The length of working life in Germany
A new perspective on cumulative (dis)advantages in the German labor market

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Abstract

The German population and the German workforce are aging rapidly. In aging societies the length of working life is a key policy indicator, and several policy measures have been aimed at increasing working life expectancy in Germany in recent years. In this paper, we use data of the German Microcensus and study how the length of working life has developed. Moreover, we analyze inequalities in working life expectancy by gender, region (eastern/western Germany), and educational attainment. Our findings show that working life expectancy has been increasing. This increase has been at least partly driven by changing educational attainment of the population, in combination with a longer working life for higher educated individuals. Inequalities in working life expectancy are substantial. While high educated western German men can expect 42.3 years of employment, it is only 20.5 years for eastern German women with low educational attainment.

Keywords: Working life expectancy; Germany; Cumulative (dis)advantage;

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1   Introduction

The German population and the German workforce are aging rapidly, and population aging is predicted to continue in the future (Eurostat 2015, Fuchs et al. 2018). In aging societies the length of working life is a key policy indicator. In Germany, several measures aimed at increasing the length of working life have been implemented. This includes the currently ongoing increase of the statutory retirement age from 65 to 67 years (for an overview of reforms, see Hess 2016).

How the length of working life has been developing in Germany is not well understood. Instead, the literature focuses on specific parts of, and transitions during, the life course, such as the transition from work to retirement. The emerging literature on the length of working life has shown that specific transitions only give an incomplete picture of working lives. For instance, Dudel et al. (2018) report that ages 60 and older only account for 5% to 10% of the duration of working life in Spain. Moreover, inequalities and disparities in the length of working life are rarely studied, although they allow to capture cumulative inequalities in the labor market (Hayward and Lichter 1998). For example, Dudel and Myrskylä (2017) show that in the United States the duration of working life differs drastically by gender, race/ethnicity, educational attainment, and their intersections.

In this paper, we study trends and inequalities in the length of working life – understood as the total lifetime spent in employment – in Germany. We use high-quality data of the German Mikrozensus for the years of 1996 to 2017 to reconstruct working trajectories by birth cohort. We analyze the working trajectories and the resulting length of working life by gender, by region (eastern vs. western Germany), education, and their intersection. Moreover, to further shed light on inequalities, we present results on the duration of working life adjusted by factual working hours and by desired working hours.

To the best of our knowledge, we are the first to study the length of working life in-depth for Germany. Germany provides us with an interesting case, as its population is aging fast and relatively large cohorts of the Baby Boom years are approaching retirement age, putting increasing pressure on the German pension system. Recent reforms aimed at increasing the length of working life might affect socio-economic groups differently depending on their current working life expectancy. We also contribute to the literature by being the first to adjust for factual and desired working hours, overcoming a blind spot of previous research. This allows us to paint a more differentiated picture of inequalities, and to show potentials for increasing the length of working life when comparing actual and desired working hours.

Our findings show that inequalities in working trajectories and labor market outcomes accumulate to substantial differences. For instance, while high educated western German men can expect 42.3 years of employment, it is only 20.5 years for eastern German women with low educational attainment. Working life expectancy has been increasing at a steady but slow pace. The findings of our analyses taking working hours into account show even stronger inequalities than our unadjusted findings. For men, the difference between desired and actual working hours is small. The difference is larger for women, but still only around 5% of the factual length of working life.

2 Data and methods

2.1 Data: The German Mikrozensus

We use data from the German Microcensus. The Microcensus is an annual survey conducted by the German Federal Statistical Office. It has been running since 1957 and is a 1% sample of all German households. Participation in the survey is compulsory if a household is sampled, because of which there is virtually no non-response. The same holds for key items in the questionnaire, many of which are also compulsory to answer.

We use data for the years of 1996 to 2017. We only include observations in our analysis which are in the age range of 15 to 69. While employment after retirement age has been increasing in Germany (Hofäcker and Naumann 2015) employment after age 69 is still rather low. For our analysis by birth cohort we will use individuals born in 1940 as the oldest, and individuals born in 1998 as the youngest cohort.

The smallest number of observations per cohort is for the 1945 cohort, for which the data includes $56,489$ observations; the cohort with the most observations is the cohort of 1964 with $220,142$ observations. The number of observations per cohort depends on both the cohort size, and the number of survey years for which data for a cohort is included. For instance, given the restriction of the age range from 15 to 69, the cohort of 1940 is only covered in survey years 1996 to 2009, while the cohort of 1950 is covered in all survey years we analyze.

The variables used in our analysis are defined as follows. We count individuals as employed or unemployed following ILO conventions. That is, an individual counts as employed if they work at least one hour per week. Individuals count as unemployed if they are not employed, have been actively looking for work in the last four weeks, and are available to start to work in the next two weeks. Individuals who are neither employed nor unemployed count as inactive. The working hours of an individual are captured through a question which asks for the typical number of hours worked in a week, including regular overtime. The desired number of work hours is captured by asking if individuals would agree to increase or decrease their work hours if their income would increase and decrease accordingly, and if they are willing to what extent, i.e., for how many hours. Note that desired working hours are only available in the data from 2008 on; for earlier years, we assume that the same values as for 2008 apply. Age is calculated for each individual as survey year minus year of birth, and thus is defined as the age reached during the year. Educational attainment is classified based on a coarsened version of the International Standard Classification of Education (ISCED) of 1997, using three levels: at most lower secondary education (ISCED levels 0 to 2); upper and post-secondary non-tertiary education (ISCED levels 3 to 4); and tertiary education (ISCED levels 5 to 6). Results will also be stratified by gender and region (eastern vs. western Germany).

2.2 Methods: Aggregating individual-level working trajectories

For each year-age-cohort combination, we calculate the employment rate as the number of individuals in employment divided by the total number of individuals. Adjustments for the actual number of work hours are achieved by weighting employment rates with the ratio of average actual work hours to 40 hours; that is, full time equivalent employment rates. Based on unadjusted and adjusted employment rates, we calculate partial working life expectancy (PWLE) over 10-year age intervals by cohort; e.g., ages 30 to 39, ages 40 to 49, etc. The youngest interval is from age 15 to 19. PWLE for a specific range like ages 30 to 39 can be calculated for several consecutive cohorts. Desired WLE is calculated by using participation rates (employed plus unemployed) weighted with the average number of desired work hours; as the latter are only included for employed individuals we assume that unemployed individuals have the same average number of desired work hours.

Total working life expectancy (WLE) is calculated on an annual basis. For each year, WLE is set to the sum of the most recent completed cohort PWLEs. For instance, WLE in 2017 includes the PWLE for ages 60 to 69 of the cohort 1948, the PWLE for ages 50 to 59 of the cohort 1958, and so on. This makes the WLE reported in this paper a composite period-cohort measure, consisting at least partially of realistic cohort trajectories, while at the same time having comparatively low data demands as purely period-based measures.

Note that our analysis does not account for mortality. Analyses not shown here which adjust WLE for survival yield results very similar to the ones reported here, though. This is not surprising, as mortality was generally rather low in the age-range and years we cover. It increases at the end of the age range, but at the same time employment decreases, leaving the effect of the mortality adjustment small.

3 Results

3.1 WLE and adjusted WLE

Figure 1 shows trends in WLE measured in years (top left panel), for WLE measured in full-time equivalent years (top right panel), and for desired WLE also measured in full-time equivalent years. Results start in 2009, because for earlier years none of the cohorts under study is in the upper part of the age range.

WLE measured in years increased steadily from 2009 to 2017, irrespective of gender and region. For instance, for men in western Germany WLE was 36.9 years in 2009 and 39.1 years in 2017, which is equivalent to an increase of 2.2 years. WLE increased faster for women than for men, although it was at a much lower level for the whole period we consider. In western Germany, for example, WLE of women increased by 3.9 years from 29.7 years (2009) to 33.6 years (2017). While trends in WLE are virtually similar for eastern German and western German females there are strong differences by region in the levels of WLE, and eastern German men work between 2.8 and 4.3 years less than their western German counterparts. This also
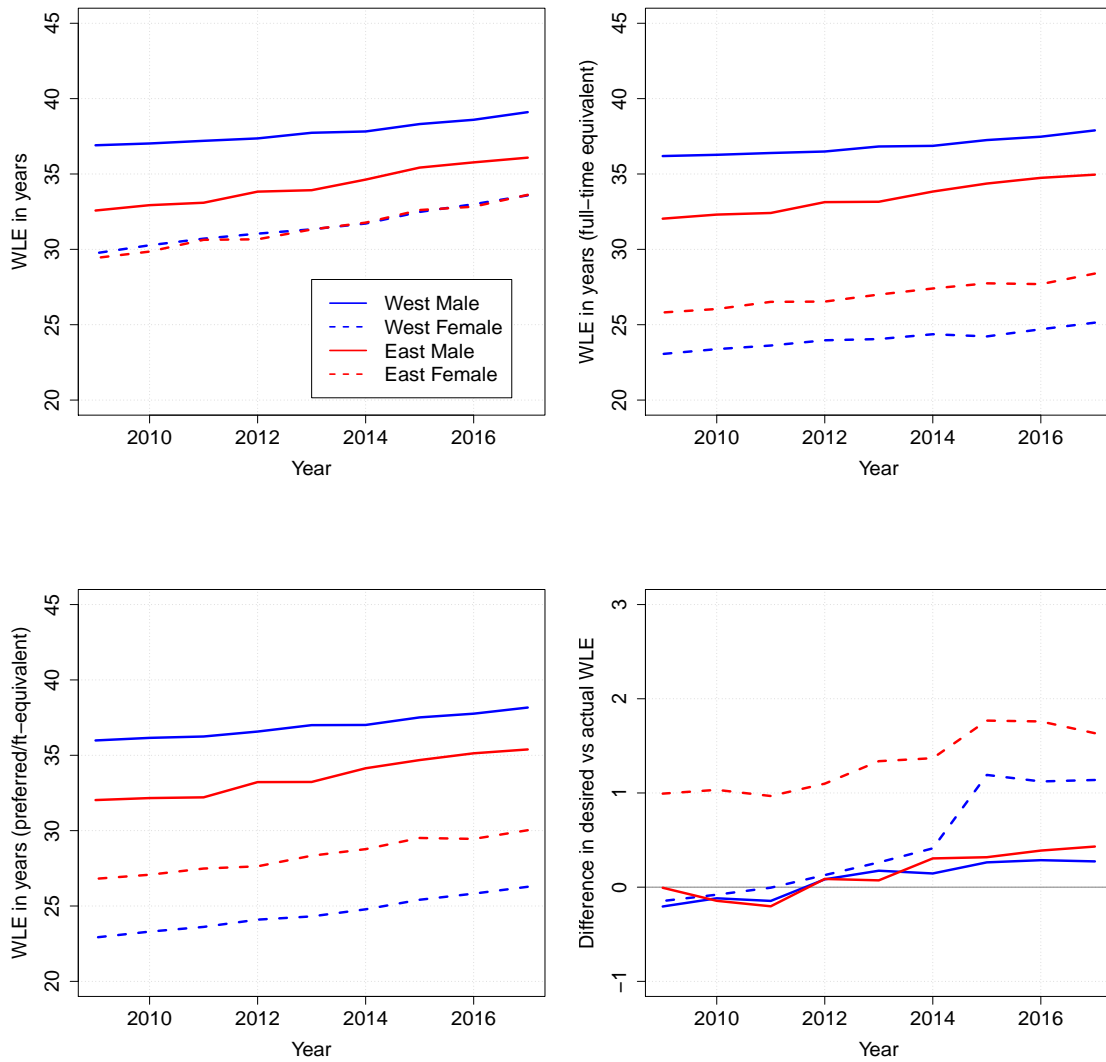
Figure 1: Working life expectancy in Germany from 2009 to 2017 by gender and region, in years (top left), adjusted for working hours and measured in full-time equivalent years (top right), and adjusted for desired working hours (bottom left). The difference between desired minus actual WLE is shown in the bottom right. Results start in 2009, because for earlier years none of the cohorts under study is in the upper part of the age range of 60+. Source: Microcensus; own calculations; preliminary findings.

means that the gender gap in WLE is considerably lower in the east than in the west.

Adjusting WLE for the number of hours worked as shown in the top right panel of Figure 1 changes results only little for men: trends are mostly unchanged, and the level of WLE drops between 2% and 3%. For women, on the other hand, the effect is much stronger, in particular western German women, for which WLE drops between 22% and 25%. This increases the gender gap in WLE in western Germany considerably from around 6 and 7 years to up to 13 years. For eastern German women the effect is less drastic but still large, and the gender gap increases by up to 7 years. These findings are due to the large prevalence of part-time work among women, in particular western German women. Men, in contrast, often work full-time. Interestingly, desired WLE in full-time equivalent years as seen in the bottom panel of Figure 1 is only slightly higher than actual WLE: in 2017 for men in both western and eastern Germany the difference between actual and desired WLE was less than 0.5 years, while for women it was 1.1 years (west) and 1.6 years (east), respectively.

3.2 Results by education

Figure 2 shows results for WLE by educational attainment: low education (ISCED 0-2), medium education (ISCED 3-4), and high education (ISCED 5-6). The highest WLE was recorded for western German men with high education in 2017 and amounted to 42.3 years. The group with the lowest WLE are eastern German females with low education. In 2017 this group had a WLE of 20.5 years, and thus less than half the WLE of highly educated western German men.

For most educational groups there is no strong increase in WLE over time, in contrast to the trends for the total population shown in Figure 1. Comparing WLE in 2009 with WLE in 2017, for the total population there are increases between 6% (western male) and 14% (eastern female). Increases for most educational groups are lower than 6%, except for ISCED levels 3-4. This means that the upward trends seen in Figure 1 are at least partly due to shifting educational composition of the population, likely an increasing proportion of individuals with tertiary education (Loichinger and Fürnkranz-Prskawetz 2017).

Interestingly, gender gaps and regional differences in WLE become smaller with increasing educational attainment. For ISCED levels 0-2, the difference between the highest WLE and the lowest WLE was 12 years in 2017, while at ISCED levels 5-6 it was only 5.2 years. At the same time, disparities in WLE by education are smallest for western German males. For instance, in 2017 the difference in WLE between western German males with tertiary education compared to western German males with low educational attainment was around 9.7 years. For western German females this difference was 13.7 years; for eastern German men it was 14.7 years; and for eastern German females it amounted to 16.6 years.

4 Discussion and outlook

Our findings show that the length of working life has been increasing in recent years in Germany, and that this trend is at least partly driven by increasing educational
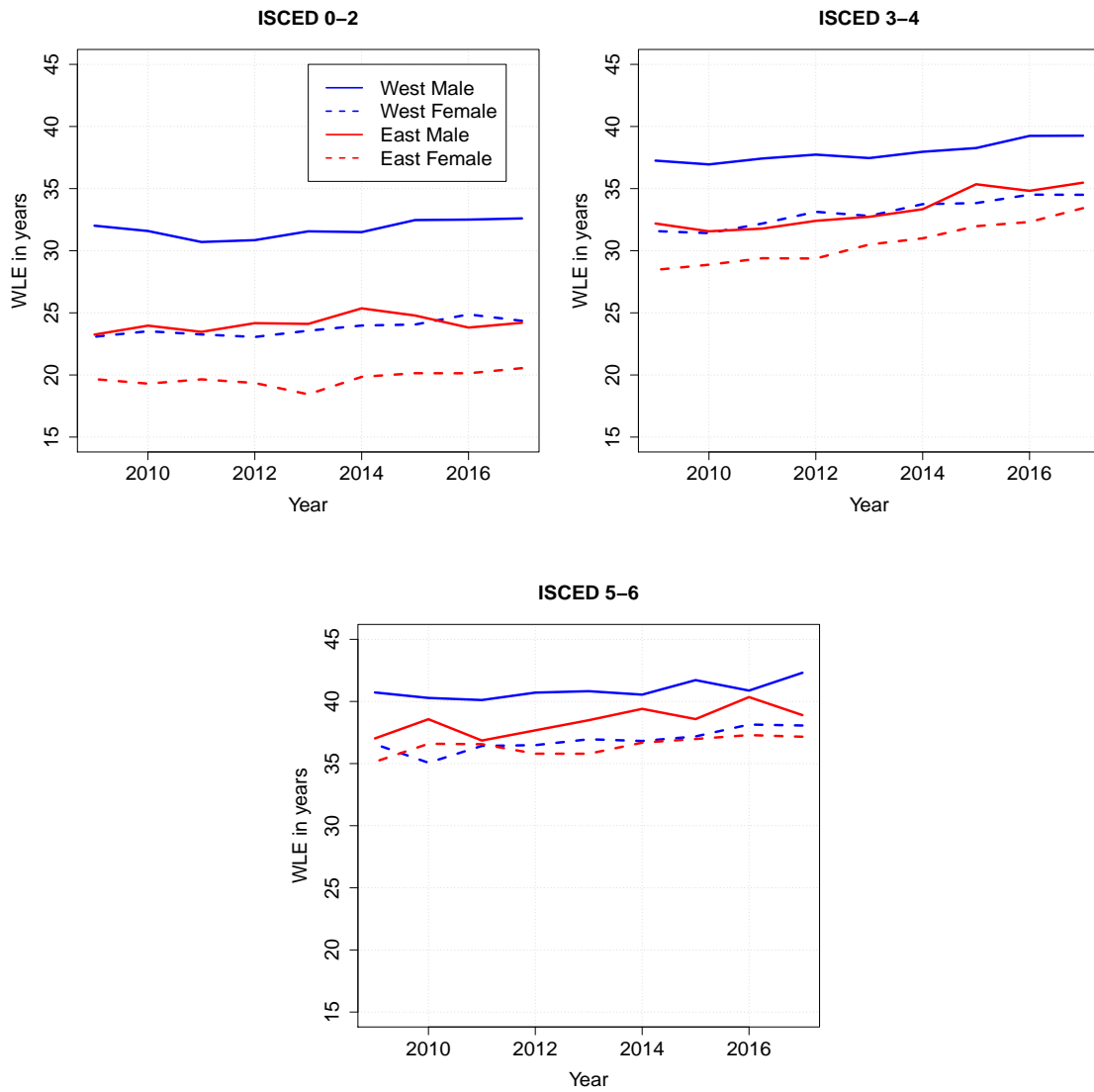
Figure 2: Working life expectancy in Germany from 2009 to 2017 by gender, region, and educational attainment. Results start in 2009, because for earlier years none of the cohorts under study is in the upper part of the age range of 60+. Source: Microcensus; own calculations; preliminary findings.

attainment. They also show that there is large heterogeneity in the length of working life by gender, region, and education, and the intersections of these categories. Unequal opportunities in the labor market thus seem to accumulate to considerable inequalities in working life expectancy. Adjusting working life expectancy for the number of hours worked, and thus accounting for differences in the prevalence of part-time work, shows even larger inequalities between groups. The desired length of working life is only marginally larger than the actual length of working life for men, while for women the difference is larger but still small.

By the time of the PAA meeting, we will expand on existing findings and present additional results. These will include findings on adjusted WLE by educational attainment, and a more in-depth look at actual versus desired WLE. Moreover, we will also investigate the working trajectories underlying WLE, assessing the contribution of different age groups to observed changes in WLE.

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