Eur J Ageing (2015) 12:17–28
DOI 10.1007/s10433-014-0326-8

ORIGINAL INVESTIGATION

# "I want to break free". The role of working conditions on retirement expectations and decisions

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Published online: 25 December 2014


**Abstract** We investigate the role of working conditions on the desire to retire as soon as possible and on the probability of transition from employment to either full or partial retirement, using different measures of work quality. We find that low work quality strongly correlates with the desire to retire as soon as possible of "young-old" workers. This might be explained by the deterioration of employer-employee match with age due to reduced incentives for firms to invest in training and work practises that enhance workability of their senior workers. When we move from intentions to decisions, the role of work quality is less clear-cut and it mainly plays a role in the transitions from employment to full retirement.

**Keywords** Work quality · Intended early retirement · Retirement · SHARE

## Introduction

In most European countries, the population has been ageing rapidly for several decades. This major change in the demographic structure has placed a great deal of pressure on welfare systems. In the same period, the labour market participation of individuals aged 50–69 (the so-called 'young-old') has been decreasing. From the 1970s through the end of the last century, early exits from work had become a major challenge to the public pension systems (Gruber and Wise 1999). Governments, employers and trade unions alike saw early retirement as a solution to the economic problems posed by mass unemployment and mass restructuring (Ebbinghaus 2006).

Today, instead, governments and international organisations advocate the postponement of retirement, the increase in labour participation of the young-old and the reform of social security in order to ensure the fiscal sustainability of the pension and welfare systems. But despite many efforts to introduce reforms aimed at inducing individuals to work longer, most workers still leave the labour market before the standard pension eligibility age in most OECD countries (OECD 2011). Delayed retirement reforms are not popular among individuals who are potentially affected by them, despite the evidence that early retirement can have negative effects on mental health (Rohwedder and Willis 2010; Celidoni et al. 2013) and financial well-being in the long run (Angelini et al. 2009).

Understanding the determinants of early retirement is, thus, a major challenge if society wishes to keep older individuals in the labour force. An extensive literature in economics has shown the role played by public pension systems in explaining low participation rates of the young-old in the United States and Europe (Lundsmaine and Mitchell 1999; Gruber and Wise 2001, 2004, 2005). However, financial considerations are not the sole determinants of retirement behaviour. Poor health, chronic illness and disability are also recognised as key reasons for early exit from the labour market by older workers (Krause

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et al. 1997; Blekesaune and Solem 2005), especially when working conditions are not adapted to their changing needs.

Similarly, a strand of literature has identified poor quality of work as another important determinant of early retirement behaviour. Drentea (2002) argues that work is alienating and retirement liberating, because retirees experience less anxiety and distress. Early exits from the labour market are more frequently observed, in fact, among employees who have physically demanding or monotonous/repetitive jobs (Henkens and Tazelaar 1994). Furthermore, poor quality of work is often associated with an increase in the intention to leave and a reduction in performance and motivation, as shown among others by Siegrist et al. (2006) using the data from the first wave of the Survey of Health, Ageing and Retirement (SHARE). Correspondingly, Cottini et al. (2011), using Danish linked employer-employee data, found that workplace hazards substantially increased the probability of voluntary turnover and that workers under adverse workplace conditions were more likely to quit their jobs.

The aim of this study is to investigate the role played by work quality on intended early retirement and on labour market participation at older ages using information from the four waves of the SHARE database for 12 countries (Sweden, Denmark, Germany, the Netherlands, Belgium, France, Switzerland, Austria, Italy, Spain, Poland and Czech Republic). We first focus on individuals who were interviewed in Wave 1 (2004–2005), Wave 2 (2006–2007) and Wave 4 (2010–2011) and currently work, and assess to what extent perceived work quality contributes to their desire to retire as soon as possible. Secondly, we look at individuals who were working when they entered the SHARE sample (in the first or second wave) and follow them through time, to analyse the effect of work quality on transitions out of full employment.

This inquiry contributes to the existing literature by bringing together a number of different features. Firstly, we use several measures of work quality in order to capture different domains, such as effort, reward and stress. Secondly, we analyse the effect of work quality on both intention and decision to retire. Thirdly, we use cross-country data to investigate the differential role played by job quality in countries characterised by different welfare systems (such as the Scandinavian model for Nordic countries and the family-based model still prevailing in Mediterranean countries) and labour market institutions. Last, but not least, we consider two possible transitions out of the labour market: full retirement and partial retirement. Partial retirement is an important policy option to promote the labour market participation of the 'young-old' that is receiving much attention lately, particularly after recent welfare reforms. It is usually defined as a period characterised by the prevalence of a reduction in working hours. This phased transition from career jobs (long-tenure full time jobs) to retirement can occur within the same job or moving to a new part time short-term job, sometimes termed as a bridge job.

## Data and descriptive statistics

The Survey of Health, Ageing and Retirement (SHARE) is a multidisciplinary and cross-national database of micro-data on health, socio-economic status and social and family network. The survey covers 20 countries representing the various regions in Europe, ranging from Scandinavia through Central to Mediterranean countries (including Israel) and Eastern Europe. It includes responses from some 85,000 men and women, aged 50 and older. SHARE currently offers four waves of data, collected from 2004 to 2011, including retrospective life history information (the third wave, called SHARELIFE). In terms of topic coverage, the survey includes socio-demographic characteristics, health, labour market participation and income sources. A distinctive feature of SHARE, that makes this survey extremely appropriate for our research topic, is a set of questions on perceived work quality, along the key dimensions of effort, reward and control. In this paper, we analyse the role played by working conditions on the desire to retire as soon as possible (intention) and on the retirement decisions in 12 European countries (Sweden, Denmark, Germany, the Netherlands, Belgium, France, Switzerland, Austria, Italy, Spain, Czech Republic and Poland) for which data are available in at least three waves.

### Work quality measures

The battery of items on quality of work in the SHARE questionnaire is based on selected probes from the Job Content Questionnaire (the demand-control model) (Karasek et al. 1998) and the effort-reward imbalance model (Siegrist 1996). The control dimension covered by the Job Content Questionnaire is captured by two items ("enough freedom in doing the job" and "opportunity to develop new skills"). For the effort dimension, respondents are asked whether the current job is physically demanding and stressful. The reward domain is tapped through reports as to whether their salary is adequate, they receive support in difficult situations, recognition for their work, or they have job advancement prospects, and job security. Additionally, respondents answer a general question on their overall satisfaction with the current job. All questions about job quality are asked on a 4-point Likert scale ("fully agree" to "fully disagree").

We construct a set of measures of job quality by exploiting the domains covered by the items and

comparing general job satisfaction with more detailed aspects of current job. The first measure of work quality we use is a dummy variable taking value 1 if the respondent strongly agrees with the statement *"All things considered I am satisfied with my job"*. We then derive a set of dummies for different work quality components starting from the more detailed questions in the questionnaire. Finally, we use these detailed work quality variables to construct a small set of work quality indicators. In order to establish which components have more power in explaining the underlying latent variable quality of work, we use exploratory factor analysis for data reduction. This is performed on the original ordinal variables to exploit all the available information. Standard methods (i.e. those based on a matrix of Pearson's correlations) assume that the variables are continuous and follow a multivariate normal distribution. In our case we have ordinal variables, and factor analysis is best performed using a polychoric correlation matrix (Holgado-Tello et al. 2010). We identify two well-defined factors and interpret them as capturing the effort dimension (stressful and physically demanding job) and the reward dimension (freedom, skill development, recognition, support and security) of work quality.

We therefore construct an effort/reward measure of poor job quality. Following Siegrist et al. (2006), we build the effort/reward ratio as the ratio between the items of the effort component and those of the reward component (defined according to our factor analysis), respectively, as shown in the following equation for the respondent $i$:

$$\frac{\text{effort}}{\text{reward}_i} = \frac{(\text{stress}_i + \text{phys\_ demanding}_i)/2}{(\text{freedom}_i + \text{skills}_i + \text{support}_i + \text{recognition}_i + \text{security}_i)/5} \quad (1)$$

As suggested by Siegrist et al. (2006), we then define a dummy variable ("poor job quality") taking value 1 if the respondent's ratio is higher than the top tercile of the country-specific distribution.

In the medical literature, the distinction is sometimes made between good and bad stress. Good stress should be associated with a positive health effect of work; bad stress, instead, with a negative one. For instance, if stress is compensated by high reward, it can actually be associated with high job quality (e.g. a highly paid manager). We construct the measure of good/bad stress by taking the ratio of stress to the same reward measure that appears in the denominator of Eq. (1). We then define a "good stress" dummy that takes value 1 if the respondent has high stress in her job and the stress/reward ratio is lower than the second tercile of the country-specific distribution. In turn, a "bad stress" dummy takes value 1 if the respondent has high stress and the ratio is higher than the top tercile. Thus, the control group is comprised of those who do not experience high stress in their job.

### Intended early retirement

The desire to retire as soon as possible is captured by the answer to the question (addressed to respondents who currently work): *"Thinking about your present job, would you like to retire as early as you can from this job?"*. As dependent variable we use a dummy that takes value 1 if the answer to this question is *"Yes"* and 0 otherwise, to investigate the role played by working conditions on retirement intention.

We focus on employees aged 50 to 59 who were interviewed in waves 1, 2 or 4. In our sample, about 45 % of respondents want to retire as soon as possible (ASAP). In most countries, individuals aged less than 60 have little opportunity to retire and draw a pension: our selection rule is arguably based on exogenous or at least pre-determined characteristics. The sample is composed of about 10,800 individuals: 48 % of them are males, 51 % are aged between 50 and 54 and 88 % live with a partner. The workers included in the sample have on average long tenure (about 15 years) and still have to work 9 to 10 years before reaching official retirement age. The average annual income from employment is about 33,000 Euros and total household income is about 46,600 Euros. The vast majority (almost 70 %) have obtained at least a lower secondary education qualification—that normally corresponds to completion of eight school grade. Looking at the health status of respondents in the sample, 46 % declare to be in good health and only 11 % have a partner in bad health.

As far as job quality is concerned, 43 % male and 47 % female respondents say that they are highly satisfied with their job. This percentage shows high variability among countries: for example, in Poland only 25 % males are satisfied with their job, whereas in Denmark it rises to 60 %. Less than 20 % of workers say that their current job is physically demanding or stressful and the salary is adequate only for 10 % of them (only 2 % in Czech Republic and Poland). A great deal of heterogeneity emerges for the reward domain: males report they are less satisfied with the support and recognition received from

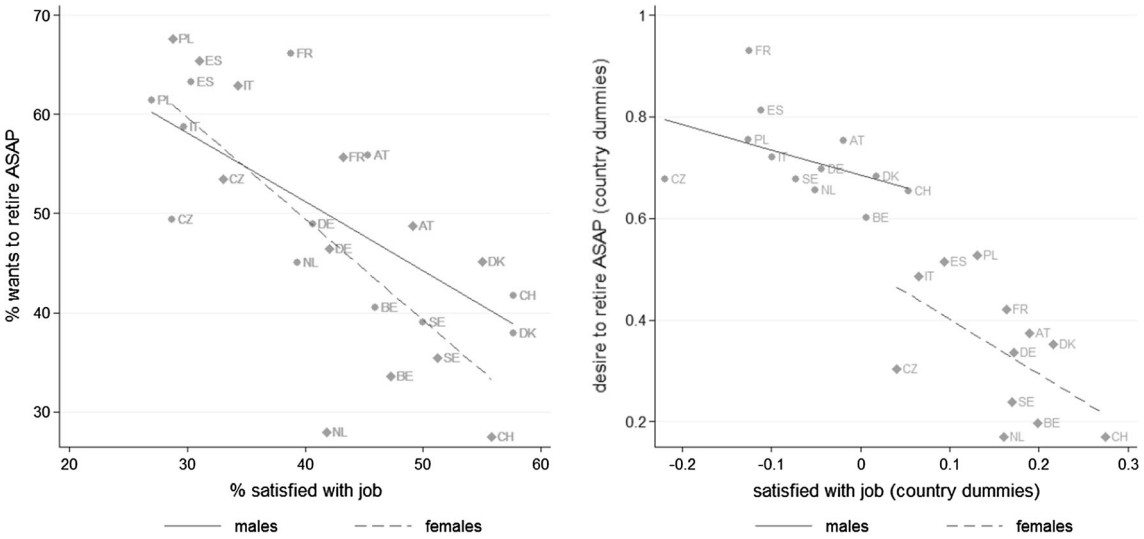


**Fig. 1** Correlation between job satisfaction and desire to retire ASAP (*left panel* raw data; *right panel* net of sampling differences). *Source* SHARE wave 1, 2 and 4

their work compared to females; Southern and Eastern countries show significantly lower percentages of highly satisfied workers than Continental and Northern countries.

In the left panel of Fig. 1, we display the relation between intended early retirement and job quality. It shows a strong negative correlation at the country level between these two variables. In the right panel, we report the remaining country effects after controlling for demographics and job characteristics. The graph shows that the negative correlation remains even after the difference between males and females is taken into account.

## Retirement decision

By exploiting the panel nature of SHARE data, we can move from the intention to retire to the decision to exit the work force and investigate the association between working conditions and transitions from employment to either full or partial retirement. Using all four waves of SHARE, we first select individuals who were full time employees and aged between 50 and 69 in the time span considered and follow them over time. We then build a year-to-year transition panel containing information on employment status, job characteristics, earnings, household income, health and job satisfaction for each year.

In baseline (in year 2004 or 2006) we have 3,737 workers in the sample (52 % are males): these remain in the sample until they transit from employment to partial retirement or from employment to full retirement. The total number of individual-year observations is 14,464. In the period of time in which we follow them (from 2004 to 2011), we observe that 35 % males and 30 % females transit from full employment to full retirement, whereas 15 % males and 14 % females transit from full employment to partial retirement. An individual transits into partial retirement either when she changes from full time to part time job (both within and between jobs) or when she moves from a career job to a bridge job. Following Ruhm (1990) and Cahill et al. (2006), we define a career job as a job that started before age 50 and lasted at least 10 years, and a bridge job as a short-term job that lasts less than 10 years—started at or past age 50, right after a career job. As Brunello and Langella (2013) have shown using SHARE data, bridge jobs are much less common in Mediterranean countries than in Central and Northern Europe.

We know that Europeans retire 2–3 years before the official retirement age, on average (OECD 2011), and this is true also in our sample. By considering the observed transitions from full employment to full retirement for men, actual retirement age is 2–5 years lower than the official one, except in the Czech Republic, Sweden, Switzerland and France. This could be due to poor work quality. In Fig. 2 we display country averages of the effort-reward ratio versus average years of early retirement, defined as the distance between official retirement age (eligibility age for old age pension) and actual retirement age. There is evidence of a positive relation between retirement decision and perceived work quality but not as clear-cut as in the case of intended early retirement. For example, Fig. 2 shows that in both Italy and Belgium, many people retire early but in Italy the average effort/reward ratio is high, while in Belgium it is relatively low.

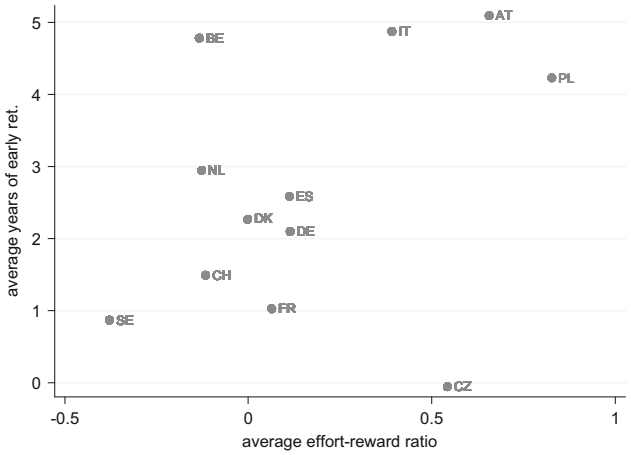


**Fig. 2** Average years of early retirement and effort-reward ratio by country. *Source* SHARE wave 1, 2, 4 and SHARELIFE

## Estimation strategy

In this section, we present the estimation strategies we use to analyse the association of job quality with retirement intention and retirement decision, respectively. We estimate the probability of intended early retirement by a logit model and the probability to transit from employment to full or partial retirement by a multinomial logit model. We exclude from our analysis individuals who transit from employment to other states, such as unemployment and disability. Transitions to unemployment and disability correspond to 0.8 and 0.3 % of the total number of transitions out of full employment, respectively.

### Retirement intention

Let $Y_i^*$ be the latent variable representing the propensity to retire early and $Y_i$ the observed binomial variable defined as follows: $Y_i = \begin{cases} 0, & Y_i^* < 0 \\ 1, & Y_i^* \geq 0 \end{cases}$

The estimated model for intended early retirement is specified as follows:

$$Y_i^* = WQ_i'\gamma + OD_i'\varphi + X_i'\beta + \varepsilon_i \quad (2)$$

where $\varepsilon_i$ follows a logistic distribution.

Standard errors are clustered by country and the model is estimated separately for males and females. The variables of interest are those included in the vector *WQ* (work quality measures). We estimate different models varying the set of work quality variables according to the indicators presented above. We control for other determinants of intended early retirement (*OD*), such as health and institutional characteristics (years to official minimum retirement age). We also control for demographic and household characteristics (*X*), such as age dummies, educational level dummies, marital status, job earnings and tenure, household income, partner's characteristics (employment status, health status and job satisfaction), life expectancy and country dummies.

### Retirement decision

To investigate the role of job quality on decision to retire, we specify the following multinomial logit model of the probability to transit from a career job to either full or partial retirement:

$$\log\left(\frac{\pi_{i,j,t+1}}{\pi_{i,j^*,t+1}}\right) = WQ_{i,t}'\gamma_j + OD_{i,t}'\varphi_j + X_{i,t}'\beta_j \quad (3)$$

with $j^*$ denoting full employment, which is the base outcome. $\pi_{i,j,t+1}$ is the probability that individual *i*, will choose one of the *j* outcomes (full employment, partial or full retirement) at time $t + 1$, while $\pi_{i,j^*,t+1}$ is the probability that the individual will choose the baseline outcome in $t + 1$. Since each individual stays in the sample until she transits to either partial or full retirement, our analysis follows a discrete duration model approach where instead of using the typical baseline hazard function (i.e. a function of the number of periods the individual stays in the sample), we capture duration dependence by conditioning on labour market experience.

The set of controls is almost the same as in the previous model to enhance comparability between intention and decision. It is worth noting that covariates are taken at time *t*, whereas the transition is observed at time $t + 1$. Also in this case we split the sample by gender and include different indicators of work quality. We depart from the previous model specification, including in the *OD* set two binary variables taking value 1 if the respondent has reached minimum retirement age and official retirement age, respectively, 0 otherwise. We also add GDP growth at time *t* as an additional control for macro conditions.

## Results

### Desire to retire as soon as possible

The first two columns of Table 1 ("Extended sample") and the upper panel of Table 2 present the estimated marginal effects of the logit model of the probability to desire to retire as soon as possible for individuals interviewed in waves 1, 2 and 4, aged 50–59 and working at the time of the interview. Results are presented for different specifications and for men and women separately. The first specification (Table 1) uses the full set of job satisfaction variables; the second specification (Table 2, model 2) includes only the overall job satisfaction variable; the third

**Table 1** Logit marginal effects on the probability to desire to retire as soon as possible

| Variables | Extended sample | | Comparable sample | |
|---|---|---|---|---|
| | Males | Females | Males | Females |
| Physically demanding | 0.078*** | 0.139*** | 0.048 | 0.138*** |
| | (0.028) | (0.021) | (0.035) | (0.026) |
| Stress | 0.106*** | 0.096*** | 0.138*** | 0.114*** |
| | (0.021) | (0.015) | (0.027) | (0.024) |
| Freedom | −0.050** | −0.021 | −0.070*** | −0.024 |
| | (0.023) | (0.013) | (0.019) | (0.023) |
| Skills development | −0.027* | −0.104*** | −0.047** | −0.093*** |
| | (0.016) | (0.019) | (0.023) | (0.028) |
| Support | −0.086*** | −0.032 | −0.097*** | −0.054*** |
| | (0.021) | (0.022) | (0.034) | (0.016) |
| Recognition | −0.064*** | −0.094*** | −0.047 | −0.042 |
| | (0.023) | (0.034) | (0.046) | (0.035) |
| Adequate salary | −0.031 | 0.001 | −0.046 | 0.030 |
| | (0.030) | (0.025) | (0.043) | (0.039) |
| Career prospects | −0.006 | −0.024 | 0.064 | −0.034 |
| | (0.039) | (0.018) | (0.056) | (0.036) |
| Job security | −0.001 | −0.021 | 0.020 | 0.001 |
| | (0.013) | (0.021) | (0.028) | (0.031) |
| N. Obs. | 5248 | 5559 | 2161 | 2344 |

Work quality single items. Extended and comparable sample

Clustered (by country) standard errors in parentheses. *, **, *** correspond to 10, 5, 1 % significance level, respectively. Table presents logit marginal effects on the probability to desire to retire as soon as possible. The "extended sample" is composed by all individuals aged 50–59 who were interviewed in waves 1, 2 and 4 and were currently working. The "comparable sample" (the same used in the multinomial logit analysis presented in Table 3) is composed by workers who entered the SHARE sample in the first or second wave, and were interviewed in all SHARE waves. Blue collar-low skilled, agriculture, age 55–59 (or 60–64), upper secondary education and Germany are used as baseline. Complete estimation results (including country dummies) are available upon request

(Table 2, model 3) includes the "poor job quality" dummy, while the fourth (Table 2, model 4) uses the "good stress" and "bad stress" dummies. We report marginal effects of the key variables of interest, such as job quality measures.

Results show that work quality has a significant role on the probability of intended early retirement and this is true for all the measures of job quality that we use. For both men and women, respondents reporting poor job quality or experiencing bad stress are more likely to express the desire to retire as soon as possible, while good stress reduces the probability of intended early retirement only for men. More precisely, experiencing poor job quality increases the desire to retire as soon as possible by about 19 % for both men and women; bad stress increases this probability by 13 % for men and 16 % for women, while good stress reduces the probability of intended early retirement of men by about 5 percentage points. In the same way, high job satisfaction has a strong negative correlation with the intention to retire: for both men and women reporting to be highly satisfied with their job, the probability of intended early retirement is reduced by about 19 percentage points.

When looking at the single components of job quality, having a physically demanding or stressful job (both in the effort domain) has a large effect in increasing the probability of early retirement. On the other hand, receiving recognition (reward domain) is strongly associated with a reduction in the probability of desired retirement. While the impact of summary job quality measures is similar between men and women, the analysis of the single components highlights the fact that what matters for men and women is different. More precisely, for men it is more important to have freedom and receive support (they reduce the probability of intended early retirement by 5 and 9 percentage points, respectively), while women are more sensitive to physically demanding jobs (14 % increase in the probability of intended retirement for women and 8 % for men) and they consider it more important to have a job that lets them develop their skills (+10 %) and have recognition for their work (+9.5 %).

The results show some variability in intended early retirement across countries. Among males, Spanish and French workers are more likely to desire to retire as soon as possible compared to the control group (German workers), while being Belgian reduces the probability of desiring

**Table 2** Logit marginal effects on the probability to desire to retire as soon as possible

| Variables | High job satisfaction (Model 2) | | Poor job quality (Model 3) | | Good and bad stress (Model 4) | |
|---|---|---|---|---|---|---|
| | Males | Females | Males | Females | Males | Females |
| *Extended sample* | | | | | | |
| High job satisfaction | −0.194*** | −0.198*** | | | | |
| | (0.018) | (0.017) | | | | |
| Poor job quality | | | 0.187*** | 0.194*** | | |
| | | | (0.018) | (0.016) | | |
| Good stress | | | | | −0.045*** | −0.033 |
| | | | | | (0.012) | (0.028) |
| Bad stress | | | | | 0.135*** | 0.164*** |
| | | | | | (0.012) | (0.014) |
| N.Obs. | 5248 | 5559 | 5248 | 5559 | 5248 | 5559 |
| *Comparable sample* | | | | | | |
| High job satisfaction | −0.215*** | −0.213*** | | | | |
| | (0.019) | (0.017) | | | | |
| Poor job quality | | | 0.214*** | 0.197*** | | |
| | | | (0.023) | (0.027) | | |
| Good stress | | | | | −0.025 | −0.042 |
| | | | | | (0.043) | (0.054) |
| Bad stress | | | | | 0.135*** | 0.167*** |
| | | | | | (0.018) | (0.029) |
| N. Obs. | 2161 | 2344 | 2161 | 2344 | 2161 | 2344 |

Work quality measures. Extended and comparable sample

Clustered (by country) standard errors in parentheses. *, **, *** correspond to 10, 5, 1 % significance level, respectively. Table presents logit marginal effects on the probability to desire to retire as soon as possible. The "extended sample" is composed by all individuals aged 50–59 who were interviewed in waves 1, 2 and 4 and were currently working. The "comparable sample" (the same used in the multinomial logit analysis presented in Table 3) is composed by workers who entered the SHARE sample in the first or second wave, and were interviewed in all SHARE waves. Blue collar-low skilled, agriculture, age 55–59 (or 60–64), upper secondary education and Germany are used as baseline. Complete estimation results (including country dummies) are available upon request

early retirement of about 10 %. In particular, women living in Italy, Spain and Poland are keener to retire early, while in continental and northern Europe, women are less likely to desire to retire as soon as possible. Even when interacting country dummies and job quality indicators, women from southern Europe appear to be more sensitive to job quality than others. Among the other determinants of early retirement, institutional characteristics, such as official retirement age, are important only for women. Female workers who have many years to wait before they reach the official retirement age have a lower probability of intended early retirement (0.8 % decrease for each additional year).

The sample used to estimate the effect of job quality on the desire to retire as soon as possible is different from the one used for the transition analysis presented in the previous section; therefore, the results are not directly comparable. However, when we re-run the analysis on the same sample (see last two columns of Table 1 and lower panel of Table 2) we obtain results, both in terms of direction and magnitude of the effects, which are qualitatively the same, even though we lose in precision because of the reduced sample size. A formal Chow test fails to reject the null of (pair-wise) structural stability.

## Transition to partial and full retirement

After analysing the intention to retire, we look at the transition out of the labour market, either to partial or full retirement for individuals who entered the SHARE sample in the first or in the second wave, using a year-to-year transition panel. Table 3 presents the multinomial logit relative risk ratios for the relevant variables, while Table 4 presents marginal changes in probability for the two states (partial retirement and full retirement) associated with changes in job quality measures variables and the country dummies. We run separate analyses for men and women and for different quality measures. Model (1) specification includes the 'high job satisfaction' dummy, model (2) uses the 'poor job quality' indicator, while model (3) includes the 'good stress' and the 'bad stress' dummies.

Our estimates show that work quality plays a very different role when we focus on actions rather than on

**Table 3** Multinomial logit estimates of the probability to transit to partial or full retirement

| Variables | Model (1) Males | Females | Model (2) Males | Females | Model (3) Males | Females |
|---|---|---|---|---|---|---|
| Partial retirement | | | | | | |
| High job satisfaction | 1.031 | 1.471** | | | | |
| | (0.146) | (0.221) | | | | |
| Poor job quality | | | 0.958 | 0.894 | | |
| | | | (0.159) | (0.155) | | |
| Good stress | | | | | 0.668* | 0.936 |
| | | | | | (0.156) | (0.204) |
| Bad stress | | | | | 1.014 | 0.830 |
| | | | | | (0.154) | (0.140) |
| Reach minimum retirement age | 0.667 | 0.713 | 0.666 | 0.720 | 0.668 | 0.714 |
| | (0.169) | (0.189) | (0.169) | (0.190) | (0.170) | (0.189) |
| Reach maximum retirement age | 0.811 | 1.164 | 0.783 | 1.174 | 0.811 | 1.173 |
| | (0.361) | (0.459) | (0.351) | (0.462) | (0.363) | (0.461) |
| Austria | 0.321 | 1.02e−06 | 0.323 | 3.57e−07 | 0.303 | 3.69e−07 |
| | (0.336) | (0.000537) | (0.338) | (0.00031) | (0.317) | (0.000326) |
| Sweden | 0.653 | 0.771 | 0.650 | 0.757 | 0.591 | 0.759 |
| | (0.234) | (0.292) | (0.234) | (0.286) | (0.215) | (0.289) |
| Spain | 0.823 | 1.167 | 0.822 | 1.132 | 0.724 | 1.114** |
| | (0.297) | (0.486) | (0.296) | (0.470) | (0.265) | (0.467) |
| Italy | 1.338 | 1.783 | 1.324 | 1.579 | 1.208 | 1.578** |
| | (0.551) | (0.939) | (0.544) | (0.828) | (0.499) | (0.830) |
| Denmark | 1.707 | 2.940** | 1.708 | 2.839** | 1.613 | 2.832 |
| | (0.775) | (1.362) | (0.775) | (1.315) | (0.735) | (1.314) |
| Switzerland | 1.889* | 2.111** | 1.886* | 2.166** | 1.685 | 2.154 |
| | (0.655) | (0.774) | (0.653) | (0.790) | (0.592) | (0.793) |
| Belgium | 0.993 | 1.184 | 0.993 | 1.185 | 0.905 | 1.181* |
| | (0.323) | (0.426) | (0.323) | (0.425) | (0.298) | (0.426) |
| France | 0.527 | 0.570 | 0.528 | 0.584 | 0.507* | 0.575 |
| | (0.206) | (0.241) | (0.206) | (0.247) | (0.199) | (0.244) |
| The Netherlands | 2.529*** | 2.029* | 2.532*** | 2.015* | 2.319** | 1.997 |
| | (0.866) | (0.813) | (0.867) | (0.805) | (0.801) | (0.801) |
| Czech Republic | 1.833 | 1.185 | 1.828 | 1.163 | 1.705 | 1.170 |
| | (0.769) | (0.577) | (0.767) | (0.565) | (0.718) | (0.569) |
| Poland | 0.425* | 0.611 | 0.423* | 0.622 | 0.394* | 0.614 |
| | (0.215) | (0.327) | (0.214) | (0.333) | (0.200) | (0.329) |
| Full retirement | | | | | | |
| High job satisfaction | 0.671*** | 0.991 | | | | |
| | (0.070) | (0.113) | | | | |
| Poor job quality | | | 1.280** | 1.182 | | |
| | | | (0.145) | (0.148) | | |
| Good stress | | | | | 0.845 | 0.887** |
| | | | | | (0.131) | (0.151) |
| Bad stress | | | | | 1.181 | 1.180*** |
| | | | | | (0.128) | (0.146) |
| Reach minimum retirement age | 5.190*** | 5.829*** | 5.120*** | 5.838*** | 5.129*** | 5.871*** |
| | (0.733) | (0.990) | (0.723) | (0.991) | (0.725) | (0.996) |
| Reach maximum retirement age | 4.178*** | 2.954*** | 4.179*** | 2.998*** | 4.163*** | 3.012*** |
| | (0.621) | (0.464) | (0.621) | (0.472) | (0.618) | (0.474) |

**Table 3** continued

| Variables | Model (1) Males | Females | Model (2) Males | Females | Model (3) Males | Females |
|---|---|---|---|---|---|---|
| Austria | 2.042** | 2.355** | 1.953** | 2.361** | 1.916** | 2.277*** |
| | (0.604) | (0.983) | (0.577) | (0.984) | (0.567) | (0.953) |
| Sweden | 0.288*** | 0.228*** | 0.307*** | 0.227*** | 0.276*** | 0.218*** |
| | (0.0691) | (0.060) | (0.074) | (0.0599) | (0.067) | (0.058) |
| Spain | 0.575** | 0.361*** | 0.633** | 0.367*** | 0.575** | 0.351*** |
| | (0.131) | (0.114) | (0.144) | (0.116) | (0.133) | (0.113) |
| Italy | 0.402*** | 0.276*** | 0.477*** | 0.282*** | 0.433*** | 0.272** |
| | (0.116) | (0.132) | (0.137) | (0.135) | (0.125) | (0.130) |
| Denmark | 1.344 | 0.366*** | 1.440 | 0.358*** | 1.368 | 0.354*** |
| | (0.355) | (0.114) | (0.380) | (0.112) | (0.363) | (0.111) |
| Switzerland | 1.295 | 0.579** | 1.369 | 0.580** | 1.276 | 0.560*** |
| | (0.305) | (0.155) | (0.322) | (0.155) | (0.305) | (0.151) |
| Belgium | 0.510*** | 0.423*** | 0.507*** | 0.423*** | 0.474*** | 0.410*** |
| | (0.115) | (0.107) | (0.114) | (0.107) | (0.108) | (0.105) |
| France | 0.355*** | 0.175*** | 0.356*** | 0.175*** | 0.331*** | 0.167*** |
| | (0.095) | (0.058) | (0.095) | (0.058) | (0.089) | (0.056) |
| The Netherlands | 2.015*** | 0.744 | 2.066*** | 0.737 | 1.950*** | 0.725 |
| | (0.433) | (0.203) | (0.444) | (0.201) | (0.424) | (0.199) |
| Czech Republic | 0.613* | 1.279 | 0.682 | 1.286 | 0.648 | 1.267 |
| | (0.171) | (0.403) | (0.189) | (0.405) | (0.180) | (0.401) |
| Poland | 0.447** | 0.843 | 0.474** | 0.863 | 0.444** | 0.830 |
| | (0.166) | (0.322) | (0.177) | (0.330) | (0.166) | (0.320) |
| N. Obs. | 7524 | 6940 | 7524 | 6940 | 7524 | 6940 |

Relative risk ratios. Relevant variables

Standard errors in parentheses. *, **, *** correspond to 10, 5, 1 % significance level, respectively. Table presents multinomial logit Relative Risk Ratio of the probability to transit to partial or full retirement. Blue collar-low skilled, agriculture, age cohort 1950–1954, upper secondary education and Germany are used as baseline

intentions. In general, high job satisfaction is associated with higher probability to transit to partial retirement for women (+1 %) and lower probability to transit into full retirement for men (−2 %). Poor job quality, instead, increases the probability of full retirement for male workers by about 1.5 percentage points. Good and bad stress have, in general, no role on transitions out of the labour market, except for marginally reducing the probability of partial retirement of male workers (−1 %). When looking at the single components of job quality no clear pattern is detected, unlike what we found for intended early retirement. The results show a certain degree of variability by country for both men and women, in particular for the transitions to full retirement. This is mainly due to different characteristics of pension systems and diffusion of forms of partial retirement, such as bridge jobs. In order to capture the differential effect of job quality by country, we interact the job quality measures with the country dummies. Results show that, as we saw for the intended early retirement, for women living in the Southern countries (and to a certain extent also in Eastern countries) job quality has stronger effects for transitions to partial or full retirement (e.g. in Spain being highly satisfied increases the probability of both partial and full retirement by 5 %). We find no differential effect of job quality by years before or after minimum retirement age (i.e. when combining the job quality measures and the number of years to/from minimum retirement age, the interaction term is not significantly different from 0) and this should rule out the possibility that the estimate of the job quality effect is affected because some people are too young to retire.

In the analysis of actual transitions, the sample includes individuals who work past the earliest retirement age who are otherwise excluded in our analysis of the intention to retire. This difference in the sample composition can jeopardise the comparability of the estimated effects of the work quality measures on retirement intentions and behaviour. More specifically, the estimated effects of work quality on retirement decisions might be partly shaped by

**Table 4** Marginal changes in probability to transit to partial or full retirement

| Variables | Model (1) | | Model (2) | | Model (3) | |
|---|---|---|---|---|---|---|
| | Males | Females | Males | Females | Males | Females |
| Partial retirement | | | | | | |
| *Baseline probability* | *0.036* | *0.033* | *0.036* | *0.033* | *0.036* | *0.033* |
| High job satisfaction | 0.002 | 0.011 | | | | |
| Poor job quality | | | −0.002 | −0.003 | | |
| Good stress | | | | | −0.010 | −0.002 |
| Bad stress | | | | | 0.000 | −0.005 |
| Reach minimum retirement age | −0.016 | −0.012 | −0.016 | −0.012 | −0.016 | −0.012 |
| Reach maximum retirement age | −0.010 | 0.002 | −0.010 | 0.002 | −0.010 | 0.002 |
| Austria | −0.023 | −0.034 | −0.023 | −0.034 | −0.024 | −0.034 |
| Sweden | −0.009 | −0.005 | −0.009 | −0.006 | −0.012 | −0.005 |
| Spain | 0.012 | 0.023 | 0.011 | 0.017 | 0.008 | 0.017 |
| Italy | 0.018 | 0.047 | 0.018 | 0.045 | 0.015 | 0.045 |
| Denmark | 0.001 | 0.006 | 0.001 | 0.006 | −0.001 | 0.006 |
| Switzerland | −0.014 | −0.012 | −0.014 | −0.011 | −0.015 | −0.012 |
| Belgium | 0.033 | 0.026 | 0.033 | 0.026 | 0.029 | 0.025 |
| France | 0.022 | 0.027 | 0.021 | 0.028 | 0.017 | 0.028 |
| The Netherlands | −0.004 | 0.006 | −0.005 | 0.005 | −0.008 | 0.005 |
| Czech Republic | 0.024 | 0.005 | 0.023 | 0.004 | 0.020 | 0.004 |
| Poland | −0.018 | −0.012 | −0.018 | −0.011 | −0.020 | −0.011 |
| Full retirement | | | | | | |
| *Baseline probability* | *0.086* | *0.072* | *0.086* | *0.072* | *0.086* | *0.072* |
| High job satisfaction | −0.023 | −0.001 | | | | |
| Poor job quality | | | 0.015 | 0.009 | | |
| Good stress | | | | | −0.009 | −0.006 |
| Bad stress | | | | | 0.010 | 0.009 |
| Reach minimum retirement age | 0.118 | 0.095 | 0.117 | 0.096 | 0.117 | 0.096 |
| Reach maximum retirement age | 0.120 | 0.066 | 0.120 | 0.067 | 0.120 | 0.067 |
| Austria | 0.052 | 0.055 | 0.049 | 0.055 | 0.047 | 0.052 |
| Sweden | −0.056 | −0.057 | −0.054 | −0.057 | −0.058 | −0.058 |
| Spain | −0.044 | −0.046 | −0.024 | −0.045 | −0.041 | −0.046 |
| Italy | 0.017 | −0.041 | −0.037 | −0.042 | 0.018 | −0.042 |
| Denmark | −0.035 | −0.037 | −0.035 | −0.037 | −0.038 | −0.038 |
| Switzerland | −0.047 | −0.057 | −0.047 | −0.057 | −0.049 | −0.057 |
| Belgium | −0.043 | −0.015 | 0.045 | −0.015 | 0.041 | −0.016 |
| France | 0.014 | −0.025 | 0.018 | −0.025 | 0.013 | −0.026 |
| The Netherlands | −0.029 | −0.040 | −0.024 | −0.039 | −0.028 | −0.040 |
| Czech Republic | −0.027 | 0.012 | −0.022 | 0.013 | −0.024 | 0.012 |
| Poland | −0.038 | −0.007 | −0.035 | −0.006 | −0.038 | −0.008 |

Relevant variables

The baseline probability (in italic) is the predicted probability to transit from full employment to either partial or full retirement

correlations between the relevant variables for people who work past the earliest possible retirement age. To address this concern, we estimate a logit model where the outcome variable is the probability of retiring at the earliest possible age (i.e. statutory minimum retirement age), dropping from the sample individuals older than the statutory retirement age. The results obtained are qualitatively the same as the ones from the multinomial logit estimation.

Given the age range considered and the heterogeneity in labour market participation rates in the group of countries analysed, sample selection bias might affect our results. In fact, we might be excluding from our sample individuals

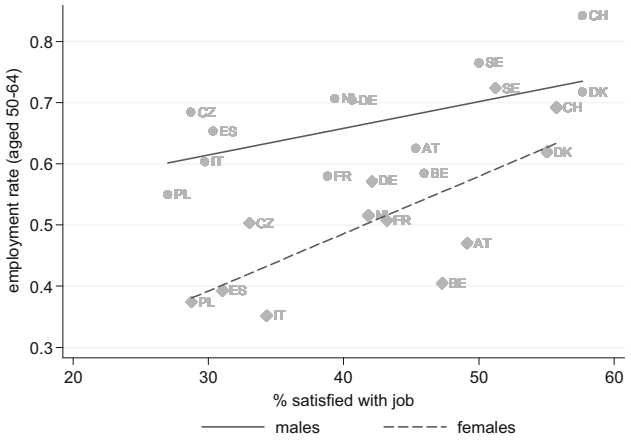


**Fig. 3** Correlation between employment rates and high job satisfaction by country and gender. *Source* SHARE wave 1, 2 and 4 and Eurostat

with very poor job quality that already exited the labour market either through retirement or through other pathways, such as unemployment or disability. To investigate this issue, we first look at the correlation between employment rates (by age and gender) and the percentage of individuals satisfied with their jobs by country and gender (see Fig. 3).

The graph shows indeed that in countries where the employment rate is higher, there is a higher percentage of individuals highly satisfied with their jobs. And this correlation is particularly strong for women. If we assume that all individuals have the same sensitivity to job quality, we can argue that the sample selection in our analysis leads to an underestimation of the effect of job quality on the probability to transit out of full employment. However, if this assumption is not true, the sign of the bias is indeterminate. We also check how many individuals in our baseline sample are unemployed or disabled and their distribution by country, since in some countries one can exit the labour market before retirement through disability or unemployment. In our sample, we observe that 8 % of individuals are either unemployed or disabled. They are mainly concentrated in the Netherlands, Sweden, France, Germany and Denmark. To test if our results are affected by this heterogeneity in pathways to retirement, we re-run our estimations excluding each of these countries in turn. The results are qualitatively the same, even if we lose precision due to reduced sample size.

Another type of bias that might affect our results is justificatory reporting bias. In the literature, there is a concern about the use of self-reported measures, in particular for health, to explain retirement decisions (Bound 1991, Dwyer and Mitchell 1999, Disney et al. 2006). The general concern is that the responses to subjective judgements may not be independent of the labour market outcome they are used to explain (Bound 1991) and this can lead to an over estimation of their effect on the outcome of interest. In our analysis, the effect of self-reported job quality on retirement behaviour may be exaggerated by individuals reporting worse job quality conditions to justify their exit from the labour market. Unfortunately, we cannot implement an estimation strategy that can deal with justification bias. However, since the work quality variables used are measured in the period prior to the exit from the labour market, justificatory reporting bias should be minimal.

## Conclusion

In this paper, we analyse the role played by work quality on both the desire to retire as soon as possible and transitions out of the labour market, using different measures of job quality. We find a strong and consistent (across different measures) association of poor quality of work with intended early retirement and (to a lower extent) with transitions to either partial or full retirement. The different strength of the role played by perceived work quality on intention and actual retirement is confirmed when we make the estimation samples as comparable as possible, and is suggestive of the possibility that actual transitions into retirement may be driven not only by intentions, but also by changes in circumstances and opportunities. One should keep in mind that some transitions may be induced by firms—something we cannot control for in our estimation—and others by a negative health shock to a parent or parent in law.

The importance of work quality once we control for health and pension system characteristics relates to the issue of workability for senior workers. To the extent that poor job quality is a factor influencing the willingness to work by the "young-old", raising the perceived work quality of this age group becomes a key policy issue.

It is possible that generous retirement schemes in place until recently in many European countries, together with seniority-related pay schedules and rigidities in work arrangements, contributed to deteriorate the quality of employer-employee match by reducing the incentives for employers to train their mature workforce (Hairault et al. 2010). The need to retain workers until an older age may induce firms to increase training of older workers. Other possible solutions may have to do with changing work arrangements, allowing for flexible working hours and partial retirement, or making bridge jobs more easily available (Brunello and Langella 2013).

In conclusion, our empirical results and their policy implications call for more research on how workers' training and work arrangements can effectively enhance

job satisfaction of older workers and their participation in the labour market.

**Acknowledgments** We are grateful to the Editors and two anonymous referees for helpful comments and suggestions. This paper uses data from SHARE wave 4 release 1.1.1, as of March 28th 2013 or SHARE wave 1 and 2 release 2.6.0, as of November 29th 2013 or SHARELIFE release 1, as of November 24th 2010. The SHARE data collection has been primarily funded by the European Commission through the 5th Framework Programme (project QLK6-CT-2001-00360 in the thematic programme Quality of Life), through the 6th Framework Programme (Projects SHARE-I3, RII-CT-2006-062193, COMPARE, CIT5- CT-2005-028857, and SHARELIFE, CIT4-CT-2006-028812) and through the 7th Framework Programme (SHARE-PREP, N° 211909, SHARE-LEAP, N° 227822 and SHARE M4, N° 261982). Additional funding from the US. National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, R21 AG025169, Y1-AG-4553-01, IAG BSR06-11 and OGHA 04-064) and the German Ministry of Education and Research as well as from various national sources is gratefully acknowledged (see www.share-project.org for a full list of funding institutions).

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