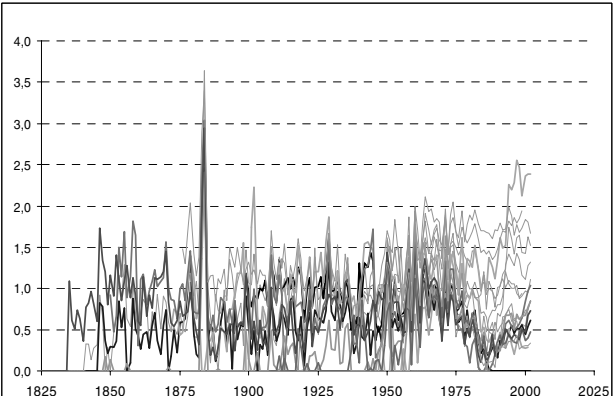
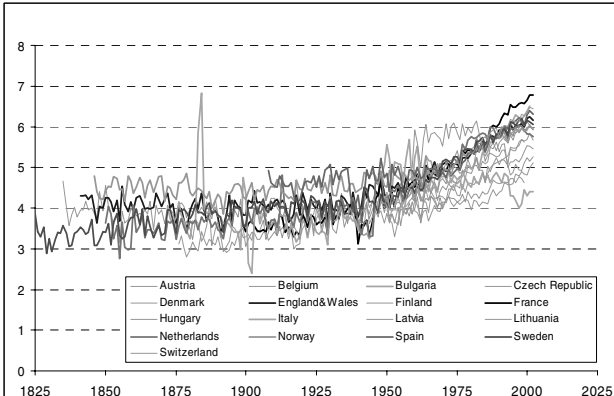
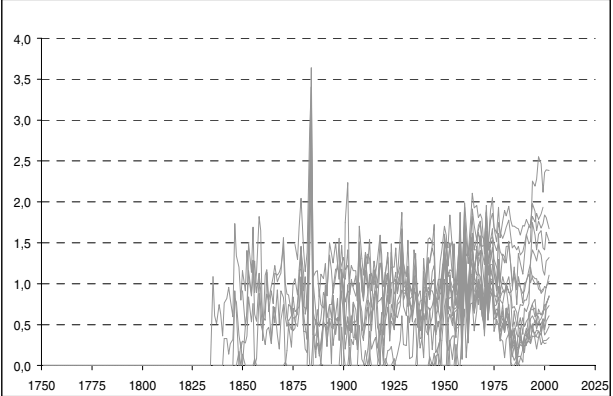
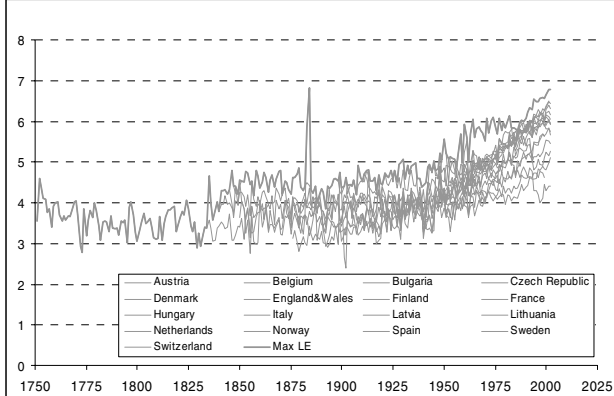
**Life expectancies at age 65 in the various European countries since 1750, 1825 or 1945 and deviations from the maximum values calculated annually, males**



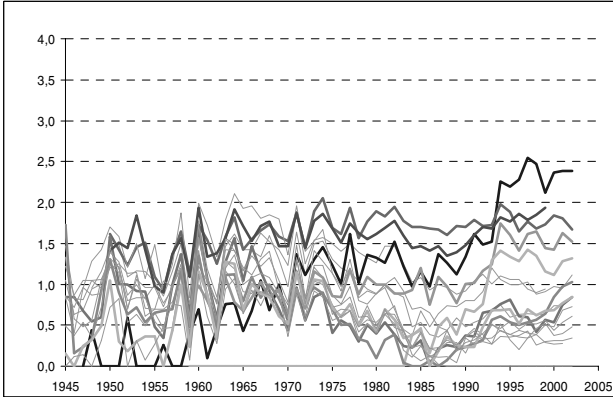
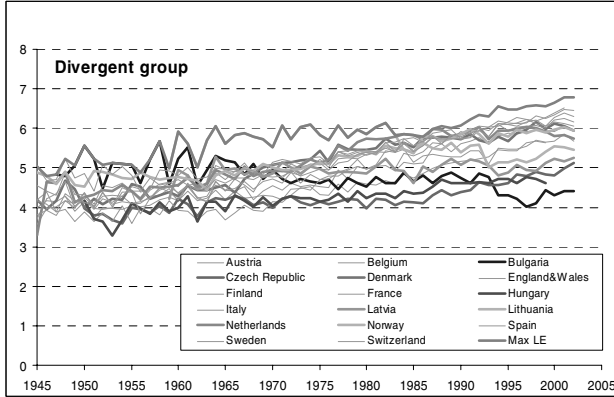
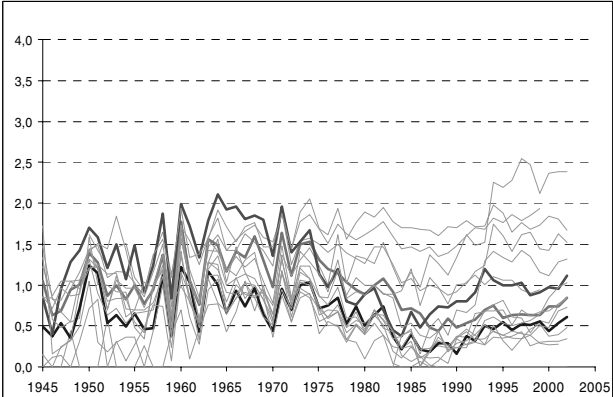
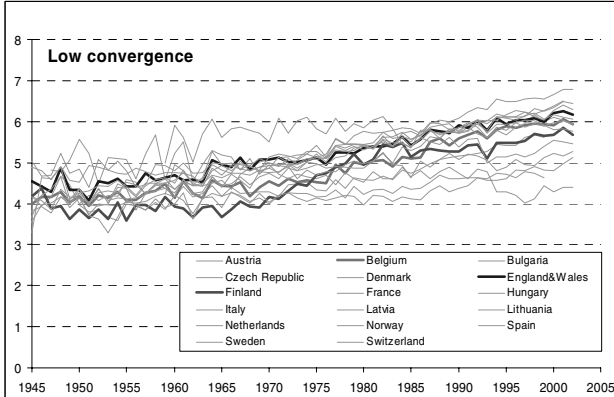
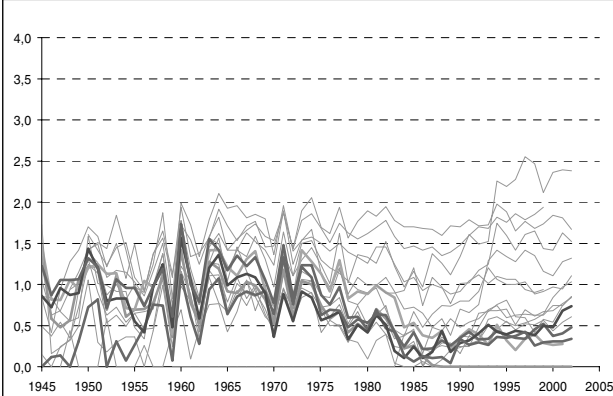
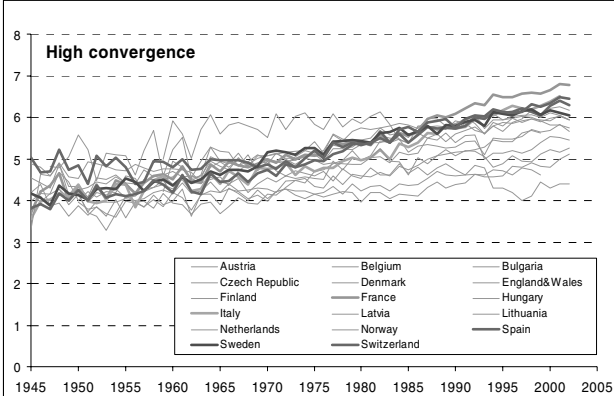
**Life expectancies at age 65 in the various European countries since 1945 and deviations from the maximum values calculated annually, males: high convergence, low convergence and divergent group**



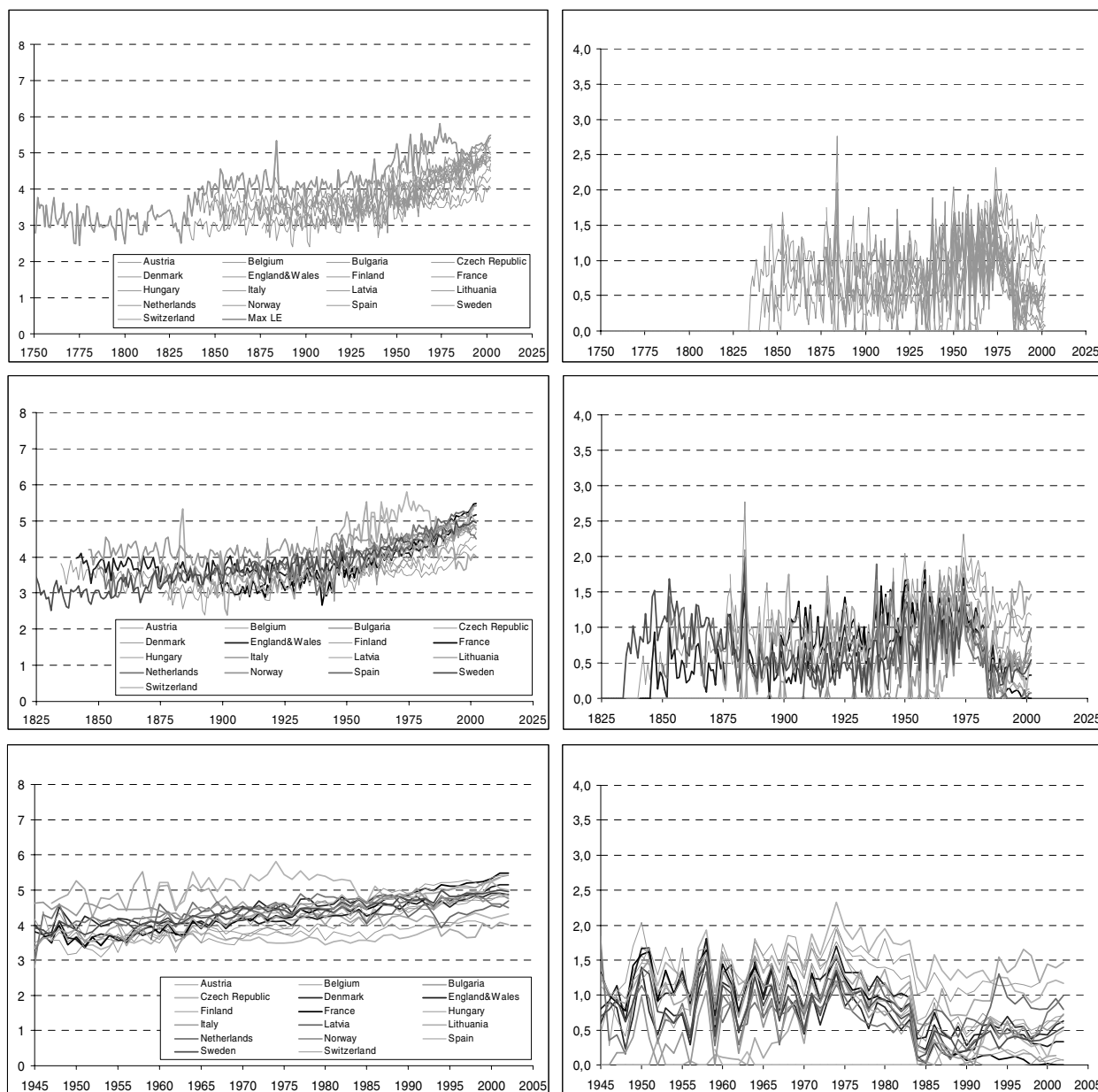
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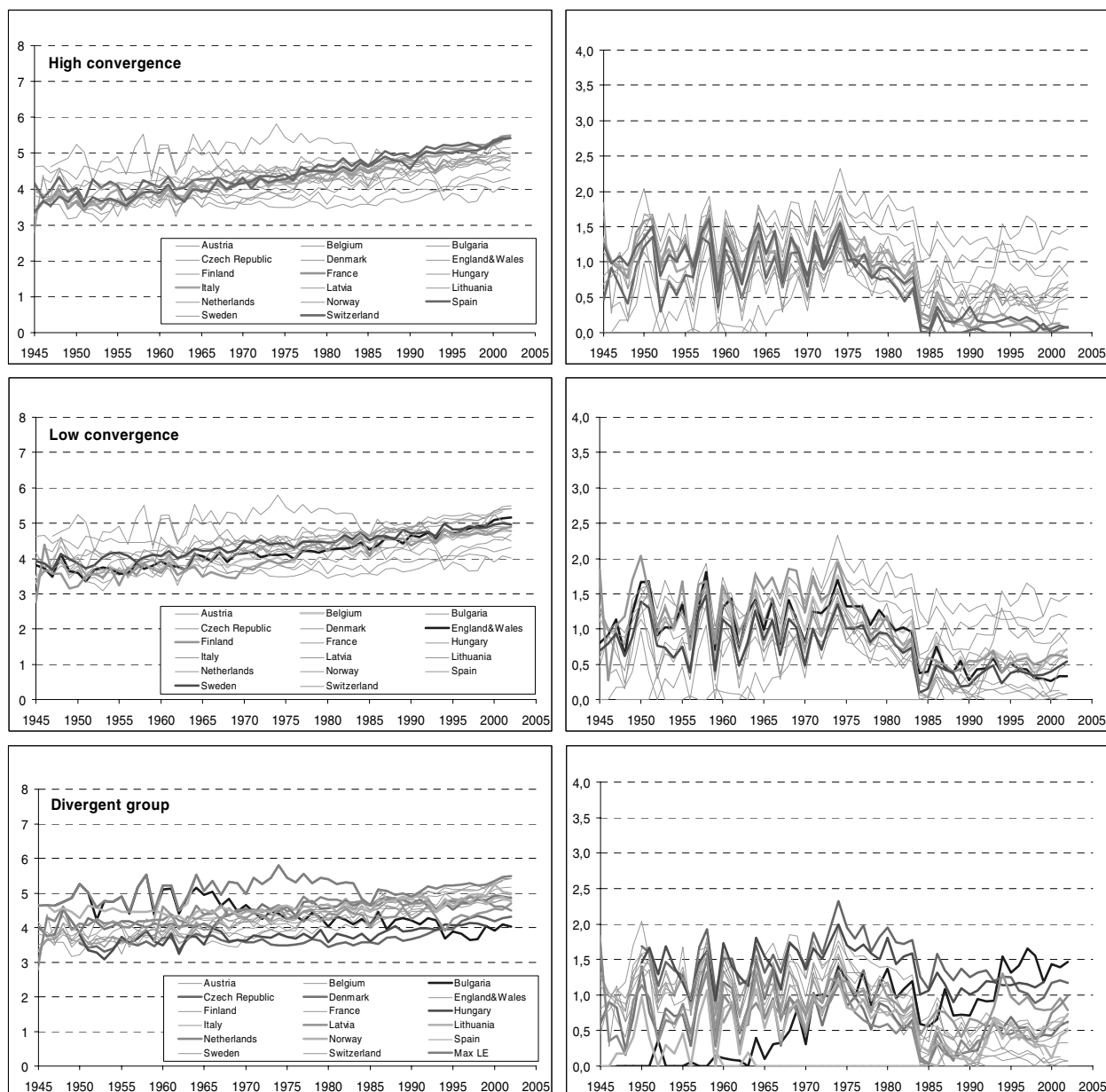
**Life expectancies at age 85 in the various European countries since 1945 and deviations from the maximum values calculated annually, females: high convergence, low convergence and divergent group**



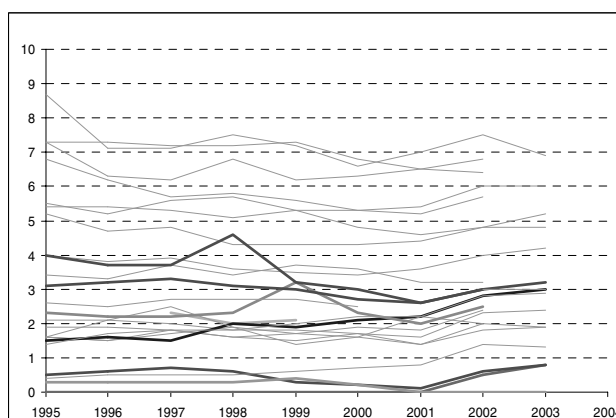
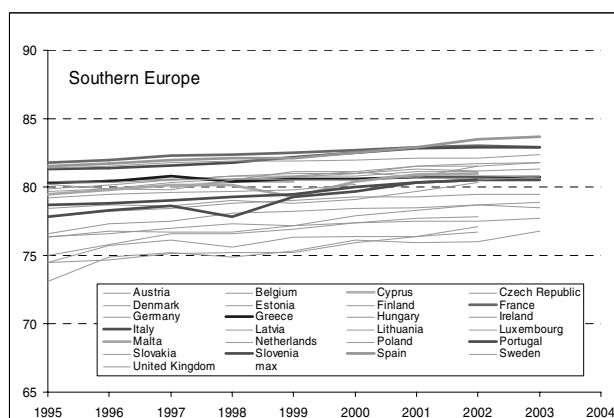
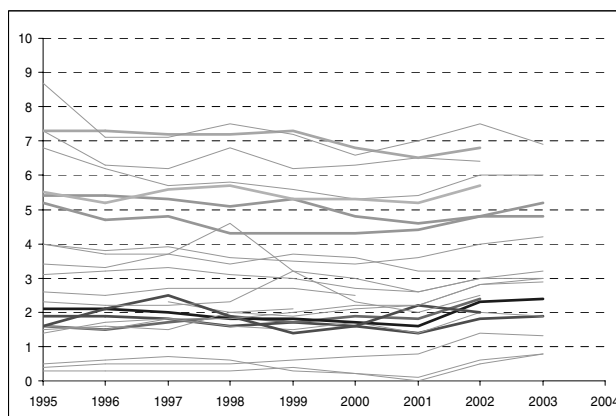
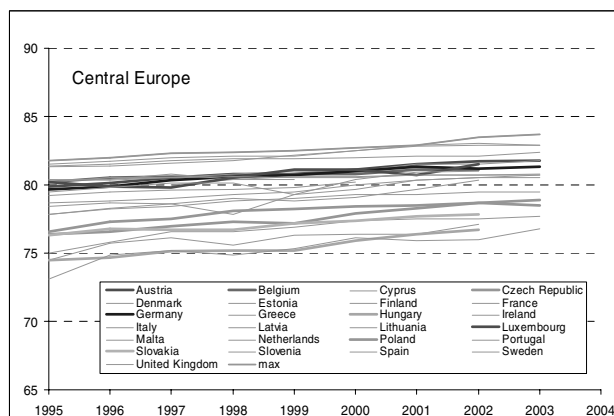
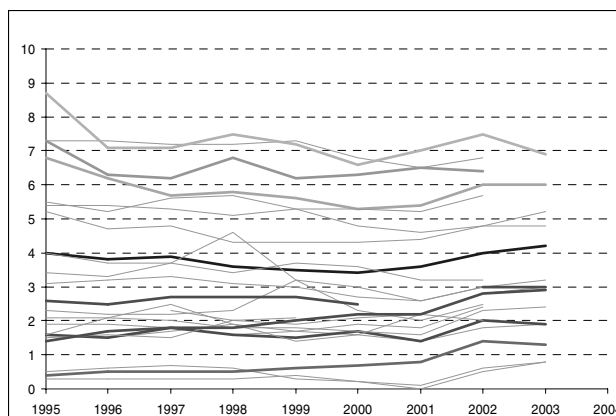
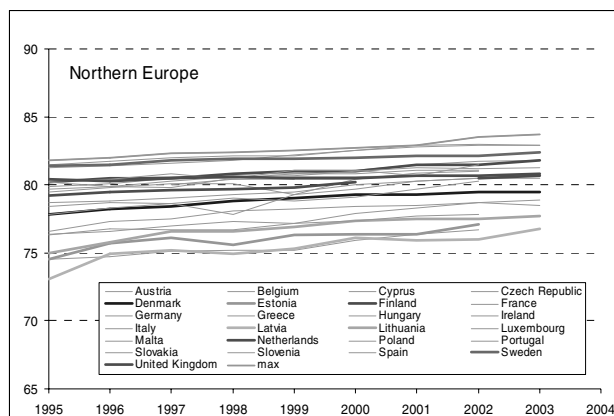
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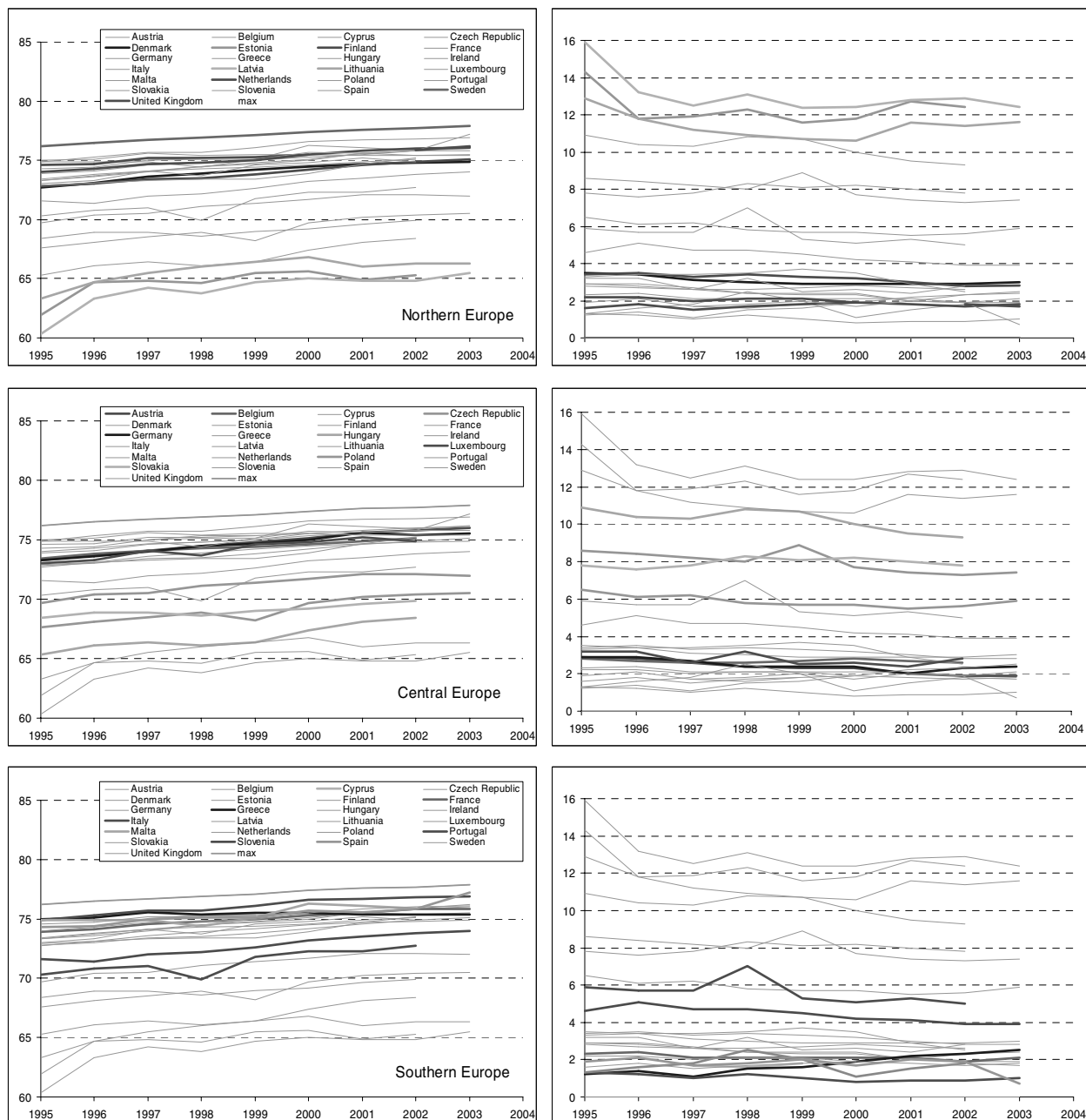
**Life expectancies at age 85 in the various European countries since 1945 and deviations from the maximum values calculated annually, males: high convergence, low convergence and divergent group**



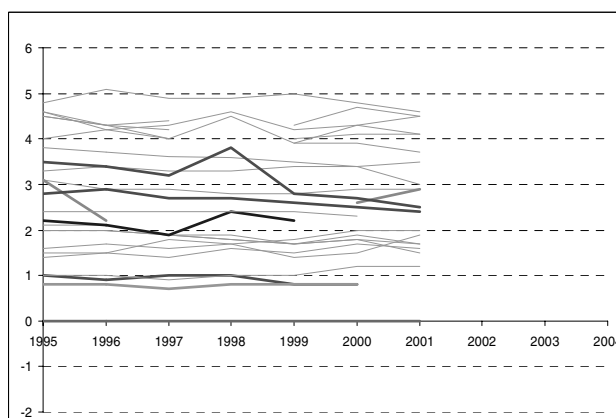
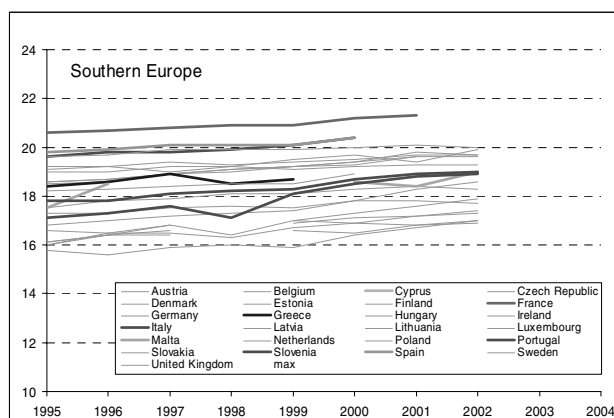
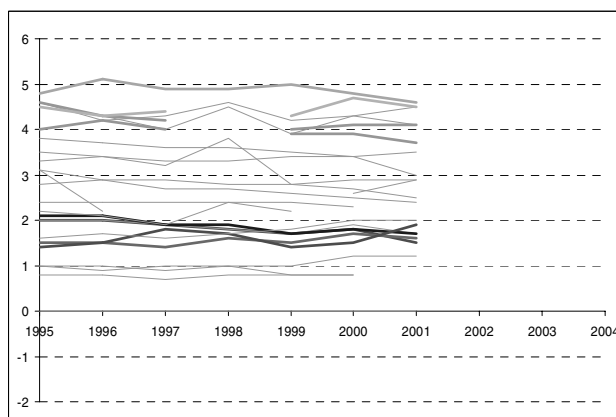
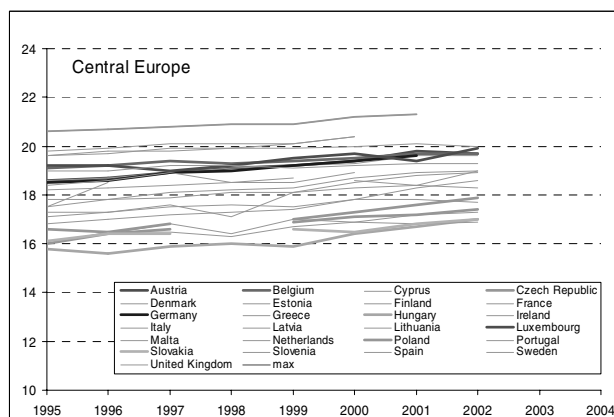
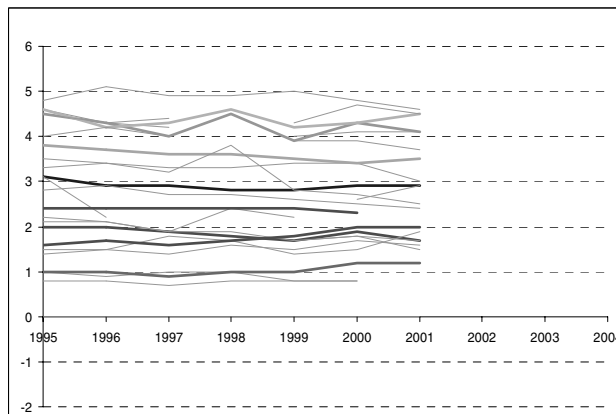
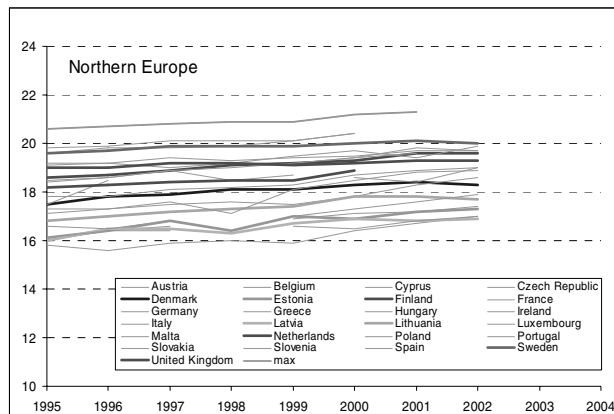
## Life expectancies at birth in the European Community countries since 1995 and deviations from the maximum values calculated annually, females: Northern Europe, Central Europe and Southern Europe



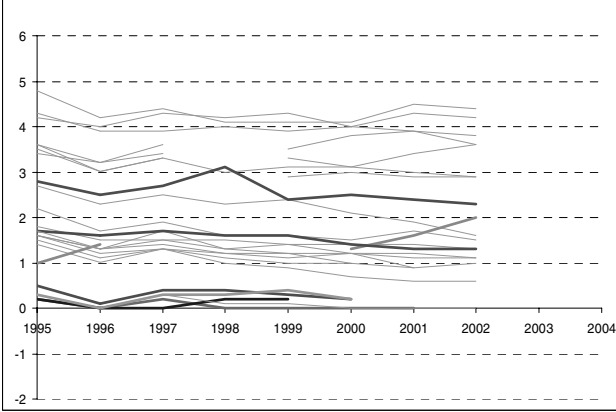
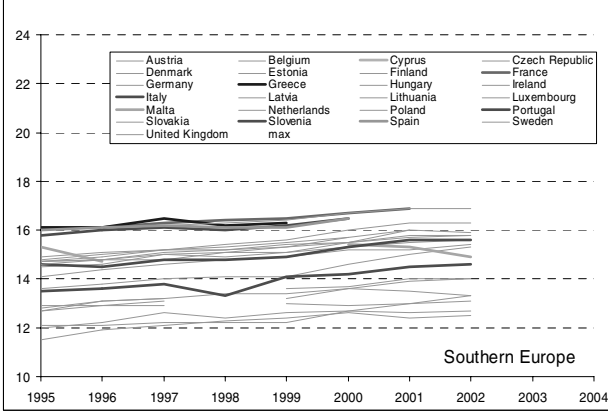
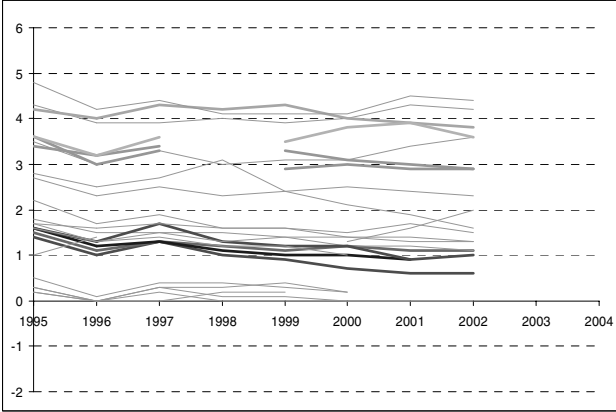
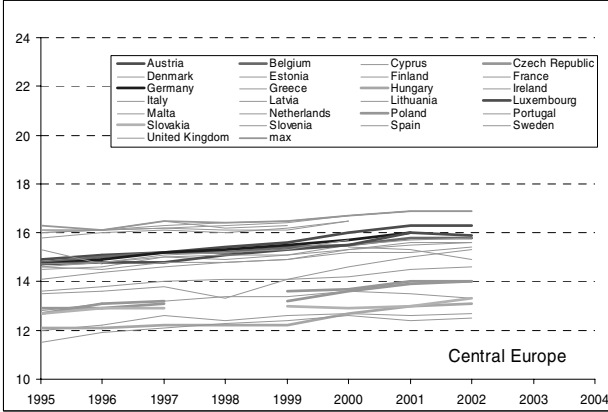
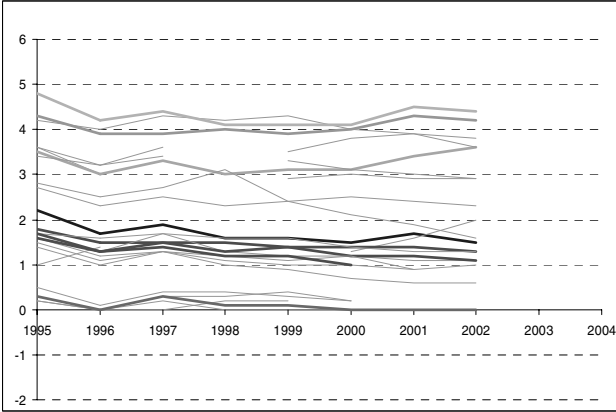
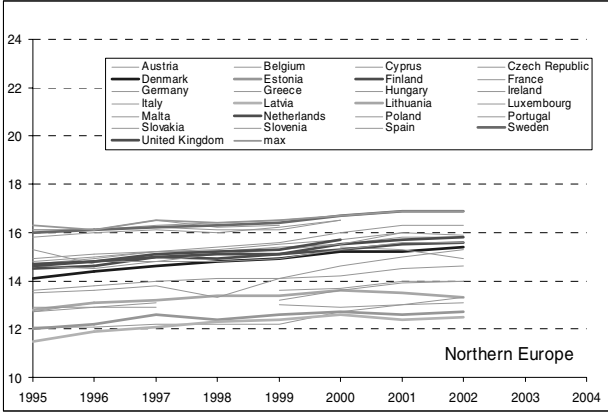
## Life expectancies at birth in the European Community countries since 1995 and deviations from the maximum values calculated annually, males: Northern Europe, Central Europe and Southern Europe



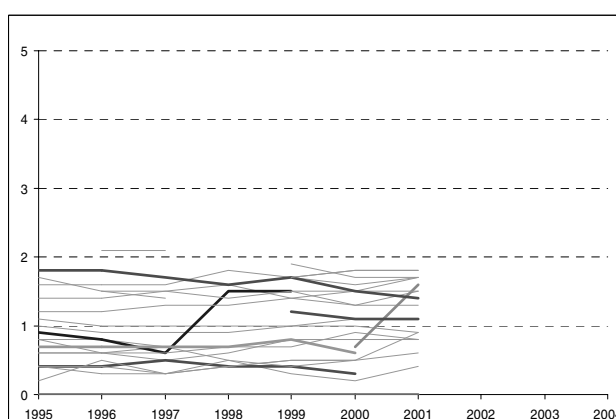
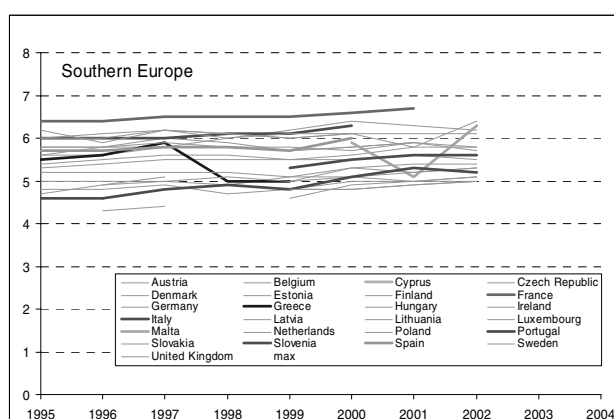
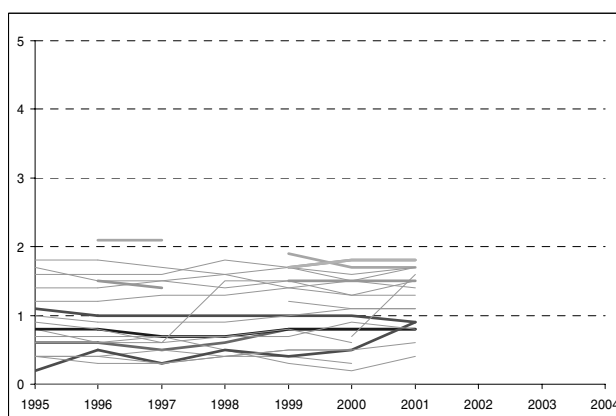
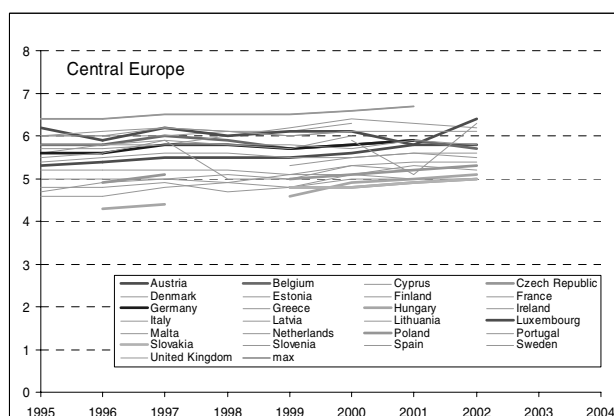
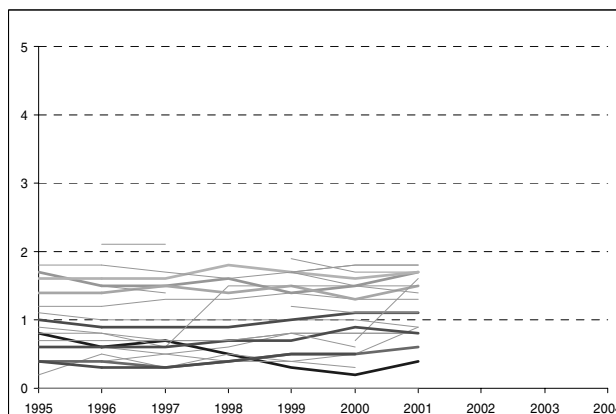
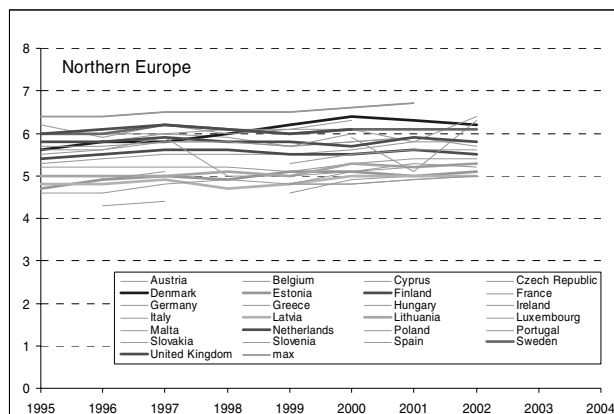
## Life expectancies at age 65 in the European Community countries since 1995 and deviations from the maximum values calculated annually, females: Northern Europe, Central Europe and Southern Europe



**Life expectancies at age 65 in the European Community countries since 1995 and deviations from the maximum values calculated annually, males: Northern Europe, Central Europe and Southern Europe**



## Life expectancies at age 85 in the European Community countries since 1995 and deviations from the maximum values calculated annually, females: Northern Europe, Central Europe and Southern Europe



**Life expectancies at age 85 in the European Community countries since 1995 and deviations from the maximum values calculated annually, males: Northern Europe, Central Europe and Southern Europe**

