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The Effects of Taking Up Employment After Pension Age on Self-Rated Health in Germany and the UK: Evidence Based on Fixed Effects Models

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Abstract

This article analyses the effects on self-rated health of taking up paid work again after pension age. With the United Kingdom and Germany, two different institutional contexts are studied. Using fixed effects models and based on data from the German Socio-Economic Panel (GSOEP) and the British Household Panel Survey (BHPS), we estimate the individual effects of taking up work again on self-rated health, and differentiate between taking up work in a low occupational class and in a middle or high occupational class. In Germany, taking up work again after pension age tends to have positive effects on self-rated health in both class categories. In the United Kingdom, no effect at all can be seen in the case of taking up work in a low class, whereas working in a middle or higher class leads to small improvements in self-rated health. We discuss these results with regard to their limitations and their generalizability.

Measures to prolong working lives are high on the policy agenda in many Western countries, as population aging, dampened economic growth, and labor market problems have led to increasing public spending for old age security on the one hand, but limited public budgets on the other. Widespread policies to prolong working lives consist of closing early retirement routes, penalizing early retirement through reduced pension payments and increasing statutory pension ages. Less in the focus of debates, but gaining factual importance, is employment after pension age, which might partly compensate for pension cuts on the individual level and, if pension receipt is deferred, contributes to decreasing collective costs for pensions. The number of people working after pension age has been rising in many Western countries in the last one or two decades (Scherger, 2015a). This trend is debated controversially in many countries. While some see working pensioners as a vanguard of prolonged working lives, others see them as proof of failed pension policies and resulting increases in old age inequalities.

One way to evaluate the trend of working beyond pension age as well as its consequences is to study the effects that this employment has on individual health and well-being (Lux & Scherger, 2017). This contribution aims at assessing the effects of taking up work after pension age on individual self-rated health. We use fixed effects models to see how self-assessed health changes after restarting work. We compare these effects between jobs in low occupational classes and those in other classes (based on a summarized version of Goldthorpe's class scheme), and do so for two different welfare environments, namely Germany and the United Kingdom. Our article contributes to the growing body of literature

on employment past pension age, more specifically its effects on individual well-being, by suggesting a class perspective to differentiate these effects, and applying a cross-nationally comparative perspective. The latter adds to the understanding of well-being effects as it allows to assess the role the institutional setting plays for well-being effects of longer working lives. In addition, we are, to our knowledge, the first to use fixed effects models based on more than two observation points for estimating the health effects of late employment.

Research so far and Theoretical Background

Paid Employment Beyond Pension Age

The many ways in which health affects the retirement transition are well known. Poor health can be seen as one of the most important reasons to leave the labor market prematurely (see e.g., Brugiavini, Pasini, & Peracchi, 2008, for several European countries; Crawford & Tetlow, 2010, for the United Kingdom). Individuals working *beyond* pension age constitute a very different group of people which has been growing in many Western countries in the last decades (for overviews, see Alcover, Topa, Parry, Fraccaroli, & Depolo, 2014; Scherger, 2015a). Working *beyond* pension age or engaging in bridge employment, as it is also called, results from an interplay of individual work ability (health and education), contextual factors like welfare arrangements and job opportunities—which vary considerably between countries—and the **(← p. 262)** individual wish to work, be it for financial or non-financial reasons (for overviews of these antecedents, see Beehr & Bennett, 2015; Scherger, 2015b; Shultz, 2003). (Although the term "bridge employment" is quite common, especially in US research, it can, in our view, be somewhat misleading: In our opinion, the metaphor of the bridge connotes a relatively specific function and form of employment past pension age, namely continuous employment that is reduced or changed in other respects and thus constitutes a "bridge" to complete retirement. There are many more patterns of work after pension age, and the mentioned connotation does not match very well the specific group of employed people we study in this article, that is, those who interrupt their employment. Thus, we prefer to use the more open term "employment in/past pension age" instead, even though this is not an all-encompassing designation either.) Nonfinancial reasons for working include, for example, social contacts, social recognition through work, its enjoyment, or the wish to keep fit (Barnes, Parry, & Taylor, 2004; Engstler & Romeu Gordo, 2014; Fasbender, Wang, Voltmer, & Deller, 2016; Scherger, Hagemann, Hokema, & Lux, 2012). Both financial and nonfinancial reasons are systematically connected to family situation, previous employment history, and the institutional frame of the pension system and the employment system. In the remainder of this subsection on paid work beyond pension age, we mostly refer to literature investigating the UK and/or Germany without explicitly mentioning this each time; we only mention the country of study if it is not (only) the United Kingdom or Germany. In the following subsections, we then refer to literature from diverse countries without mentioning this explicitly.

Some of the factors found in empirical studies to impact employment beyond pension age mirror influences affecting early retirement. People working beyond pension age are of better

health than their nonworking contemporaries, a relationship that is consistent across different national contexts (Crawford & Tetlow, 2010; Lain, 2011, 2016; Scherger et al., 2012; for the United States: Wang, Zhan, Liu, & Shultz, 2008; for several countries: Scherger, 2015a). People working beyond pension age are also a very selective group with regard to other characteristics. In Germany and the United Kingdom, as in most other countries, they are more frequently male, and have, on average, higher educational qualifications than their nonworking counterparts (Engstler & Romeu Gordo, 2014; Hokema & Lux, 2015; Lain, 2011, 2016; for other countries: Scherger, 2015a; Wang et al., 2008). They are also often self-employed or tend to be from the service classes, and most of them work part-time (Hokema & Lux, 2015; Lain, 2011; Scherger, 2015a; Scherger et al., 2012). Additionally, household factors play an important role; for example, divorced women work more often than other women of pension age (for the United States: Pleau, 2010; Scherger et al., 2012; for a number of European countries: Dingemans, Henkens, & van Solinge, 2016). The relationship between postretirement work and further factors is less generalizable across countries, as there is a nation-specific multiplicity of trajectories and constellations of work after pension age. Lack of (pension) income or relative income losses at retirement seem to play some role in most countries for the decision to work, but the importance of these factors varies (for several countries: Alcover et al., 2014; Scherger, 2015a; for the United States: Wang et al., 2008). Depending on the (continuity of) employer and the field of the job, different types of postretirement employment can and should be distinguished (see, e.g., Beehr & Bennett, 2015; Cahill, Giandrea, & Quinn, 2017; Lain, 2012; Scherger, 2015a; Wang et al., 2008), although data often do not allow one to do so.

Health- and Other Well-Being Effects of Paid Employment in Old Age

Although the causal path from work to health is highly relevant since it bears upon the long-term effects of prolonged working lives on health and health inequalities, the health effects of late employment have not often been investigated. Many cross-sectional studies testify to the better health and well-being of people working after pension age (see, e.g., the literature mentioned above), but methodologically they do not disentangle the effects of good health on the probability of working from the inverse relationship, that is, the effects of working on health (see also the section on Methods and data).

Generally, and with regard to main working age, research dealing with the relationship between *employment in general* and well-being points to the paramount role that employment plays for individual well-being and health, including mental and physical health as well as subjective and objective health measures (Waddell & Burton, 2006). Correspondingly, unemployment during main working age is found to have negative effects on mental and physical health (Ahn, García, & Jimeno, 2004; Paul & Batinic, 2010; Waddell & Burton, 2006). However, the assumption that *old age retirement* must impair health is not necessarily convincing, as retiring is a legitimated and (ideally) economically secure transition which may relieve people from paid work in an age when it becomes mentally and physically (more) straining. Empirical research on the effects of retirement points to its varying health outcomes, which depend on the timing, circumstances, and individual experience of the

retirement transition and the job that is left (for an overview, see van Solinge, 2013). Some authors report positive effects of retirement, at least in the long run (Coe & Zamarro, 2011; Insler, 2014), and explain them by decreased work-related stress and more time for behavior beneficial to health. Others find negative health effects of retirement, especially in cases of "involuntary" retirement due to ill health or unemployment (see Dave, Rashad, & Spasojevic, 2008; Matthews & Nazroo, 2015; Waddell & Burton, 2006, pp. 16–17). Wang (2007) shows that for the United States as well, the long-term patterns of psychological retirement adjustment depend on the circumstances and the timing of retirement, and the resources of the retiree.

There are not very many longitudinal studies on the effect of *paid employment after pension age* on health. Most of these studies find (at least partially) positive effects of working past pension age, and explain this by referring to the physical and cognitive activity connected to employment, the social contacts that come along with working, and the resulting continuity of work roles and life patterns (Dave et al., 2008; Luoh & Herzog, 2002; Shiba, Kondo, Kondo, & Kawachi, 2017; Zhan, Wang, Liu, & Shultz, 2009). While the effectiveness of these mechanisms is only very rarely proven directly, they are highly plausible and their general relevance is underlined by theoretical approaches such as activity theory, continuity theory, and role theory—with employment as the opportunity to be (cognitively and physically) active, maintain social contacts and continue lifelong working roles, at least to a certain degree.

Especially studies in which data allow for the differentiation of the health effects of working beyond pension age introduce further mechanisms which moderate the relationship of late-life working and health. Some studies find positive effects of paid employment on physical and/or mental health only if the subjectively perceived relationship between effort and (financial or nonfinancial) reward connected to working is balanced (Matthews & Nazroo, 2015; McMunn, Nazroo, Wahrendorf, Breeze, & Zaninotto, 2009; both drawing on Siegrist, **(← p. 263)** von dem Knesebeck, & Pollack, 2004, for the concept of the balance of effort and reward). Work with subjectively insufficient reward does not have any effects on health or may even increase the probability of depression, compared to nonwork (Matthews & Nazroo, 2015, using propensity score matching). A connected factor influencing the health effects of postretirement employment relates to the perceived choice with regard to the decision to take up or continue employment: Only if employment is voluntary, working tends to have positive effects on health satisfaction, while involuntary work does not have any effects, as Nikolova and Graham (2014) show for the United States and several European countries after controlling for the selectivity of late employment by propensity score matching. This specifies theoretical arguments positing favorable effects of working because the latter is related to a sense of agency and control (Luoh & Herzog, 2002). In contrast to the plausible assumption that the amount of hours worked makes a difference for health (also discussed by Luoh & Herzog, 2002), Zhan and colleagues (2009) did not find that this was the case, once other factors such as the type of job (continued employment, career bridge employment, bridge employment in different field) were taken into account. In their study, most pathways into postretirement work had predominantly positive effects on different outcomes of health,

except for bridge employment in a different field where positive effects on mental health were absent.

Empirical studies on other well-being outcomes of postretirement employment which may be closely related to (mental) health, such as life satisfaction and quality of life, are broadly similar in their findings. In the Dutch study by Dingemans and Henkens (2014), for example, bridge employment for financial motives, which may be perceived as less voluntary, leads to a lower life satisfaction, whereas employment for nonfinancial motives entails an increased satisfaction. Lux and Scherger (2017) find mostly positive effects of starting to work after pension age in Germany and the United Kingdom in both of the broad categories of occupational class they investigate.

The research so far underlines the need for theoretical explanations which allow for a differentiation of the health effects of working according to individual or job-related circumstances. So far, however, only few studies differentiate between different types of jobs or jobs with different characteristics. Besides the amount of hours worked, stressful working conditions and physically arduous work, the balance between perceived efforts and rewards of the job (Siegrist et al., 2004) and perceived control over the decision to work (de Quadros-Wander, McGillivray, & Broadbent, 2014) affect the consequences of working for self-rated health. Positive effects of working on health are plausible if the job implies continued physical and mental activity to a degree which is beneficial to health. Positive subjective rewards for the work (be they money, social recognition, or social status) will potentially enhance well-being and health, as will autonomy in the decision to work. In contrast, if there is little perceived choice in the decision to work, if the job is stressful or physically arduous, or if it is not experienced as rewarding, the health outcome is likely to be negative.

Our study extends the perspectives of the existing literature in that it applies a class perspective to the question of (differential) health effects of working, and at the same time compares two different contextual settings: Germany and the United Kingdom. Together with the application of fixed effects models (with more than two observation points), this constitutes a unique and novel approach to examining the effects of employment past pension age on well-being.

Institutional Background

We examine the health effects of working in a comparative perspective, and contrast Germany and the United Kingdom because they differ considerably in their pension systems and the interplay of the latter with the employment system. Germany has, or used to have, a stronger first pillar of public pensions, whereas the structure of the UK's pension system is more balanced across pillars. However, income from the more important occupational and private pensions is very unequally distributed among older Britons. This and the UK's more flexible and deregulated employment system (OECD, 2013; Schulze & Jochem, 2007; Schulze & Moran, 2007) go together with a higher degree of inequality in old age incomes in the United Kingdom. As the German pension system has seen a number of reforms moving it into a more liberal direction, and its employment system has also been deregulated through

the "Hartz" reforms, these institutional differences are no longer as clear-cut as they used to be. However, the pension reforms will only have their full effect on future pensioners, and old age poverty rates have differed for most of our observation period, with higher poverty rates in the United Kingdom (Zaidi, 2010). The labor market reforms, in contrast, have probably created better job opportunities in atypical, low-paid, and low-hours employment for German pensioners in the second half of the 2000s.

Regular pension age for men was 65 in both countries for most of the observation period of this study (i.e., 1990s and 2000s), although many exceptions applied in Germany. In Germany, women were able to claim a pension in the first pillar at age 60 until 2012 under certain conditions; similarly, in the UK women had a state pension age of 60, which is currently being increased to 65. While in Germany an increase of pension age to 67 started in 2012, British state pension age will start to rise from 2018 onwards, ultimately to 68.

The Approach of This Study

The research results summed up above, as well as the multiplicity of forms and constellations of postretirement work, point to the need for differentiation. In this article, we accommodate this need by applying a class perspective to the question of health effects of employment past pension age, and do so for two different institutional settings.

The focus of our analysis is those who take up paid employment again after a period of nonemployment. This is due to our modeling strategy, which, based on individual fixed effects, necessarily has *change* in employment status as an independent variable (see below). Only with a focus on those who take up work again after reaching pension age is it at all possible to apply a rigorous method for assessing causal effects. The subgroup of those working post-pension age after a period of nonemployment may contain many older people who were able to "afford" retirement and start working again because they are bored and like the social contacts at work; it may also contain a number of people who were not able to continue in their old jobs due to bad health, because of a strict application of retirement age by their previous employers or because they were laid off, but then take up work again primarily for financial reasons and without enjoying their work. The unique class approach we suggest in the following to examine the health effects of working after pension age will, in part, capture the differences between these experiences of working which chime with some of the discussed mechanisms concerning potential health effects (see the literature review above). At the same time, there will be variation within the two very broad categories of class we apply, and the composition of the **(← p. 264)** class categories with regard to the experience of working and working conditions will vary depending on the institutional framing, that is, country.

With regard to job characteristics, the class of the job pursued is a good approximation of the job-related mechanisms of health effects which are discussed in the literature. Working conditions and rewards tend to be worse in low class jobs than in middle and higher class jobs. These latter jobs are usually related to higher incomes (Goldthorpe & McKnight, 2006), higher nonfinancial rewards such as social contacts, collective purpose and status (Batinic,

Selenko, Stiglbauer, & Paul, 2010), less repetitive work and fewer ergonomic exposures (Borg & Kristensen, 2000), and higher autonomy to design and to initiate work tasks (Evans & Mills, 1998). Consequently, they often go together with higher job satisfaction (Svallfors, 2006, pp. 31–51) and also psychological health (Batinic et al., 2010). Furthermore, people who work in middle and higher class jobs after pension age will probably have worked in these classes before, and might therefore have stronger occupational identities.

There will certainly be shifts in the class structure in employment past pension age in comparison to employment in main careers (Hokema & Lux, 2015), and the exact composition of the classes will change, also in terms of people who work in them. Nonetheless, and despite the fact that differences between jobs of different classes may be somewhat less pronounced past pension age, we assume that such differences continue to exist to a considerable degree, and at least broadly follow similar lines as the differences before pension age. For example, the low-skilled jobs of those working after pension age are often in the service sector and offer, on average, less autonomy, less diverse tasks and lower social status than higher class jobs. Still, they might not be as physically arduous as low-skilled jobs before pension age, which are more often in the industrial sector than after pension age. Based on the previous assumptions, our first hypothesis is class related.

Hypothesis 1: Taking up employment after pension age in low class jobs has no or negative effects on self- rated health, whereas taking up employment in middle or high class jobs has positive effects on self-rated health.

We assume the largest difference to be between the lowest classes on the one hand and the middle and higher classes on the other (and not between low/middle and higher classes). This assumption is based on the idea that coping with mediocre or even unfavorable working conditions is easier under the prevailing circumstances of postretirement jobs. Most people working past pension age in Germany and the United Kingdom do so part-time (Lain, 2016, pp. 94–95; Scherger et al., 2012). They often experience their jobs rather positively precisely because they work for nonfinancial reasons, such as the enjoyment of work and social contacts (Barnes et al., 2004; Engstler & Romeu Gordo, 2014; Fasbender et al., 2016; Scherger et al., 2012), and they see themselves primarily as pensioners (Hagemann, Hokema, & Scherger, 2015; Hokema, 2016). Thus, if at all, the work is most likely to be stressful in the lowest classes, also because purely financial reasons for working will be more predominant among those working in such jobs.

In addition, by looking at two different national contexts, we examine whether the effects of working vary depending on the national setting. For this, we formulate a second hypothesis which in part competes with the first one.

Hypothesis 2: In the UK, taking up employment after pension age in low class jobs has no or negative effects on self-rated health, whereas it has positive effects in Germany. Taking up employment after pension age in middle or high class jobs has positive effects on self-rated health in both the UK and Germany.

As the less generous pension system in the United Kingdom has been associated with more inequalities in old age in most of our observation time (Zaidi, 2010), we assume that more people have to work for (mainly) financial reasons and potentially under poor working conditions in the United Kingdom, which they accept although this may be detrimental to their health. This assumption is supported by evidence on financial reasons for working which are mentioned more often as sole reasons in the United Kingdom (Scherger et al., 2012) and the fact that less educated persons in the United Kingdom, relative to highly educated people, do not have as low a probability of working as in Germany (Hokema & Lux, 2015).

The assumption that more people have to work for (mainly) financial reasons and potentially under poor working conditions in the United Kingdom, however, probably does not apply uniformly to jobs in all occupational classes. Those working in higher or middle class jobs are a (predominantly) positive selection in both countries (see literature cited above) and rewards for these jobs will tend to be good regardless of country. Thus, the effect on health of working in these jobs is likely to be positive in both countries, while we expect country differences for the jobs in low classes. As the share will be higher in the United Kingdom of those within low occupational classes who work for (mainly) financial reasons, and whose working conditions are unfavorable, there should be no or a negative effect of starting work in these jobs. In contrast, we expect a positive effect of working on health for jobs in low classes in Germany, where more people who work in these low class jobs do so without strong financial needs as a motive and under acceptable working conditions, and thus experience similar health effects to those working in higher class jobs.

Methods and Data

Data

Our analyses are based on the years 1992 and 1994–2011 of the German Socio-Economic Panel (GSOEP) and the years 1992–1998 and 2000–2008 of the British Household Panel Survey (BHPS). In the BHPS, the question on subjective health was not asked in 1999 and in the GSOEP it was not asked in 1993. Both longitudinal surveys provide annual information on living conditions, health, employment status and many other individual characteristics of the noninstitutionalized resident population aged 16 or older in Germany (GSOEP) and the United Kingdom (BHPS). In our analyses, we only include those respondents who are 65 or older at the time of the interview (see next section). Our dependent variable is self-rated health, which has been shown to be a good approximation of objective measures of physical and mental health, and a predictor of mortality (Idler & Benyamini, 1997; Jylhä, 2009; Schneider et al., 2004). In Germany, subjective **(← p. 265)** health is measured by a respondent's answer to the question "How would you describe your current health?" which has the following possible answers: very good, good, satisfactory, poor, and bad. In the United Kingdom, the corresponding question is "Please think back over the last 12 months about how your health has been. Compared to people of your own age, would you say that your health has on the whole been …?" This can be answered with excellent, good, fair, poor, and very poor. We interpret both answer categories as metric. Our dependent variable has, in

both countries, five scale points with higher values indicating better self-rated health.

As independent variables, employment status and social class of the job taken up by respondents are our main interests. Employment status shows whether a respondent is employed or not. Respondents are defined as employed if they either state (a) that their current working status is full-time employed, part-time employed, self-employed, or marginally/irregularly employed, (b) that they currently have some kind of job on the side, or (c) that they have been engaged in paid work in the last seven days. Furthermore, we categorize the current job on the basis of Goldthorpe's (2007) class scheme, contrasting low class jobs (semi- and unskilled manual workers, low routine nonmanual, and skilled manual workers) and jobs in other, middle or higher classes (i.e., high routine nonmanual class, low service class, high service class, self-employed). (Contrasting higher class jobs with lower and middle class ones yielded less significant results but similar country-specific class differences.) Due to low case numbers of those in employment, it is not possible to differentiate class further or to use additional variables to do so (such as working time, for example). Neither is it possible to include the individual mobility pattern between preretirement class and postretirement class. However, given that there are only very few longitudinal studies on the subject, the results will give an indication of potential differences in the underlying processes according to class and related job characteristics. All of the following analyses control for age at the time of the interview, change in marital status and year of the interview. Change in marital status captures any change of marital status (change from married to widowed/ divorced and change from widowed/divorced/single to married). (In both countries, roughly 85% of these changes relate to becoming widowed or divorced [and the vast majority within this are changes to widowhood]. Only the remaining small minority of around 15% among all changes are [re-]marriages. Due to the small size of the latter we do not estimate separate effects for [re-]marriages. The effect we estimate for change of marital status, which thus mainly consists of the effect of becoming widowed or divorcing, does not change substantially if we exclude [re-]marriages.) By including the year of interview in the analyses, we also capture potential institutional changes on the labor market and in the pension system affecting the composition of postretirement workers and potential health effects of working. All time-constant (observed and unobserved) individual characteristics are, by definition, controlled for, as we use fixed effects regressions for our analyses (see below).

Estimation Strategy

For the analyses, we use country-specific linear fixed effects regression models (FE models). This is the method of choice because it focuses only on time-specific variation within individuals (within-variation) and thus controls for *all* time-constant characteristics of individuals (Brüderl & Ludwig, 2015). Hence, the models also control for the fact that some people, because of time-constant individual characteristics, are likely to work in later life *and* have better health. Additionally, they also control for inter-individual differences in how optimistically or pessimistically people generally rate their health. As within-variation can only be analyzed for respondents who exhibit some variation in the central independent variable, we focus—for the estimation of the effect of employment on self-rated health—on

respondents who *start* working again after having reached age 65 (and after having given up employment before they start working). Sixty-five was the regular pension age for men during most of our observation time in both countries, so that most of the respondents had given up their main careers and started to receive a pension at that point. Pension age for women was partly 60 during this time, although in Germany this only applied to those with longer contribution periods. We nonetheless ignore this variation and stick to our strict notion of retirement because doing so increases the comparability of the baseline health of the respondents. (Moreover, extending the observation period for women would not add many cases, as much fewer women [used to] work past pension age.) By using age 65 as a cutoff in combination with our definition of employment (see above), we approximate an objective measure of retirement and avoid a mainly subjective measure of this state, as such measures are notoriously unreliable.

In our fixed effects regression models, we control for the time-varying factors of age, year of the interview and change in marital status. Including age and period (year of interview) as independent variables in fixed effects regression models is not possible in a straight- forward way because fixed effects models by definition also control for the time-constant characteristic of birth cohort, and controlling for all three aspects of time causes the so-called age-period-cohort problem, that is, the effects of age, cohort, and period cannot be disentangled statistically. However, by imposing a restriction, it becomes possible to include both age and period in fixed effects regressions. In our models, we apply the restriction suggested by Brüderl and Ludwig (2015, pp. 351–352): As reference category for period, we use two 1-year-dummies (instead of one). In more detail, we choose the years 2007 and 2008 as a reference category, because both years show a similar coefficient in random effects models with age and year of interview as independent variables.

In order to estimate an unbiased effect of age on self-rated health, we also include respondents who did not work at all after reaching pension age. For respondents aged 65 or older who start to work, we only include the "jobless" year directly before taking up work (to reduce the possibility of reversed causality, see below) and the subsequent years within a job, but not the years after finishing a postretirement job (to not estimate the effect of ending a job). For those who do not work again, we include all available years. As the vast majority of postretirement jobs end by age 75 (the latest), we exclude respondents aged 76 or older. (In our sample, about 90% of older Britons who take up work after age 65 end their later-life employment at age 75 at the latest. The corresponding share is 95% in Germany.) With this, we ensure that the age range under study is the same for respondents with work episodes and for those respondents who do not work again. Based on these specifications, we have 6,431 respondents (36,836 respondent years) in Germany and 3,622 respondents (19,190 respondent years) in the United Kingdom. Among these respondents are 251 older German adults who start to work in jobs in low classes and 176 who start to **(← p. 266)** work in other classes. In the United Kingdom, the corresponding numbers are 71 (low classes) and 120 (other classes).

It should again be noted that this setup implies that we study a specific group of working pensioners, that is, those who go back to work after a time of not working. On the one hand, we thus exclude people who simply continue working and defer pension receipt. On the other

hand, we also exclude pensioner jobs which directly follow after the end of a respondent's main career, or jobs on the side which are continued beyond pension age.

The Problem of Reversed Causality

In general, a fixed effects model estimates the impact of changes in the independent variable on changes in the dependent variable through demeaning the dependent and the independent variables on the level of individuals:

$$y_{it} - \bar{y}_i = \boldsymbol{\beta}(\boldsymbol{x_{it}} - \bar{\boldsymbol{x}}_{\boldsymbol{i}}) + (u_{it} - \bar{u}_i)$$

This means that the person-specific means of the dependent variable ($\bar{y}_i$) and the independent variables (vector $\bar{x}_i$) over the observed ages are subtracted from the observed values at specific ages (y_{it} and vector $\boldsymbol{x_{it}}$,) which only leaves the within-person-variation (Allison, 2009; Brüderl & Ludwig, 2015). The coefficient for the independent variable employment status, thus, shows the (mean) change of self- rated health if a respondent has started a job after age 65. Put differently (Brüderl & Ludwig, 2015, pp. 329–332), the coefficient for employment status represents the inter-individual mean of a set of intra-individual differences, more exactly the intra-individual differences between the intra-individual mean of self-rated health in the years *before* starting work and the intra-individual mean of self-rated health in the years *after* starting work (controlled for age, change in marital status, and year of interview). Accordingly, the more years before starting work that are included in this calculation, the higher is the chance of reversed causality, that is, the higher is the probability that a permanent increase in self-rated health before starting work is counted as an effect of starting work. Imagine, for example, an individual with information on the 5 years before starting work and on the 5 years with work thereafter, so altogether 10 years. If his or her self-rated health improves permanently between the third year and the fourth year (counted from the beginning of the available information), this would increase the mean before taking up work to some degree, but it would also increase the mean of the time after taking up work to a considerable—and higher—degree. This would then appear as an effect of starting work in the fixed effects model, although the causality is actually reversed and the person has taken up work after, and possibly because of, improved health. As we only include the year immediately before starting work (see the above section on our estimation strategy), our estimation would not be strongly biased by reversed causality in this and similar cases. Although we reduce the possibility of reversed causality in this way, we cannot rule it out completely. Self- rated health may improve within the year immediately before starting work (but after the first instance of observation) and thus cause the start of work rather than being a result of it. However, given the poor employment opportunities of older workers (at least in Germany), such a close temporal relationship between improved self-rated health and taking up paid work should not be the normal case. Additionally, the fact that the question on subjective health in the United Kingdom relates to the last 12 months and not to current health, as in Germany, may bring about an increased possibility of reversed causality slightly distorting our results for the United Kingdom.

Results

In Table 1, we give an overview of our sample. The lower middle panel (row percentages) shows that in both countries, men and those with middle and higher education take up work after pension age more often than women and people with only low education. Looking only at those who actually start employment (see lower panel of Table 1, row percentages excluding people without work), we see that it is common for highly educated respondents to take up employment in other classes and not in lower classes, while the pattern is reversed for those with low education: they more often start to work in lower classes than in other classes. Interestingly, the proportion of those with high education (and also those with middle education) who take up a job in a low class is higher in Germany than in the United Kingdom, probably indicating a higher degree of downward mobility. With regard to the composition of the different groups (see the column percentages in Table 1), the group of those taking up a job in the lower classes is dominated by people with low education in both countries, while the group of those who take up a job in the other classes mainly consists of people with middle and high education. Both groups (lower and other classes) are dominated by men. This is true for both countries, albeit to a somewhat lower degree in the United Kingdom.

The values for self-rated health (see the second row of Table 1) indicate the average self-rated health of three distinct groups over the available observation period between age 65 and 75: those who never take up work, those who take up work in a low class, and those who do so in another class. In both countries, the first group rates their health on average less well than those taking up work at some point. Among those taking up employment, a (small) difference between those taking up a job in a low class and those taking up work in another class can only be found in the United Kingdom, with the latter feeling slightly better than the former. As discussed above, these descriptive relationships do not say anything about the direction of causality, with those feeling in better health perhaps being more likely to take up work, and vice versa.

The results of the fixed effects models (Figure 1 and Table 2), in contrast, allow for a more specific interpretation with regard to causality. Starting to work (again) after age 65 has positive effects on self-rated health in both classes in Germany. It increases self-rated health by 0.10 scale points if older adults start working in one of the lower classes, and by 0.08 scale points if they take up employment in one of the other classes (Figure 1a and Table 2). However, only the former effect is statistically significant at the 5% level, while the latter effect only narrowly misses the 10% level. This lack of significance is probably due to the small number of respondents who start to work in other classes compared to low classes (see above). (In general, fixed effects estimates are not very efficient. This means that they produce relatively large standard errors because they are only based on within-variation. In addition, our fixed effects models are based on only few respondents who start working in the two classes in both countries, which further increases the standard errors. Therefore, the 10% significance level. In addition, we interpret point estimates even if they miss this significance level slightly but point to a *substantively* significant effect. For this meaningful differentiation and a similar strategy, **(← p. 267)** see Bernardi, Chakhaia, & Leopold, 2017.)

Table 1. Comparison of Nonworking Respondents Aged 65–75 With Those Aged 65–75 With Job Uptake in Different Classes, in Germany and the United Kingdom (Based on the Sample as Specified in the Methods and Data Section).

	Germany			United Kingdom		
	Without Work	Starting Work in Low Class	Starting Work in Other Class	Without Work	Starting work in Low Class	Starting work in Other Class
Mean[a]						
Age	69.6	68.9	69.2	69.9	69.5	69.2
Self-rated health[b]	2.87	3.22	3.27	3.52	3.82	3.95
Respondent years per person	5.9	2.9	2.8	5.4	3.5	2.6
Respondents	6,004	251	176	3,431	71	120
Respondent years	35,614	731	491	18,625	247	318
Column percentages[c]						
Gender						
Male	44.2	61.0	71.0	41.9	57.8	57.5
Female	55.8	39.0	29.0	58.1	42.3	42.5
Respondents	6,004	251	176	3,431	71	120
Education (CASMIN)						
Low (1–3)	67.9	72.2	26.9	67.1	72.9	40.0
Middle (4–7)	16.9	18.4	20.6	14.8	18.6	20.0
High (8–9)	15.2	9.4	52.6	18.1	8.6	40.0
Respondents[d]	5,908	245	175	3,386	70	120
Row percentages[c]						
Gender						
Male	90.1	5.2	4.3	92.9	2.7	4.5
Female	95.7	2.8	1.5	96.1	1.5	2.5
Education (CASMIN)						
Low (1–3)	94.7	4.2	1.1	95.8	2.2	2.0
Middle (4–7)	92.5	4.2	1.3	93.1	2.5	2.2
High (8–9)	88.6	2.3	9.1	91.9	0.9	7.2
Row percentages (people without work excluded)[c]						
Gender						
Male		55.0	45.0		37.3	62.3
Female		65.8	34.2		37.0	63.0
Education (CASMIN)						
Low (1–3)		79.0	21.0		51.2	48.8
Middle (4–7)		55.6	44.4		35.1	64.9
High (8–9)		20.0	80.0		11.1	88.9

Note. German Socio-Economic Panel 1992, 1994–2011 and British Household Panel Survey 1992–1998, 2000–2008. Own calculations, unweighted.

[a] All respondent years of respondents included. The categories of job uptake ("starting work in low class", "starting work in other class") also include the respondent year without work of those who take up work at some point. The years without work after job uptake are excluded by definition for these categories (Methods and Data section).

[b] Higher values indicate better health (range: 1–5).

[c] Only the first respondent year of respondents included.

[d] Education was not used for the definition of the sample for our multivariate analysis. The number of respondents with valid information on education is somewhat lower than the number of respondents in the rest of the sample.

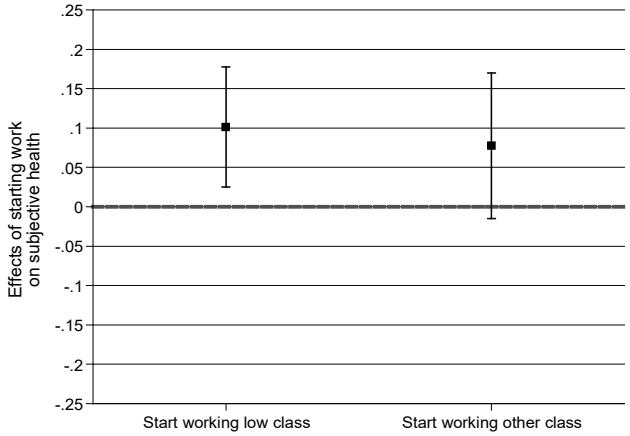
In the United Kingdom (Figure 1b and Table 2), starting to work (again) after age 65 in other classes increases self-rated health by 0.14 scale points, which is statistically significant at the 5% level. However, starting to work in a low class does not have any effect on self-rated health and clearly misses all standard significance levels.

Above, we have assumed that taking up work again has positive effects on those with middle and higher class jobs ("other classes"), whereas it should have no or negative effects for those starting to work in a low class job (Hypothesis 1). With regard to country differences, we have formulated a second hypothesis which partly competes with the first one: we assume that the class difference only exists in the United Kingdom, while taking up employment is beneficial for self-rated health in both classes in Germany (Hypothesis 2). Our results falsify the first hypothesis and are compatible with the second one: positive effects dominate the picture in both class categories in **(← p. 268)** Germany, where even people of pension age who start to work again in low class jobs are likely to do so without strong financial needs as a motive and under acceptable working conditions. In the United Kingdom, in contrast, positive effects of late employment only exist for those working in middle or high class jobs, but not for those in low class jobs, who are more likely to work mainly because of their financial needs and under poorer working conditions. The size of these effects might look weak considering that they refer to a five point-scale of subjective health. Yet, based on our estimations, starting to work again after pension age would compensate for about one-third of the average health decline between age 65 and 75, which amounts to a decrease of 0.31 scale points in Germany and 0.33 scale points in the United Kingdom (Table 2). Finally, the results of the FE model also show that older Germans evaluate their health less favorably in the 2000s than in the 1990s, while older Britons rate their health less favorably at the turn of the millennium than before and after (Table 2). However, only the effects for Britons are significant.

In sum, we find positive effects of restarting employment after age 65 on self-rated health. These effects are class-specific in the United Kingdom, but not in Germany. To be able to estimate causal effects based on fixed effects regressions, we only look at those who restart employment after an employment interruption. The potential downside of this approach is that the group under study may be a selective and possibly small subsample of those working after age 65. To assess this potential selectivity, we conducted additional analyses based on a balanced longitudinal sample including all respondents with an interview in every year from age 65 to 75 (see Appendix Table 1). The results of these analyses show that among those older Germans who have worked between age 66 and 75, a share of 49.7% has continued working after age 65 without interruption, while 50.3% have restarted working after age 65. In the United Kingdom, the corresponding shares are 65.6% (continuing work without interruption) and 34.8% (stopping and restarting work). This shows that the relative size of the group of those who restart work after pension age is substantial in both countries. In addition, we find only relatively small educational and health-related differences with regard to the composition of those who continue working without an interruption and those who stop working and restart again. Only the less educated Germans are somewhat overrepresented in the group of those who restart working compared to the group of those who continue to work.

Although the sample of these additional analyses is somewhat different from the sample of our main analyses, we see these results as an indication that the selectivity of our subgroup of older workers is limited—at least with regard to education and self-rated health.

a) Germany



b) United Kingdom

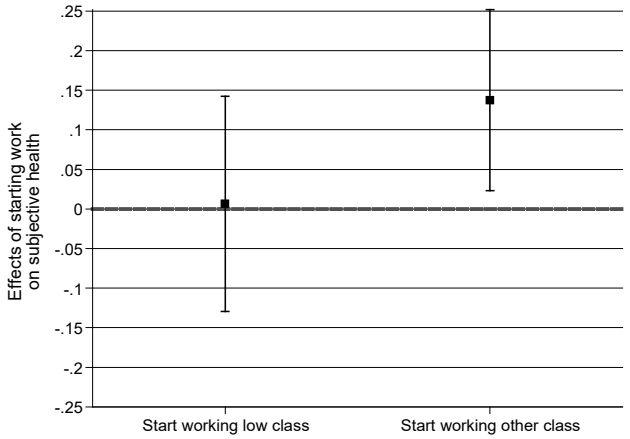


Figure 1. Effects of starting work after age 65 in different classes in Germany and the United Kingdom (90% confidence intervals).
Source: GSOEP 1992, 1994–2011 and BHPS 1992–1998, 2000–2008. Own calculations, unweighted (for complete model, see Table 2).

Discussion and Conclusion

Our analyses show that the effects of starting work after pension age on self-rated health are class-specific only in a particular macro-structural setting. In the United Kingdom, we find positive effects only for the middle/higher classes, while there is no effect for the low classes. In Germany, in contrast, both starting to work in a middle/higher class job *and* in a low class

job are related to increases in self-rated health. The absence of positive health effects for taking up work in a lower class in the United Kingdom might indicate that these British respondents more often take up work for financial reasons—this would be in line with the findings of Scherger and colleagues (2012) who show that older Britons more often work after pension age because of financial reasons. Additionally, the presence of positive health effects of low class jobs in Germany might be a result of the—by tendency—more privileged situation of these workers with regard to their decision to take up work. As seen descriptively, Germans with high or middle education more often start to work in low-class jobs after retirement than their British counterparts. This possibly more frequent downward mobility among German working pensioners would then imply that well-educated people from middle or higher occupational classes who would like to work for predominantly nonfinancial reasons relatively often do so in low-class jobs (for indications of this for the German context, see Lux, 2016; Scherger et al., 2012, p. 51; Schmitz & Zink, 2017). There are two reasons why these jobs may even be attractive and experienced positively. First, they allow for low working hours, and second, pensioners may have difficulties in finding a job which matches their qualification in the less flexible and more ageist German **(← p. 269)** labor market (for corresponding indications, see Lux, 2016). Finally, and somewhat speculatively, the category of "lower classes" may be composed differently in the United Kingdom and in Germany, with more jobs with unfavorable conditions within these classes existing in the United Kingdom—which at least generally chimes with arguments regarding lower employment regulation and more unequal wages in the United Kingdom.

In sum, there is no indication of any negative health effects of taking up work again after pension age. Rather, working again tends to have positive consequences for self-rated health for most people. Our analyses constitute a novel contribution to the literature on well-being effects of late employment, as they apply a class perspective and fixed effects regressions in a cross-nationally comparative setting. However, our investigation can only be a first step to approach the question of health effects of postretirement work, and they suffer from (at least) three limitations. First, the group of people we have observed (as well as those working after pension age in general) might be selective because we only include those who restart employment after pension age. This focus on a particular subgroup of workers post-pension age is a limitation of this study, yet it is this setup which allows us to apply methods that estimate causal effects in a rigorous way. Although our additional analyses suggest that our subgroup of workers post-pension age is not selective to a relevant degree with regard to education and self-rated health, further research needs to also look at other groups of working pensioners with appropriate methods and better data.

The second limitation of our analyses is that we cannot completely rule out that the effects we find of working on self-rated health are in part compounded by effects of (improved) health on working. Further research will have to make more attempts to disentangle these two causal paths which are both plausible, and will require more refined data. This also includes identical measures of subjective health for different countries which ideally refer to current health, and which were not available in the data we analyzed.

Table 2. Influence of Starting Work After Pension Age on Subjective Health in Germany and the United Kingdom (Country-Specific Fixed Effects Models)

	Germany		United Kingdom	
Employment status (ref.: not working)				
Starting work in low class	0.10*	(0.03)	0.01	(0.95)
Starting work in other class	0.08	(0.17)	0.14*	(0.05)
Change of marital status (ref.: married)				
Not married (divorced/widowed)	0.01	(0.74)	-0.03	(0.54)
Age (ref.: 65)				
66	-0.02	(0.35)	-0.03	(0.17)
67	-0.04	(0.19)	-0.08**	(0.00)
68	-0.09+	(0.05)	-0.08**	(0.00)
69	-0.11+	(0.07)	-0.12**	(0.00)
70	-0.13+	(0.09)	-0.11**	(0.00)
71	-0.16+	(0.08)	-0.15**	(0.00)
72	-0.21*	(0.05)	-0.19**	(0.00)
73	-0.24*	(0.04)	-0.25**	(0.00)
74	-0.28*	(0.04)	-0.30**	(0.00)
75	-0.31*	(0.04)	-0.33**	(0.00)
Year (ref: 2007 and 2008) [a]				
1992	0.23	(0.32)	0.01	(0.73)
1993	–		-0.02	(0.45)
1994	0.13	(0.53)	-0.06+	(0.06)
1995	0.15	(0.42)	-0.03	(0.26)
1996	0.13	(0.46)	-0.02	(0.55)
1997	0.11	(0.48)	-0.07*	(0.03)
1998	0.12	(0.39)	-0.13**	(0.00)
1999	0.10	(0.44)	–	
2000	0.09	(0.40)	-0.17**	(0.00)
2001	0.10	(0.29)	-0.07**	(0.01)
2002	0.05	(0.57)	-0.07**	(0.01)
2003	0.08	(0.25)	-0.08**	(0.00)
2004	0.02	(0.73)	-0.02	(0.39)
2005	0.00	(0.94)	-0.03	(0.12)
2006	-0.01	(0.77)	-0.03	(0.17)
2009	0.00	(0.94)	–	
2010	-0.02	(0.67)	–	
2011	-0.03	(0.60)	–	
Constant	2.96**	(0.00)	3.73**	(0.00)
Observations	36,836		19,190	
Respondents	6,431		3,622	
Within-R^2	0.04		0.02	

Note. German Socio-Economic Panel 1992, 1994–2011 and British Household Panel Survey 1992–1998, 2000–2008. Own calculations, unweighted.

Dependent variable: subjective health; range: 1–5; higher values indicate better subjective health.

[a] We simultaneously use year 2007 and year 2008 as the reference category. This allows us to include age and period in the fixed effects model (see subsection on Estimation Strategy).

+p < 0.10, *p < 0.05, **p < 0.01. p-values in parentheses.

A larger database would, third, also allow for a more differentiated view of different groups of people working after pension age, for example, by detailed class categories (including a separate view on the self-employed) or class-related mobility, by gender, detailed working conditions, hours worked, financial situation, or by the voluntariness of the employment and the prior desire to work. These and further factors will add substantially to an explanation of differential health effects of work after pension age, and also allow for a direct test of our somewhat speculative interpretations of the country and class differences. This includes the

possibility that different mechanisms cancel each other out. For example, positive health effects of the moderate physical activity connected to some jobs may offset unfavorable effects of limited psychological rewards or scope of action.

Concluding, our result of no or small positive effects of working on (self-rated) health does not offer sufficient grounds for generalized optimistic conclusions with regard to prolonged working lives, as it only applies to the recent and current situation in Germany and the United Kingdom, and should not be generalized to every kind of worker or employment. Instead, it is plausible that the outcomes will differ according to personal circumstances as well as historical and institutional background. With declining public pensions **(← p. 270)** and increasing old age inequality in many countries (including Germany), more people of pension age will have less scope for action with regard to employment decisions, will work although they would rather not and will have to accept unfavorable working conditions—with the potential consequence of adverse health effects. In this sense, our results can also be seen as indirect proof of the (until now) protective function of current or recent pension regulations which provide a financial and moral basis that allows older adults to engage in late employment in an autonomous and beneficial way. Finally, as shown by Halleröd (2015) for Sweden, working past pension age might itself be a driver of rising inequalities between those who are able to work longer and potentially compensate for low pension incomes, and those who cannot.

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Appendix Table 1. Comparison of People Who Continue Working After Pension Age Without Interruption With Those Who Interrupt Their Employment

	Germany		United Kingdom	
	Continuing to Work Without Interruption[a]	Stopping and Restarting to Work[b]	Continuing to Work Without Interruption[a]	Stopping and Restarting to Work[b]
Share among those with work after age 65 (row percentages)	49.7	50.3	65.6	34.8
Self-rated health at age 66 (mean) [c]	3.37	3.20	4.12	4.05
Educational qualification (column percentages) [d]				
Low (CASMIN 1–3)	55.1	67.0	52.3	55.3
Middle (CASMIN 4–7)	16.9	17.0	18.6	17.0
High (CASMIN 8–9)	28.1	16.0	29.1	27.7
Respondents	93	94	88	47

Note. German Socio-Economic Panel 1992, 1994–2011 and British Household Panel Survey 1992–1998, 2000–2008. Own calculations, unweighted. Balanced panel: all respondents with interview in every year from age 65 to 75.

[a]Defined as having worked at age 65 and then continuing to work.

[b]Defined as not having worked at age 65 and then starting to work again at a later age, or as having worked at age 65, stopped working at age 66 and restarting to work at a later age.

[c]Higher values indicate better health (range: 1–5).

[d]The number of respondents with valid information on education is somewhat lower than the number of respondents in the rest of the sample. **(← p. 273)**