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Trends in Working Life Expectancy in Europe

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Abstract

Objectives: The aim of the article is to analyze past and present developments of working life expectancy (WLE) at age 50 in Europe, by age and sex. Differences in WLE by education are explored as well. WLE is also compared to life expectancy (LE) and healthy life expectancy (HLE) at age 50.

Methods: WLE is calculated with the Sullivan Method.

Results: WLE at age 50 has been increasing since the mid- to late-90s in most countries. Increases were more pronounced among women than men, leading to a reduction in gender differences. Differences in WLE by education are substantial. Developments of WLE as a share of LE at age 50 showed no uniform pattern, but gender differences decreased here as well. The comparison of WLE, LE and HLE for the year 2009 reveals that the correlation between WLE and LE is smaller than between WLE and HLE.

Discussion: The analysis of trends in WLE at age 50, particularly when set in relation to remaining LE, provides useful insights of how the distribution of economically active and inactive years above age 50 are developing in Europe's aging societies.

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Trends in Working Life Expectancy in Europe

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1 Introduction

People in Europe are living longer than ever before. A highly discussed consequence is that without changes in the timing of when people leave the labor force, these additional years will be added to the period that is spent economically inactive towards the end of people's life. The great majority of people in Europe draw some kind of public pension that is financed through pay-as-you-go pension systems once they retire. Therefore, there have been severe concerns that an aging population will lead to substantial financial burdens if people do not work until higher ages. Consequently, many countries have passed legislation to gradually increase official retirement ages and measures to promote higher economic activity among the population 50+. In many countries, these measures have started to show effect and labor force participation rates of this age group has been increasing.

Against this background, the question suggests itself to what degree these observed increases in economic activity have been compensating for the parallel increase in life expectancy. In other words: Have people spent them predominantly economically active or inactive, or was there a more or less even split of them between both states? We expect to find that the answer varies greatly between countries and for men and women. Additionally, we expect that even within countries, the allocation of years of economic activity and economic inactivity varies over time. The decision about when to leave the labor force depends on a large number of factors, with some of them clearly being influenced by period events like changes in retirement regulations or economic conditions. This should be visible in trajectories over time of the number of years that people spend economically active.

The indicator that lends itself to the analysis as the one at hand is working life expectancy (WLE). It describes the number of years persons are expected to be economically active (Siegel, 2012). As with life expectancy, working life expectancy can be calculated for any age. Past research has shown that it is the qualitatively superior measure compared to calculations of the average exit age from the labor market (Hytti & Nio 2004). There are several names in use for the same concept, for example labor force expectancy, worklife expectancy, labor market life expectancy, duration of working life, average length of working life, or active life expectancy. We deliberately refrain from using the term active life expectancy, due to its well-established use in health research. A basic conceptual distinction in the calculation of this indicator is whether it is based on labor force participation – including the employed and the unemployed – or on employment (Nurminen et al. 2005). The interpretation changes slightly: WLE based on labor force participation rates estimates the expected economically active life expectancy, whereas employment rates describe the expected employed life expectancy.

Working life expectancy in the present study represents the number of years that a person can expect to be economically active, i.e. it does include both, times spent in employment as well as unemployment. This is in line with the labor force concept where the labor force is comprised of the employed as well as the unemployed. Hence, being in the labor force is equivalent to being economically active. The ratio between the labor force and the population represents the labor force participation rate which can be calculated overall or broken down by e.g. age and sex. Eurostat uses this approach based on labor force participation to calculate their recently added indicator “duration of working life” which describes WLE at age 15. The essential “ingredients” to calculate WLE are life-tables and labor force participation rates. Given that both parameters show significant differences by sex, calculations are performed separately for men and women. What is much less explored but is strongly positively associated with both, differences in life expectancy and labor force participation, is the level of educational attainment. Hence, we additionally show results for WLE for three education levels.

The insights gained from our analysis will be useful in the discussion about how to make pension systems more robust to shifts in populations’ age structure, and whether those that are currently on average retiring later – the highly educated – are actually

contributing more working time over the life-course, given that they enter the labor force on average at higher ages due to more time spent in education.

2 Method and Data

2.1 Statistical Analysis

The main two approaches that have been used for estimations of the number of years a person is expected to be economically active are the Sullivan method (through prevalence rates) and multi-state models (through transition probabilities). Given the cross-sectional nature of our data, we applied the prevalence-based method (Hytti & Valaste, 2009; Sullivan, 1971). Analogous to calculations of healthy life expectancy based on the Sullivan method, calculation of working life expectancy employ the concept of synthetic cohorts. This means that cross-sectional life-table and labor force data are used to construct hypothetical life-courses for the observation period. One big advantage of the Sullivan method, compared to for example calculation of average exit ages from the labor force, is that it allows comparisons between age-groups and men and women, as well as comparisons over time and across countries (Hytti & Nio 2004; Hytti & Valaste 2009).[1] The prevalences are age-, sex- and education specific labor force participation rates for individuals aged 15 to 74. The labor force participation rate represents the share of the economically active population in each age-group, as defined by the International Labour Office (ILO), and covers the employed as well as the unemployed. Since labor force participation of persons in the age-group 70-74 in the EU28 was on average 7.5 percent in 2013, we include them in our analysis.

The data on economic activity provided by Eurostat is aggregated by 5-year age-groups. The calculations require data by single years of age, so we transformed the 5-year averages of participation rates into single years of age by linearly interpolating between the mid-points of each age interval. For example, for the age-group 30-34 and 35-39, we assumed the given participation rate to pertain to age 32 and 37, respectively,

[1] Eurostat actually discontinued the provision of the indicator "average exit age from the labour market", due to methodological and data quality issues, and replaced it with the indicator "duration of working life" (Eurostat 2014, http://ec.europa.eu/eurostat/documents/1978984/6039591/Note-Indicator.pdf)

and obtained the values in between through linear interpolation. Given that age 70-74 is the last age-group we have data for, we set participation at age 75 to 0.

Life tables by single-years of age and sex are readily available for most European countries in the Human Mortality Database. In order to be able to calculate education-specific WLEs, we employed the Brass relational model (Preston, Heuveline, & Guillot, 2001). The age- and sex- specific life-tables served as standard life-tables and were combined with information about education-specific life-expectancy to construct education-specific life-tables.

WLE in this paper is also referred to as remaining active life expectancy or remaining economically active years. The estimation of WLE allows the calculation of the share of the remaining life expectancy that is spent working when the results for WLE are set in relation to remaining life expectancy. This can in principal be done for any age between 15 and 74. We are particularly interested in the results for age 50, since calculations for that age summarize the development of WLE of persons close to retirement.

2.2 Data Sources

The data utilized in this study are from two main sources: (1) Eurostat's database (European Commission 2015) and (2) the Human Mortality Database (University of California, Berkeley & Max Planck Institute for Demographic Research 2014). Labor force participation (LFP) rates by age, sex, and highest level of educational attainment were obtained from Eurostat and are based on the European Labor Force Survey (EU LFS, European Commission 2015). The harmonized information on labor force participation covers 10 countries in 1983, the first year that data are available, and more and more countries are included during subsequent surveys, covering presently all 28 EU member countries, the candidate countries Turkey and the Former Yugoslav Republic of Macedonia, and the three EFTA countries Iceland, Norway and Switzerland. Non-education specific LFP rates are available from 1983 to 2013 and education-specific LFP rates are provided from 1998 to 2013 since harmonized information on the highest level of educational attainment became only available in 1998. In our study, we distinguish between three education levels, according to

UNESCO's ISCED 97 classification: ISCED 0 to ISCED 2 (up to completed lower secondary education), ISCED 3 and ISCED 4 (upper secondary and post-secondary non-tertiary education) and ISCED 5 and ISCED 6 (tertiary education). The Eurostat database is also our source for data on education specific life expectancy at birth. Data are available for 15 EU countries and Norway, the Former Yugoslav Republic of Macedonia and Turkey since 2007 for the aforementioned education categories (European Commission 2015).

Period life tables for single years of age (ages 0-100+) and by sex for all EU member countries except for Croatia, Cyprus, Greece, Malta and Romania were provided by the Human Morality Database to varying last years but at least until 2009 (University of California, Berkeley & Max Planck Institute for Demographic Research 2014).

Data on healthy life expectancy (HLE) that we used to compare WLE and HLE were also obtained through the Eurostat database. From 2004 onwards, HLE (called healthy life years by Eurostat) has been calculated using the self-perceived activity limitations question in the EU-SILC survey.

3 Results

The availability of country data in each of our data sources determines the country selection in each step of our analyses. The broadest coverage is achieved for the calculations of WLE at age 50 and covers 26 countries, followed by the comparison of life-expectancy, working life expectancy and healthy life expectancy, which comprises 26 countries. The analysis of WLE by education covers only 11 countries, due to the restriction that education-specific data for life-tables and labor force participation is required in order to calculate this indicator.

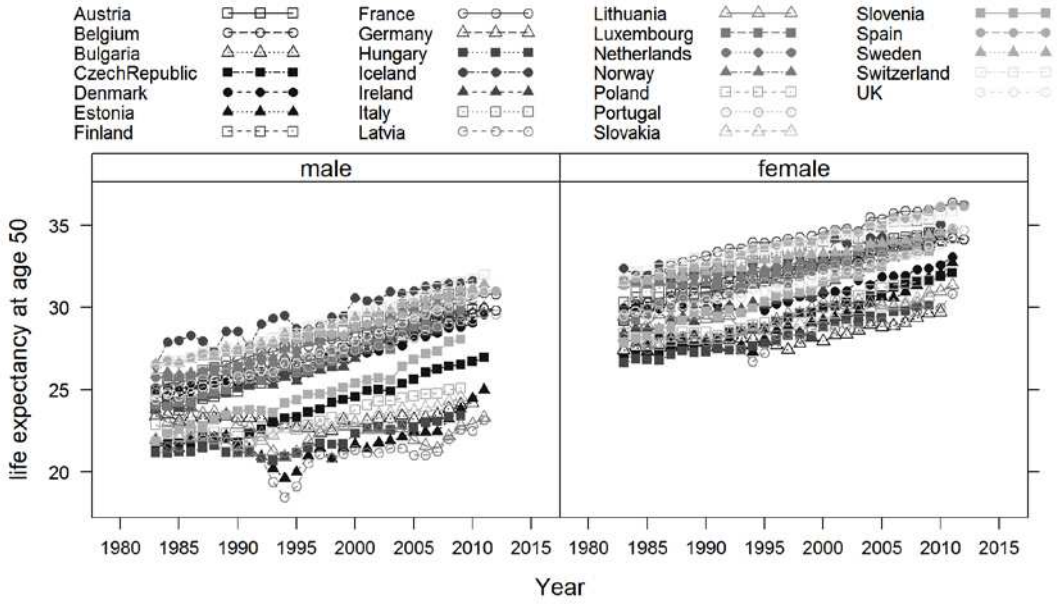
3.1 Gender specific analysis

3.1.1 Life expectancy by gender

Before we present results for working life expectancy at age 50, we take a look at the development of life expectancy and labor force participation since the early 80s. Life expectancy at age 50 has been increasing for both men and women across Europe

(Figure 1). Differences between countries persist over time and there seems to be no convergence happening, neither for men nor women. The 26 European countries in our analysis show a range in life expectancy at age 50 of 5.4 years in 1983 and 9.7 years in 2010 for men, while the range in women's life expectancy also increased but to a much lesser extent (5.8 years in 1983, compared to 6.4 years in 2010). This observation is in line with findings elsewhere where the recent divergence in developments of life expectancy at birth across Europe were analyzed in more detail (Leon, 2011; Mackenbach, 2013).

Figure 1. Trends in country specific life expectancy at age 50 for 26 countries in Europe, by sex (source: Human Mortality Database).

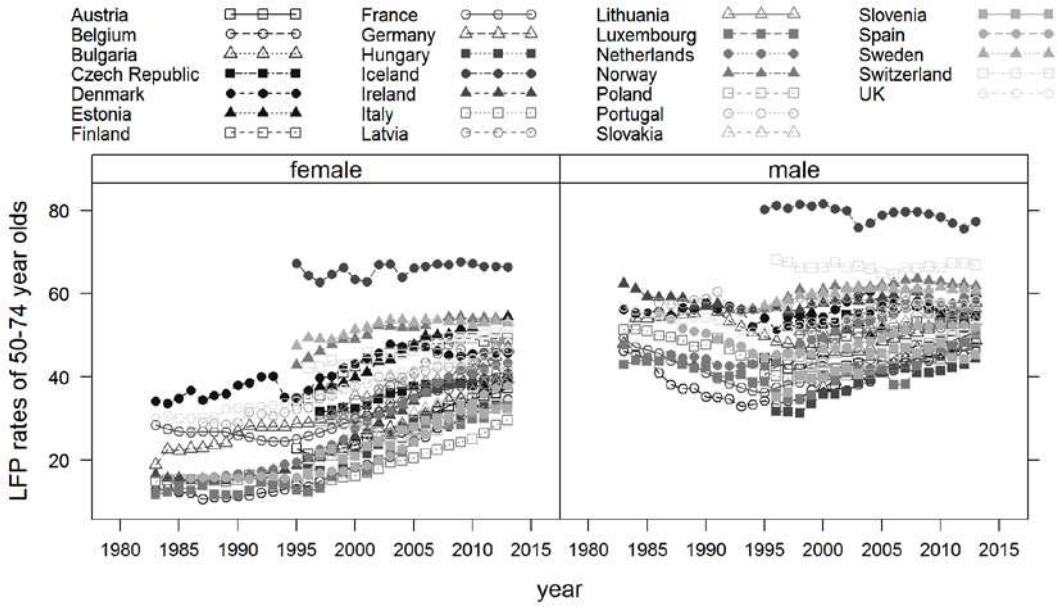


3.1.2 Labor force participation by gender

When it comes to labor force participation of 50- to 74-year-olds, the picture is a slightly different one: the inspection of the development of men's and women's economic activity reveals that differences between countries have decreased over time. Comparisons before the year 2000 are restricted by the fact that only a limited number of countries were part of the EU LFS back then, but focusing on the years after 2000 discloses a convergence in participation among men as well as women. When it comes to the level of participation, there were and still are gender differences, though they have been decreasing as well. Also noticeable is the development that whereas female participation started in most countries to increase since the mid-1990s from a previously

low but stable level, male participation had for the most part declined until the mid-1990s and started to increase thereafter, except in those countries where it had been at a comparatively high level all along (Figure 2).

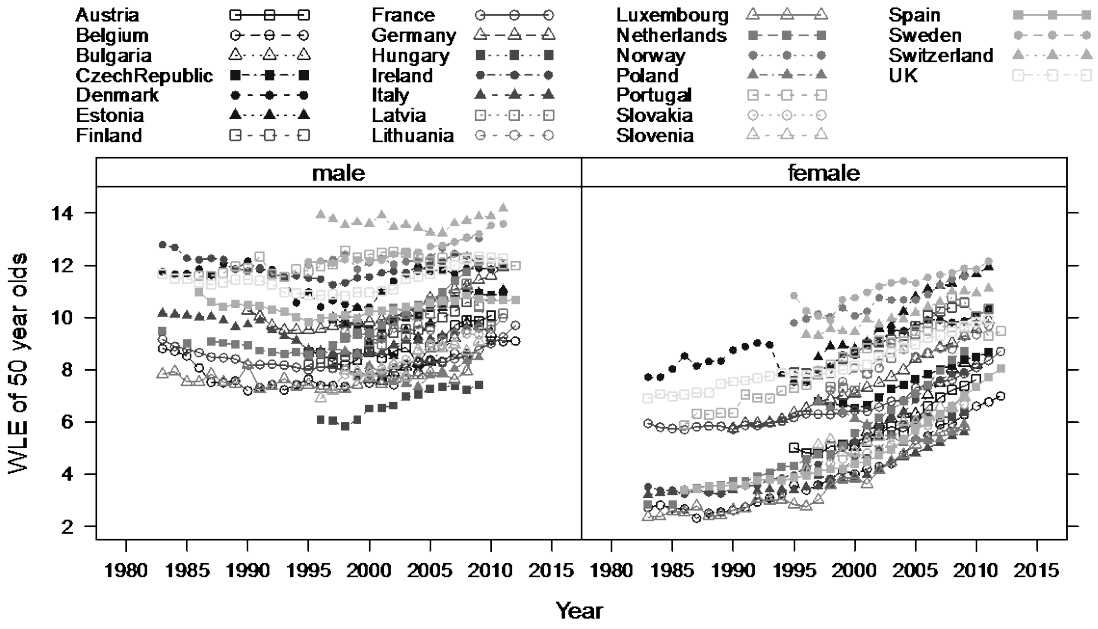
Figure 2. Labor force participation (age 50 to 74) for 26 countries in Europe, by sex (source: Eurostat database).



3.1.3 Trends in working life working life expectancy by gender

These developments entailed in most European countries that men's working life expectancy at age 50 decreased slightly until the early 1990s and increased in the following years. When it comes to women's working life expectancy at age 50, the picture is one of universal increase during the last 3 decades. Whereas men showed at least 7.4 remaining years (in Hungary) of economic activity in 2009, which marks the last year where calculations for all 26 countries are possible, men in Iceland had the maximum number of 16.5 years. Women had the lowest number of remaining years in Italy with 5.6 years and the maximum also in Iceland with 13.6 years (Figure 3). Though women have not caught up to men in most countries, gender differences have shrunk significantly over time, and even turned slightly negative in Estonia, Finland and Latvia where women at age 50 continue to work on average a few months longer than men. The largest gender difference in WLE in 2009 was found for Ireland, Italy and Spain with about 4 years.

Figure 3. Working life expectancy at age 50 for 26 countries in Europe, by sex (source: own calculations).

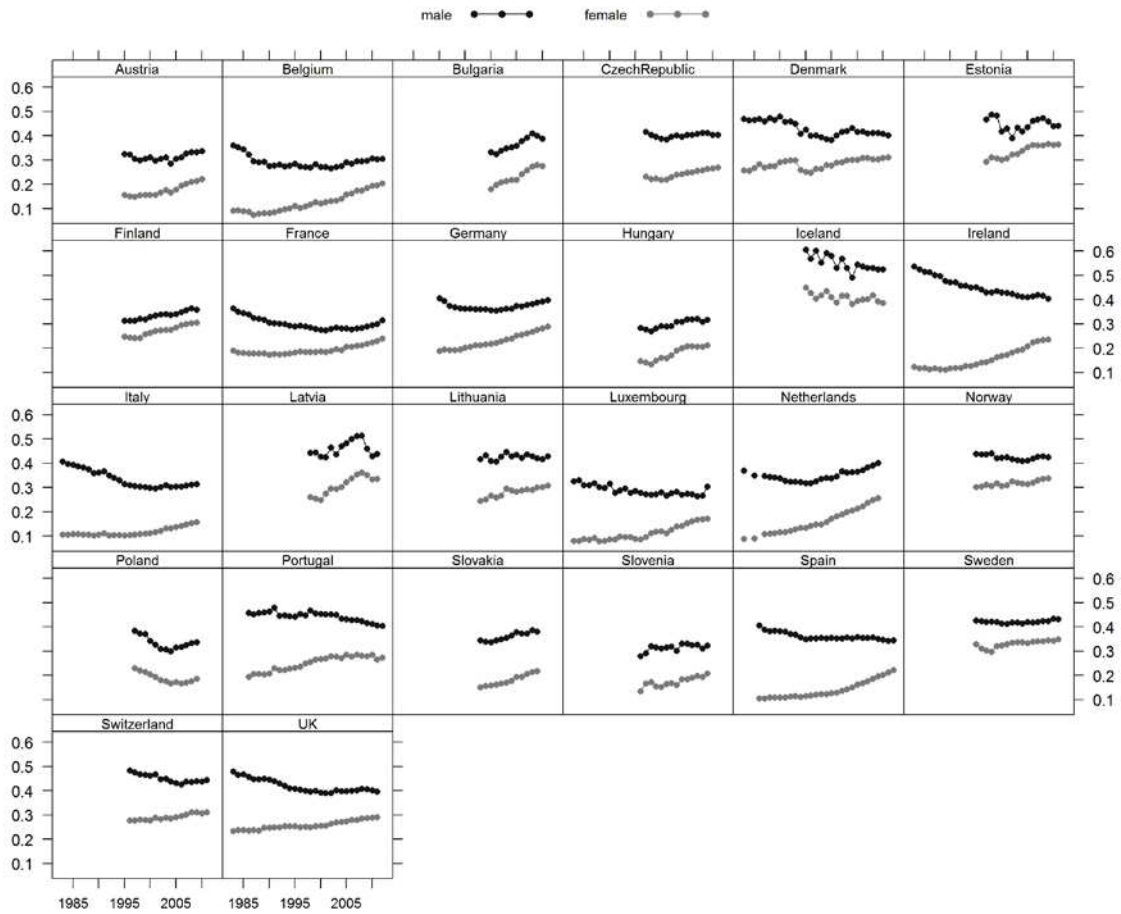


3.1.4 A comparison of LE and WLE by gender

In order to address the question how the observed increases in life-expectancy (LE) have been distributed between economically active and inactive years, WLE at age 50 is set in relation to LE at age 50 (Figure 4). Data availability is the reason that the trajectories cover differing time periods for individual countries. The developments of WLE as a share of LE show anything but a uniform picture across gender and countries, be it in terms of levels or trajectories. Looking at levels, the first observation is that men spent a larger share of their life expectancy at age 50 working than women, in every country. This result does not come as a surprise, given that generally life expectancy is higher and labor force participation is lower for women than for men. Based on the latest available data point for each country, men in 20 out of 25 countries spend at least one third of their remaining LE economically active, whereas this applies to women only in 5 countries. Turning to the inspection of the trajectories over time and first looking at the development of the difference in the share of LE that is spend working between men and women, the universal picture is one of a reduction of the gender difference with very few exceptions, e.g. for Poland. This convergence is the result of

the increasing share of economically active remaining LE of women, an increase that is happening at varying speed across countries. Women in Belgium, Ireland, the Netherlands and Spain showed particular strong increases, starting off from relatively low levels. The trajectories of men are much more diverse than those of women, with some countries showing initial decreases with subsequent increases (e.g. France, Germany, the Netherlands and Poland), others having an almost stable profile since around 2000 (e.g. Spain, Sweden and the UK), and again others showing a continuous decrease. The last observation applies to Ireland and Portugal, however, these are also two countries with a large share to begin with, and even after the decline men in these countries still spent a larger share of their LE at age 50 working than in most other countries.

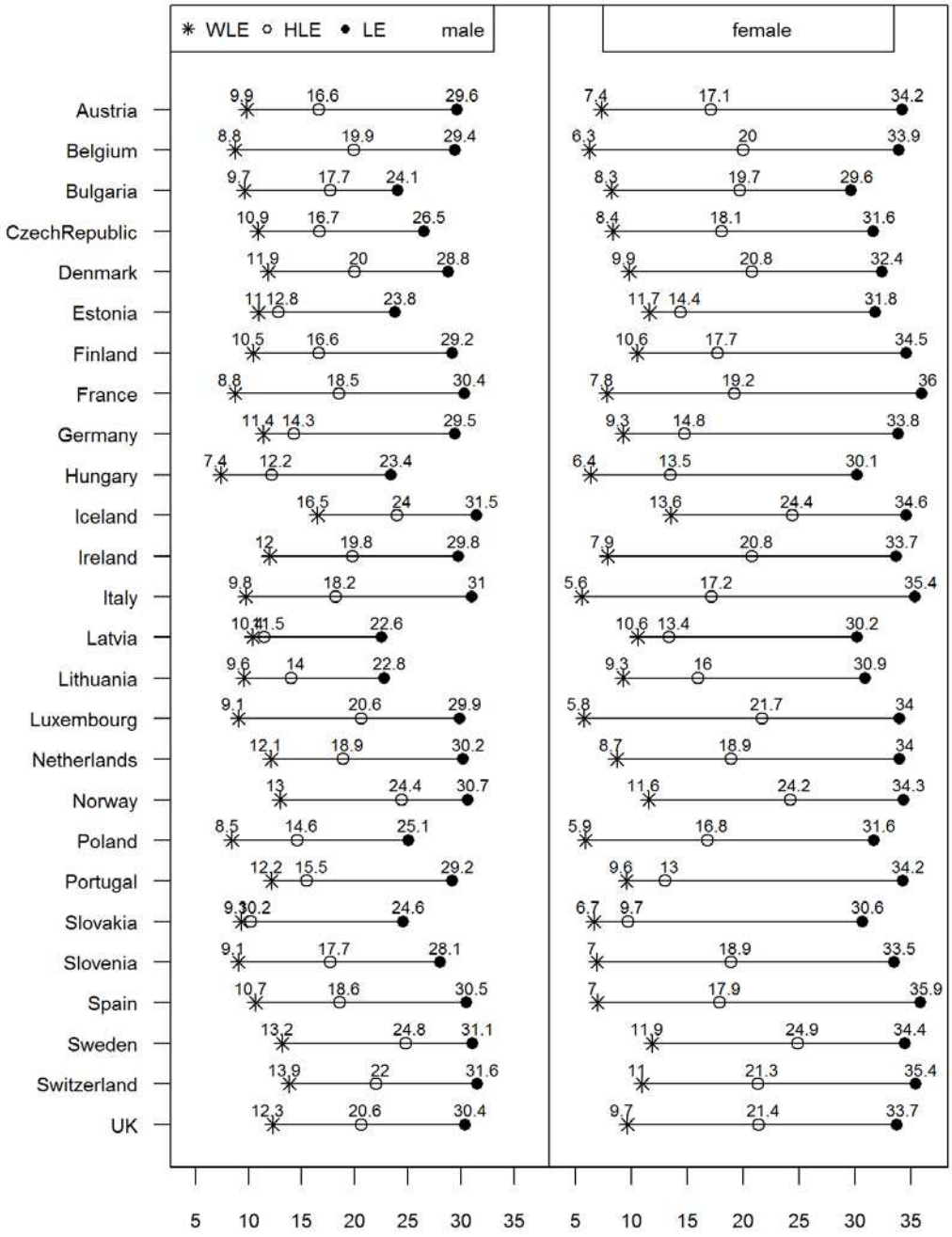
Figure 4. Working life expectancy at age 50 as share of life expectancy at age 50 for 26 countries in Europe, by sex and country (source: own calculations).



3.1.5 A comparison of LE, HLE, and WLE by gender

A comparison of life expectancy, healthy life expectancy, and working life expectancy at age 50 shows even more of a diversity across countries (Figure 5). Overall, women have fewer remaining economically active years than men, but more remaining years to live and almost the same amount of remaining healthy years as their male counterparts.

Figure 5. Life expectancy (LE), healthy life expectancy (HLE), and working life expectancy (WLE) at age 50 for selected countries in 2009, by sex (source: LE: Human Mortality Database. HLE: Eurostat database. WLE: own calculations).



The gap between economically active years and healthy years is particularly small in Estonia, Latvia and Slovakia where for men the differences are less than 1.5 years. Germany, Hungary and Portugal show as well not many healthy years beyond working life years. On average the gap between working life expectancy and healthy life expectancy is 7 years for men and 9.9 years for women. Life expectancy differs from healthy life expectancy on average by 10.3 years for men and 14.6 years for women. Life expectancy and working life expectancy differ between 12 and 22 years among men and between 20 and 30 years among women, whereas the difference between working and healthy life expectancy ranges between 0.5 and 12 years for men and 3 and 17 years for women. This means that while in some countries people do not have many healthy years remaining after they leave the labor force, in others more than 10 healthy years can be expected. For men, the correlation between WLE and HLE is slightly larger (0.61) than the correlation between WLE and LE (0.53). For women, both correlations are distinctly smaller, with correlations of 0.35 and 0.10, respectively.

3.2 Education-specific analysis

Given that life expectancy as well as economic activity does not only vary between men and women but is also correlated with educational attainment, WLEs are also presented including the education dimension. As described in the methods and data section, data on life expectancy by education is only provided since 2007 and only for selected countries. Since there is also a restriction when it comes to the latest year that life tables are available from the Human Mortality Database we confine the presentation of WLE by education to the year 2009 to be able to include the maximum number of countries that we have data for.

3.2.1 Life-expectancy by education

Life-expectancy at birth differs greatly for persons with different education levels for the year 2009 (Table 1). The largest differences between the lowest and the highest education category, in absolute as well as in relative terms, are observed for men in Central and Eastern Europe. For example, in the Czech Republic, men with tertiary education have a 15 year higher life-expectancy than men who have at most lower secondary education. The education advantage for Estonian men is even 17.7 years. In

Sweden, on the other hand, the difference comprises 4.4 years. These differentials are the result of a multitude of factors that are associated with education, morbidity and mortality.

Table 1. Life-expectancy at birth (and at age 50, in parentheses), by sex and education, 2009 (source: Eurostat database).

Men				
Country	Total	Up to lower secondary education	Upper secondary/post-sec. non-tertiary education	Tertiary education
Bulgaria	70.1 (24.0)	61.6 (19.5)	73.4 (26.3)	76.1 (28.2)
Czech Republic	74.2 (26.6)	65.8 (21.5)	74.1 (26.4)	80.8 (31.8)
Denmark	76.9 (28.9)	73.7 (27.2)	77.3 (29.0)	79.6 (30.7)
Estonia	69.8 (23.9)	60.0 (17.9)	70.3 (24.3)	77.7 (29.2)
Finland	76.6 (29.3)	73.3 (28.0)	76.6 (29.2)	80.0 (31.4)
Hungary	70.3 (23.5)	62.9 (18.2)	72.8 (25.8)	76.1 (28.0)
Italy	79.4 (31.2)	77.3 (30.0)	82.4 (33.6)	82.8 (33.8)
Norway	78.7 (30.8)	75.5 (28.9)	79.1 (31.0)	81.0 (32.3)
Poland	71.5 (25.2)	64.8 (22.4)	71.9 (25.3)	77.6 (29.5)
Slovenia	75.9 (28.2)	68.7 (23.3)	77.2 (29.4)	80.2 (31.5)
Sweden	79.4 (31.2)	77.2 (30.2)	79.4 (31.2)	81.6 (32.8)
Women				
Country	Total	Up to lower secondary education	Upper secondary/post-sec. non-tertiary education	Tertiary education
Bulgaria	77.4 (29.7)	72.8 (27.6)	78.8 (30.8)	80.7 (32.1)
Czech Republic	80.5 (31.9)	80.3 (32.6)	79.8 (31.2)	84.2 (34.9)
Denmark	81.1 (32.5)	79.0 (31.3)	81.6 (32.8)	82.9 (34.0)
Estonia	80.2 (32.0)	74.7 (28.9)	79.0 (31.1)	83.8 (34.8)
Finland	83.5 (34.9)	81.2 (34.1)	83.5 (35.0)	84.8 (35.7)
Hungary	78.4 (30.3)	75.1 (28.4)	80.1 (31.8)	80.7 (32.1)
Italy	84.6 (35.7)	83.5 (35.2)	86.3 (37.1)	86.6 (37.3)
Norway	83.2 (34.5)	81.1 (33.2)	83.8 (34.8)	84.7 (35.7)
Poland	80.1 (31.9)	77.4 (30.9)	80.3 (32.0)	82.7 (33.9)
Slovenia	82.7 (33.8)	79.6 (32.1)	83.8 (34.9)	84.5 (35.4)
Sweden	83.5 (34.6)	81.7 (33.6)	83.4 (34.6)	84.9 (35.8)

For women, differences in life-expectancy by education at birth are generally much smaller than for men. In addition, the relative size of the population in each country that falls into the respective education category has an influence on the development of life expectancy over time (Shkolnikov et al., 2006). Life expectancies at age 50 (given in parentheses in Table 1) shows the same general patterns as life expectancies at birth. However, the relative disadvantage of men and women with only up to lower secondary education – measured as ratio of the difference in life expectancy between highest and lowest education group over the lowest group's life expectancy – is even larger at this higher age.

3.2.2 Labor force participation by education

Labor force participation is positively correlated with education. This observation holds for every EU country, and for men as well as women. The size of the education differentials in participation differ by sex and across age-groups, with differentials for women in general being larger than for men (Loichinger, 2015).

Figure 6. Labor force participation rates for EU27 countries, by age, sex and education, 2013 (source: Eurostat database). ISCED 0 to ISCED 2 (up to completed lower secondary education); ISCED 3 and ISCED 4 (upper secondary and post-secondary non-tertiary education); ISCED 5 and ISCED 6 (tertiary education).

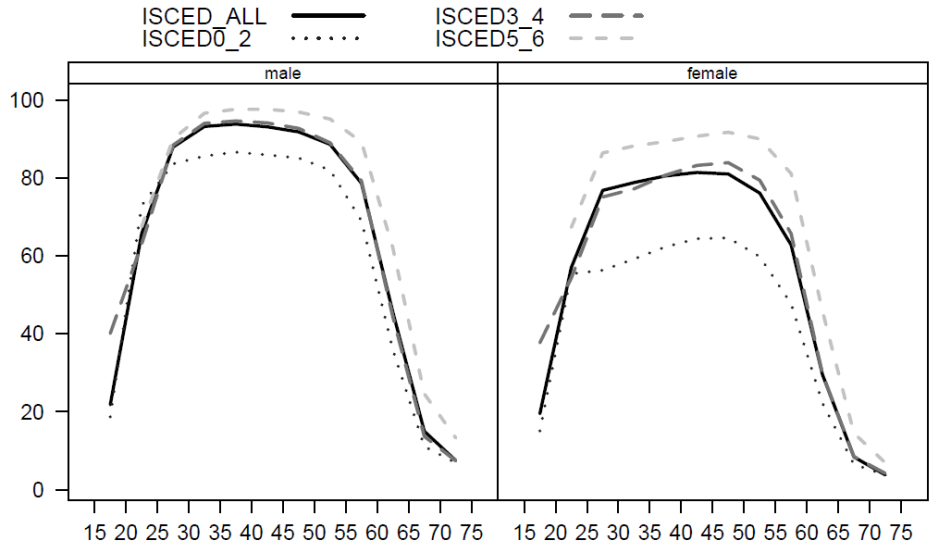
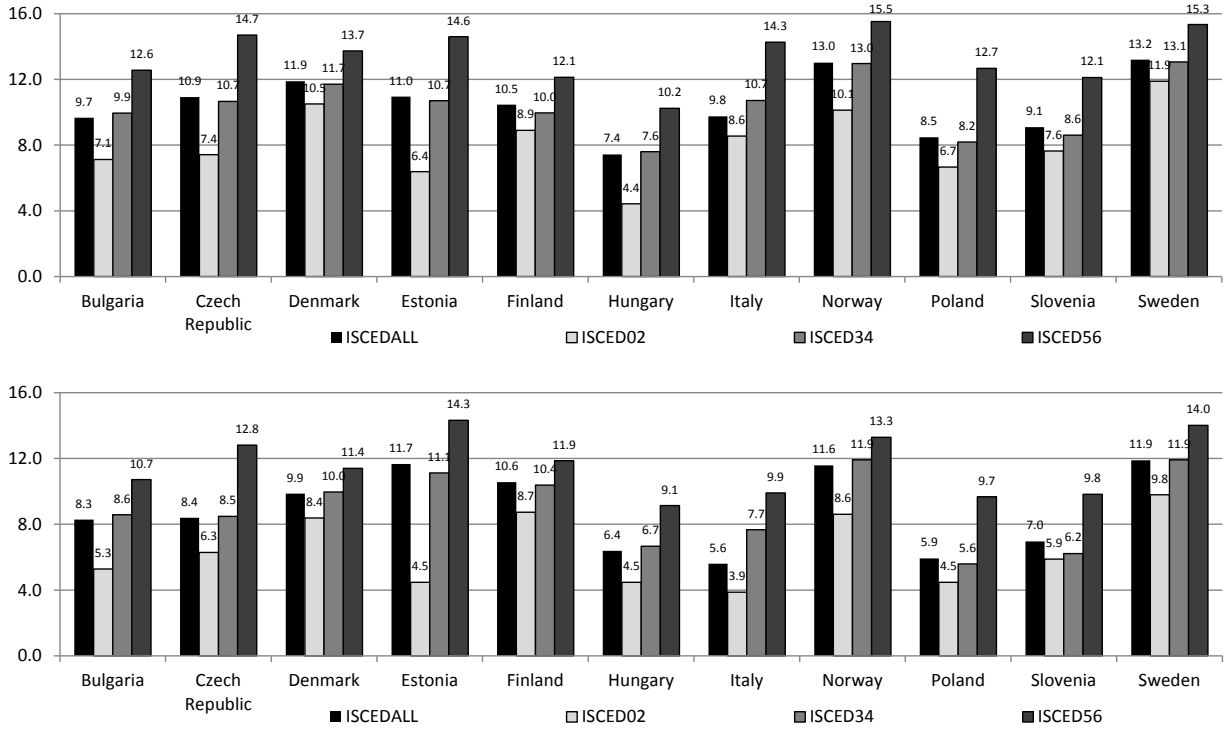


Figure 6 shows the aggregate profile for the average across all EU27 countries in 2013. The overall patterns are similar across countries, what varies is the general level of participation, particularly of women, and the size of the education differentials. For example, participation rates are higher and education differentials are smaller in the Scandinavian countries compared to Southern European countries.

3.2.3 Working life expectancy by education

As described in the previous paragraphs, life expectancy and labor force participation are both positively correlated with education. Combining these inputs in calculating working life expectancy at age 50 has to irrevocably lead to a positive correlation between WLE and education as well, which Figure 7 confirms. The differences between the lowest and the highest education group are striking and are largest for men as well as women in Estonia and the Czech Republic and smallest in Denmark and Finland. In general though, education differentials in WLE are larger for women than for men, a result that Millimet, Nieswiadomy, & Slottje (2010) also found in their study of worklife expectancies of American men and women.

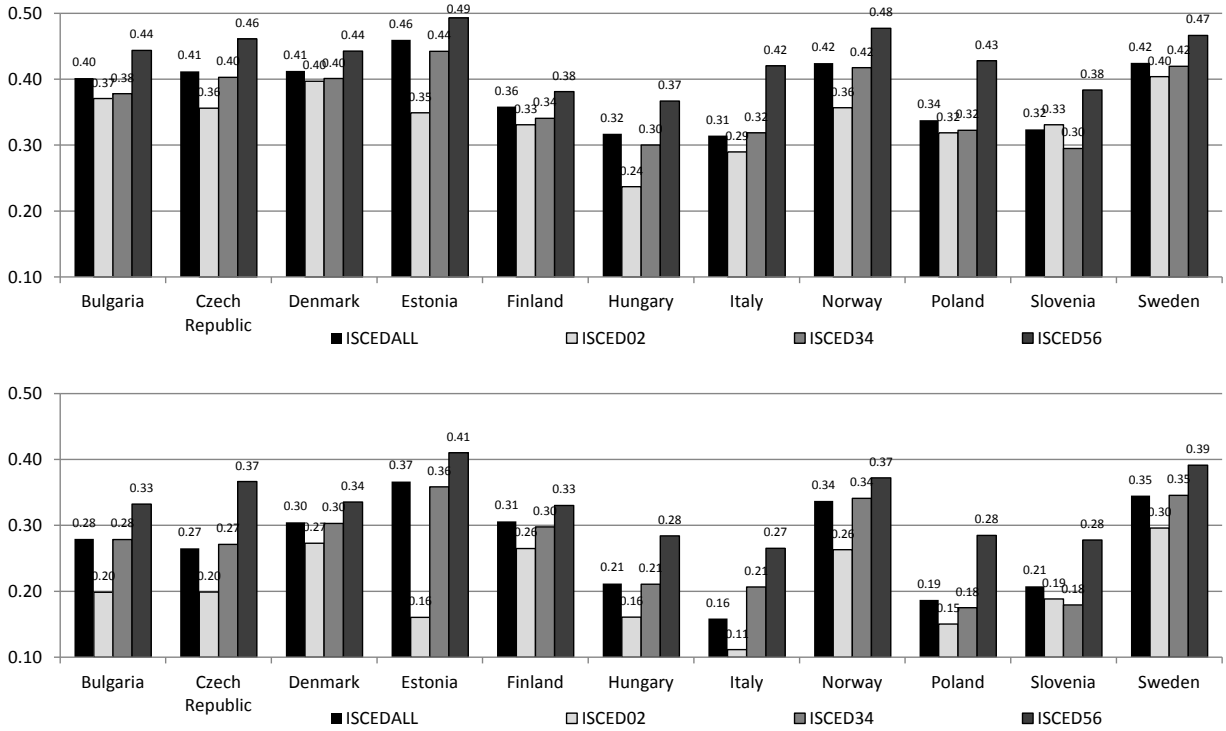
Figure 7. Working life expectancy for men (top) and women (bottom), by highest level of educational attainment, 2009 (source: own calculations).



What is also worth noting is that there is no uniform picture when it comes to the differences in WLE between men and women by education. In some countries, for example in Estonia and Sweden, the absolute difference in WLE between men and women is smaller for those with tertiary education (ISCED56) than for those with at most lower secondary education (ISCED02). In the Czech Republic and Slovenia, the opposite is the case. What is also possible to identify now is that the higher WLE of women compared to men in Finland and Estonia which was pointed out earlier is driven by higher WLEs of women with upper secondary or non-tertiary education (ISCED34).

As presented in Table 1, life expectancy at age 50 and highest level of educational attainment are positively correlated. The question then becomes in how far the likewise positive correlation between WLE and education leads to more or less equal shares of remaining life expectancy spent working by persons with different education levels, or whether differences persist or possibly even reverse.

Figure 8. Working life expectancy for men (top) and women (bottom) by education as share of life expectancy at age 50, 2009 (source: own calculations).



It turns out that even after considering differentials in LE, differentials between education groups persist – with the exception of Slovenia where of men and women with ISCED02 spend a larger share of remaining LE working than those with ISCED34. The magnitude of the differences between education groups becomes in most instances smaller though, particularly for men (Figure 8).

4 Discussion

Life expectancies have been continuously increasing across Europe during the last decades. As our calculations of working life expectancy at age 50 have shown, it differs between countries and also between men and women how these additional years have been distributed between economic activity and inactivity. A general trend has been though that gender differences have been decreasing, both for WLE in absolute number of years and also when seen in relation to developments of life expectancy at age 50. The positive correlation between education and life expectancy and education and labor force participation leads to substantial educational differentials in WLE at age 50. They persist even when considering the education differentials in life expectancy by looking at working life expectancy as share of remaining life expectancy. The comparison of WLE with life expectancy and healthy life expectancy for the year 2009 revealed large variations between countries and by gender. While persons in some countries do not have many healthy years remaining after they leave the labor force, in others more than 10 healthy years can be expected.

In order to compare WLE by education, comparing values at age 50 might miss the point since persons with non-tertiary education enter the labor force in most countries at significantly younger ages than persons with tertiary education, and it is necessary to consider the whole working career for education-specific comparisons of WLE. However, calculating WLE expectancy at age 15 by education is tricky: at young adult ages, educational attainment is not a fixed characteristic yet and several people will “transfer” into a higher education category up to their 30s. These transitions can only be accounted for with longitudinal data, where it is possible to identify education transitions and allocate adequate labor force participation rates. For example, there will be individuals who worked while obtaining a tertiary degree. One could argue that their contributions to the labor market while still having upper secondary or post-secondary

non-tertiary education should be attributed to their (eventually tertiary) WLE and not be subsumed under the upper secondary or post-secondary non-tertiary education group. Our data did not allow for such more complex analyses, so in order to still be able to get some rough estimates for the whole working life course we had to take educational attainment at face value. Proceeding like this, the results for education-specific WLEs as share of life expectancy at age 15 do indeed reduce the "tertiary advantage" significantly compared to age 50, and the share of remaining LE spent working becomes more similar for persons with differing education levels.

A limitation of the analysis is the fact that we can only show results for synthetic cohorts because we are using cross-sectional data. This means that the results are not representative of any actual individuals. Still, just as statistics about healthy life expectancy are not representing the experience of any actual birth cohort but are still providing useful information about developments of health, working life expectancy does the same for developments of economic activity. A related caveat is that such period measures are sensitive to short-term variations in economic activity and might represent the expected WLE of actual cohorts imperfectly. Myrskylä, Leinonen & Martikainen (2013) show that it does make a difference whether calculations of WLEs for Finish men and women are based on period or cohort data, and that period WLE can underestimate the expected WLE of cohorts if years of economic recession fall in the period of observation. Hence, our results are useful for an assessment of the labor market conditions during the years they were calculated for, but they should be used very carefully for any future expectation. In countries with economic downturns during the period of our calculations – which pretty much applied to every European country - the true cohort WLEs will be different. Depending on the timing of economic recovery and the extent to which persons of various ages will be able to (re-) enter the labor force, actual cohort WLEs might be larger or smaller than their period counterparts. Still, results for period WLEs are useful summary measures for detecting trends and labor force potential (Nurminen 2012).

Our analyses were restricted by mainly three factors: the availability of 1) life-tables, 2) data on education-specific life-expectancy, and 3) education-specific labor force participation rates. Education-specific data on LE is only available since 2007, and only for selected countries. Being able to perform analyses of educational trends of

WLE would be crucial, since this could uncover inequalities in pensions systems and would support the claim that it should rather be the number of economically active (or employed, for that matter) years that are the basis for receiving pension payments than uniform retirement ages. However, in order to have a solid empirical basis for such considerations, it would be necessary to have time-series data for educational differentials in life expectancy, which is currently only very limited available.

The ILO definition of labor force participation that is the basis for calculations of WLE allows only limited conclusions about retirement ages and time spent in retirement, since someone might be working and at the same time already draw a pension. Hence, inactive life-expectancy does likely underestimate the time spent in retirement, except in those countries where it is forbidden (or highly unattractive if pension entitlements are cut when additional income is earned) to work while receiving pension payments. It depends on the specifics of countries' pension regulations whether someone can draw a pension and still be gainfully employed.

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