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Job quality and pathways beyond the labour market in Europe

Catherine Pollak[*], Nicolas Sirven[†]

Abstract:

This article analyses the effect of job quality on pathways to productive activities of older workers in Europe. Using comparative panel data from SHARE, we analyse the medium term effects of working conditions of workers aged 50-64 on three participation outcomes (staying in employment, participating in social activities, and providing informal care) with a trivariate probit model. Several aspects of job quality appear to play a role for participation in society as a whole, including participation in social activities. Care-giving on the other hand appears independent from the considered job quality indicators, but very gender specific. However, trade-offs between full time work and care activities appear in some cases. Therefore, better working conditions and the opportunity for work time arrangements should be developed if one aims to foster participation of older workers in the society.

Key words: job quality, ageing, early retirement, social participation, informal care.

JEL: J22, J14, C35

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1. Introduction

Since the early 2000's, a major target of the European Union has been the fostering of labour market participation of older workers. More recently however, the World Health Organisation which had adopted this "Active Ageing" leitmotiv has shifted towards the concept of "Healthy Ageing". This renewed framework has received a growing attention in the perspective of favouring a sustainable growth in Europe (Siddall et al., 2007; Agren and Berensson, 2006). One main focus of this process is to increase opportunities for older individuals to take part in society. Indeed, social participation has for long been recognised to have positive individual and collective spill-over effects (Woolcock, 2001). In addition, participation in the society appears today as part of the response to the emerging challenges of demographic ageing: the risk of unbalanced pension systems, but also increasing health expenditures, care needs for frail elderly, or social exclusion in late life. In this perspective, the scope of participation in the society is extended beyond participation on the labour market alone, and aims to include different types of meaningful activities. Meaningful and productive activities can be understood as including market activities (paid work), but also non market activities, such as volunteering, and informal care activities (Sirven and Godefroy, 2009).

Each of these productive activities (market and non-market) can have many positive outcomes for society. With the increase of frailty situations within the oldest generation, there is a growing demand for formal and informal care. "Seniors", especially women, are the main informal care-givers to old dependent parents, and this unpaid work significantly reduces the costs of ageing (De Vaus et al., 2003). Social activities, such as voluntary work, also create directly measurable well-being (Archambault, 1996). More generally, collective organizations create trust and information (Putnam et al., 1993; Fukuyama, 1995) and participate in creating the institutional conditions of governance and economic performance (North, 1990).

Improved health of individuals is another positive outcome of participation in the society. Links between participation in society (work and social activities) and health of older individuals are well documented. Better health is associated with both labour market participation and social participation, but the causal pathways remain complex to identify (on health and labour market see Currie and Madrian, 1999; and on social participation Lindström, 2004; Ziersch and Baum, 2004). Evidence suggests that the stylised "healthy worker effect" (i.e. the usual observation that the average health level is better among the employed population then among the unemployed and inactive population) is partly due to adverse effects of inactivity and unemployment on health (Linn et al., 1985; Mathers et al.,

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1998). Reversely, consequences of work on health depend on the quality of jobs: there has been large empirical evidence of the negative effects of straining and imbalanced work-related psychosocial conditions on mental and physical health (Karasek and Theorell, 1990; Siegrist, 1996). Participation in social activities has also been found to have positive outcomes on self-reported health (Sirven and Debrand, 2008). On the other hand, the positive correlation between health and productive activities could be explained by selection effects. Indeed, health deterioration is a factor of labour market exits (Bound et al., 1999) and early retirement (Debrand and Sirven, 2009). The same holds to be true for other activities: healthy individuals are also more likely to engage in social activities (Sirven and Debrand, 2008).

Within this context of promotion of participation in the society, a growing empirical literature has focused on understanding its determinants. These studies have highlighted the respective roles of individual, contextual and institutional factors for older people to retire early (Lumsdaine and Mitchell, 1999), to participate in social activities (Erlinghagen and Hank, 2006; Choi, 2003; Ruiter and De Graaf, 2006; Prouteau and Wolff, 2007), and to provide care to frail relatives (Fontaine, 2009; Bettio and Plantenga, 2004).

However, little is known on the role of job quality on transitions of older workers beyond the labour market. The assumption of this chapter is that job quality of older workers could play a role in the process of promoting participation in society of older workers. The common causal pathways of job quality on participation can be that 1) working conditions affect health and thus the physical and cognitive ability to do paid or unpaid work or participate in other activities, 2) positive non monetary aspects of work, such as received recognition or learning, can increase individuals' preference for "work" and their willingness to engage in productive activities, including after exiting the labour market, and 3) opportunities for work-time arrangements can allow individuals to conciliate in-work and out-of-work activities and enable complementarities of "labour" and "leisure" time (rather than substitution).

The purpose of this study is to empirically investigate whether job quality is a common determinant for productive activities of older individuals. Indeed, the determinants for market and non market productive activities may be connected, and beyond individual characteristics, past work experience may affect the choice to engage in other productive activities. The analysis of the impact of job quality on transitions of older worker is still rarely addressed within the economic literature, in particular concerning participation in social activities and informal care-giving. We contribute to the existing literature by studying the medium-term effects of job quality experienced by older workers on three productive activity

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outcomes (staying in employment, participating in social activities, and providing informal care). The adopted perspective is dynamic and comparative as we use longitudinal data from the Survey of Health, Ageing and Retirement (SHARE, 2004-2006). Taking advantage of the multidimensional character of the data, we estimate the role of a variety of job quality variables (job satisfaction, and identifiable monetary and non monetary job characteristics) and job quality models (effort-reward and demand-control imbalance), controlling for detailed socio-demographic variables, on participation outcomes. Multivariate regressions enable us to account for the fact that the decisions to take part in one or several of these activities are interdependent. Our results show that past working conditions do not only increase the likelihood to remain on the labour market, but also affect the decision to participate in social activities. Care-giving on the other hand appears independent from individual work experience, and principally determined by environmental factors. The three different types of activities have many common explanatory factors, and are often complementary. However, trade-offs between care and work can appear.

The rest of article is organized as follows: section 2 briefly presents the literature on the links between job quality, labour market participation, participation in social activities, and informal care, section 3 presents the data and method, section 4 summarizes the results, and section 5 discusses and concludes.

2. Literature

The standard economic analysis of labour supply of older workers focuses on the opposition between labour and leisure, though a substantial part of the "leisure time" of retirement can be devoted to non market - nevertheless productive - activities. Determinants of the retirement decision like job quality can be interpreted as increasing the preference for leisure when they are shown to have an impact on early labour market exits. They may also influence the decision to engage in productive activities outside of the labour market. In this perspective, it seems accurate to analyse whether past work experience, reflected by the individuals' job quality, also affects transitions to productive activities beyond the labour market and decisions to engage in social or care activities.

In the following, we will briefly review the economic literature in this field, by distinguishing the role of job quality in labour market participation (2.1.), social participation in voluntary activities (2.2.), and informal care provided to relatives, neighbours or friends (2.3.).

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2.1. Job quality and labour market participation

On the supply side of the labour market, job quality appears to be an important individual determinant of labour market participation. This has mainly been stressed by the large body of literature related to the field of "happiness economics" (Layard, 1980, 2005), which has extensively studied the impact of *job satisfaction* on labour market behaviour. Several studies using general job satisfaction as an independent variable have found that satisfied workers were less likely to *quit*, and thus job satisfaction was an important predictor of labour market participation (Freeman, 1978, Akerlof et al., 1988, Lévy-Garboua et al., 2007). However, job satisfaction can be interpreted in different ways. On one hand, job satisfaction is perceived as a proxy of utility at work, which is not only based on pecuniary aspects, and thus captures important but unobserved aspects of well-being (Clark, 2001; Frey and Stutzer, 2002). On the other hand, job satisfaction is understood as reflecting the experienced preference of workers for their jobs compared to other mentally experienced alternatives, such as job opportunities (Lévy-Garboua and Montmarquette, 2004). The role of job satisfaction on retirement behaviour has been shown to affect intended retirement and effective labour market exits at older ages. Focusing on "stated preferences" of older workers, Afsa (2008) found that satisfied workers were more sensitive to monetary incentives and thus more willing to *delay their retirement age* then unsatisfied workers. In terms of "revealed preferences", Debrand and Sirven (2009) found that satisfied workers were indeed less likely to *retire early*.

The analysis of the role of monetary and non monetary aspects of work on labour market outcomes has been deepened by the use of more precise variables on identifiable aspects of jobs. One recurrent concern indeed is that job satisfaction is subject to several declarative biases and that it is difficult to draw policy conclusions from job satisfaction itself. Thus, some recent empirical studies have estimated the determinants of intended retirement, and directly integrated variables on *identifiable aspects of job quality*. Two studies on SHARE studied the determinants of *intended retirement* with different methods (Siegrist et al., 2006; Blanchet and Debrand, 2007). Blanchet and Debrand (2007) directly introduced ten *job quality items* in the regression (binary coding of answers initially reported on a 4 point Likert-scale), correcting for selection effects. On the other hand, referring to the effort-reward model (Siegrist, 1996), Siegrist et al. (2006) constructed an indicator of "*effort-reward imbalance*" which is defined by a ratio of the sum score of 2 "effort" items and the sum score of 5 "reward" items (adjusted for number of items). Tertiles of imbalance were calculated for

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each country separately, and individuals scoring in the upper tertiles were considered experiencing poor quality of work. Country indicators were added in both studies to control for country specificities. Both studies found a significant and important impact of working conditions on *intended retirement*.

Results on effective *retirement behaviour* are more contrasted. For instance, Blekesaune and Solem (2005) studied the impact of different types of reported working conditions on retirement outcomes with 3 indexes: "*autonomy*" (freedom to decide working pace, and plan of tasks during the day), "*physical strain*" (strained working postures, monotonous or repetitive movements, lifting heavy objects), and "*stress*" (frequency of stressful situations, daily stress), on *disability and non disability retirement* in Norway. They found that low autonomy had an impact on retirement for men (which is interpreted as voluntary exit "jumps" linked to unattractive jobs) but not for women. Job strain, known to affect health, only had an impact on disability retirement. Contrary to expectations, stressful jobs were positively linked to delayed labour market exits. This can be interpreted as the association of attractive jobs with a moderate amount of stress (Blekesaune and Solem, 2005). It could also reflect a lack of exit opportunities for individuals in low quality jobs. Gustman and Steinmeier (2004) simulated the effects of different policies to encourage delayed retirements in the United States (Health and Retirement Survey), and found that reducing *physical difficulty* and *job stress* (each index being a score of 3 reported variables on a 4 point Likert-scale) were not likely to have a major impact on employment rates of older workers. These results contrast with a study on French data (Derriennic et al., 2003), which found that "*repetitive work under time constraint*" was highly associated to retirement for men (observed 5 years later) and other labour market exits for women, whereas "*decision latitude*" and "*having the means to do good quality work*" were not significant.

2.2. Job quality and social participation

As mentioned earlier, there is a vast literature on the individual and contextual determinants of productive ageing, including social and care activities, and its effects on well-being and health. However, the role of job quality on the participation in social activities of older workers is still a largely unexplored issue. To our knowledge, only one recently published study (by Lindström, 2006) has analysed the impact of working conditions on *social participation* of older workers. The underlying mechanism suggested in this study is that work related psychosocial conditions can affect health (as theorized by the demand-control model of Karasek and Theorell, 1990) by two causal pathways: first, job strain may

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directly increase stress and risky health related behaviour (such as smoking or low physical activity). Second, job strain may affect social participation, which is in turn found to affect health-related behaviours. Focusing on the second causal pathway, the tested hypothesis is that exposure to straining working conditions might negatively affect social participation. The study used Swedish data from a cohort aged 45-69, interviewed between 1992 and 1994 and in a one year follow-up, and workers were grouped in four work-related psychosocial categories derived from the demand-control model (Karasek and Theorell, 1990): "*job strain*" (high demands, low control), "*passive*" (low demands, low control), "*active*" (high demands, high control), and "*relaxed*" (low demands, high control)[3]. Multivariate logistic regressions were used to estimate the impact of working conditions on 13 items of social activities[4] (respondents were asked whether or not they had participated in each of these activities during the last year). Results showed that compared to the "job strain" category, "active" and "relaxed" workers had higher odd ratios for most of the social participation items, whereas being in the "passive" category was either negatively or not related to social participation items.

More recently, a study using retrospective data from the third wave of SHARE (SHARELIFE) has provided evidence of long term effects of job quality on the participation in social activities (Wahrendorf and Siegrist, 2010). As in Siegrist et al. (2006), the synthetic job quality variable is a binary indicator of effort-reward imbalance, which complements binary indicators of different work dimensions (physical demands, psychological demands, social support, control, and reward). The first results from this study indicate that most of the stress indicators during the life course are associated with a lower likelihood of participation in voluntary work during retirement, even after controlling for health.

2.3. Job quality and care-giving

The ability to conciliate professional and familial life is an important element of job quality (Davoine and Erhel, 2007). In particular for women, arising care-giving responsibilities could lead to trade-offs between paid work and informal activities including in

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[3] Variables are constructed as follows : *"individuals are given five questions assessing psychosocial job demands and six questions on control/decision latitude, and are instructed to respond on a scale from 1-4. Overall scores for each category are calculated using the sum of weighted items (Karasek, Theorell, 1990). The scores for the two categories are dichotomized at the median into four groups* [job strain, passive, active, relaxed]" (Lindström, 2006).

[4] Items of activities are the following: study circle/work, study circle/other, union meeting, meeting/other organization, theater/cinema, arts/ exhibition, church, sports event, written an article/to a journal, demonstration, entertainment/night club, gathering of relatives, private party, no activity.

the latter life course. The current "senior" generation (women in particular), is referred to as a "pivot" or "sandwich" generation (Mooney et al., 2002), confronted to combine longer and more intense work lives with a higher need to provide informal care to elderly relatives or spouses due to a higher life-expectancy and longer dependency conditions. In addition, grandchild care is also increasing due to the longer life expectancy (Bourgeois and Légaré, 2009); a trend which combined to prolonged careers could lead to tensions, affecting either labour market participation of grandparents, or (and perhaps more likely) their ability to provide care in the absence of work arrangements (CAS, 2010).

The effect of care on labour supply is ambiguous: workers facing an occurring dependency situation may 1) reduce their labour supply in order to have more time for care (substitution effect), 2) increase their labour supply to support associated costs (income effect), and finally 3) very engaged care-givers may need to increase their labour supply as a "buffer" against their care-giver role ("respite effect"). As a consequence, the theoretical effect of care on labour supply is undetermined (Carmichael and Charles, 1998; Fontaine, 2009).

Hence, there has been a growing interest on the impact of care responsibilities on labour market participation of ageing workers (Lumsdaine and Mitchell, 1999). Empirical evidence indicates that *"intensive" care to elderly parents* significantly decreased the probability for middle-aged women to be employed (Crespo, 2007), and that cohabitation with parents is associated with declining working hours of older women (Ettner, 1995). In contrast, when the care recipient is a spouse in poor health, the retirement decision is more likely to be delayed (Pozzebon and Mitchell, 1989).

The retirement decision of care-givers also varies across countries: Fontaine (2009) found that the substitution effect of *care* on labour market participation was strong in Eastern and Southern European countries. In Northern and Continental countries, there was no significant impact of care on women's employment: care and work appeared complimentary in countries where formal institutional patterns of care were more developed. Bolin et al. (2008) compared the impact of care on the probability of being employed, the number of hours worked, and wages, and showed that the wage rate was also less negatively affected in Central Europe than in Northern Europe.

These differences between countries could also be due to the existence of *working arrangements* that enable women to combine care and work when a need for care occurs, instead of completely giving up working. Scarce availability of qualitative data on work time arrangements that can be linked to social transitions makes thinner analyses difficult (one

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example can be found in Arskey (2002) who studied carer-friendly working arrangements in the UK).

Another issue relates to the consequences of *straining work conditions* on care-giving. Indeed, in the last decades, the employment rates and working hours of women have increased, but women have also faced work intensification (Mooney et al., 2002). The impact of working conditions on care-giving is however not yet developed by the literature, and causal pathways could be two-ways. On one hand, straining work conditions could *increase* the preference for out-of-work activities such as caring for an older parent and encourage labour market exits (or decreased working hours) of women with frail relatives. On the other hand, an intense and straining job could *reduce* out-of-work activities for "exhausted" women and could also be associated to lower working arrangement (or exit) opportunities. Finally, care-giving could be independent of the job content as providing informal care may be less the direct result of a personal choice rather than the consequence of an arising dependency situation and the available family arrangements.

3. Data and descriptive statistics

3.1. Source

In order to estimate the effects of job quality of older workers on the decision to participate in productive activities, the study takes advantage of the longitudinal and multidimensional character of SHARE data (*Survey of Health, Ageing and Retirement in Europe*). The analysis is based on the two first waves of the survey, where individuals aged 50 and over (and spouses or partners in the household) were interviewed for the first time in 2004 and followed-up for a second interview in 2006. The main advantage of this comparative data is the variety of topics of the questionnaire, which - besides socio-demographics, health, employment and job quality - also includes data on social activities and care-giving of respondents and partners.

3.2. Sample

Since our focus is on the effects of job quality on transitions beyond the labour market, our selected sample includes individuals in working age (50 to 65 years throughout waves 1 and 2) who were present in the two waves of the survey, and who were employed or self-employed in the first wave. This restriction is necessary as job quality variables are only available for the present job, thus for employed (or self-employed) individuals. It is also a

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mean to exclude those for which there is no arbitration between labour market participation and other social activities (Casado-Marin et al., 2008; Berecki-Gisolf et al., 2008).

The initial sample of 50 to 65 year old present in both waves is of 8.587 individuals. Among them, 4.615 were employed or self-employed in the first wave and constitute our sample (about 60 needed to be excluded due to non-response). The sample size by country goes from 208 individuals (Austria) to 735 (Sweden) (table 1).

Table 1.   Sample size by country

	Sample size
Austria	208
Germany	409
Sweden	735
Netherlands	477
Spain	230
Italy	270
France	501
Denmark	408
Greece	521
Switzerland	239
Belgium	617
Total	**4.615**

Source: SHARE, wave 1 and 2

3.3.   Dependent variables

As the purpose of this study is to estimate the determinants of three types of productive participation in society, the three following outcomes constitute the dependent variables of the estimations: 1) labour market participation, 2) participation in social activities, and 3) informal care-giving.

3.3.1. Labour market participation (dY1)

All individuals in the sample are employed or self employed in the first wave of the survey (2004). Their labour market outcome in the second wave of the survey (2006) is binary coded (1 if still employed or self employed and 0 otherwise). Hence, different types of labour market exits are not distinguished (unemployment, disability, inactivity or retirement). The first reason is that self-reported inactivity and unemployment statuses are approximate (in many cases, the borders between retirement, inactivity and unemployment are blurry[5]) and

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[5] The case of the French "*dispense the recherche d'emploi*" is an example of blurry borders between inactivity and unemployment: individuals aged over 57 can be eligible to unemployment compensation but are exempted from job search requirements.

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can hardly be compared across countries (disability, unemployment or pre-retirement often serve as functional equivalents for early retirements). The second reason is that, among this age group, labour market exits are rarely followed by returns to employment and consist mainly in pathways to retirement. Additionally, a majority of seniors do not transit directly from employment to retirement and experience unemployment or inactivity spells before actually reaching retirement: as shown in figure 1, only half the seniors who reached retirement in 2006 were employed two years earlier. This roughly corresponds to the average employment to retirement transition rates in France (Burricand and Roth, 2000).

Figure 1.   Labour market transitions between waves (%) (50-65 year old)

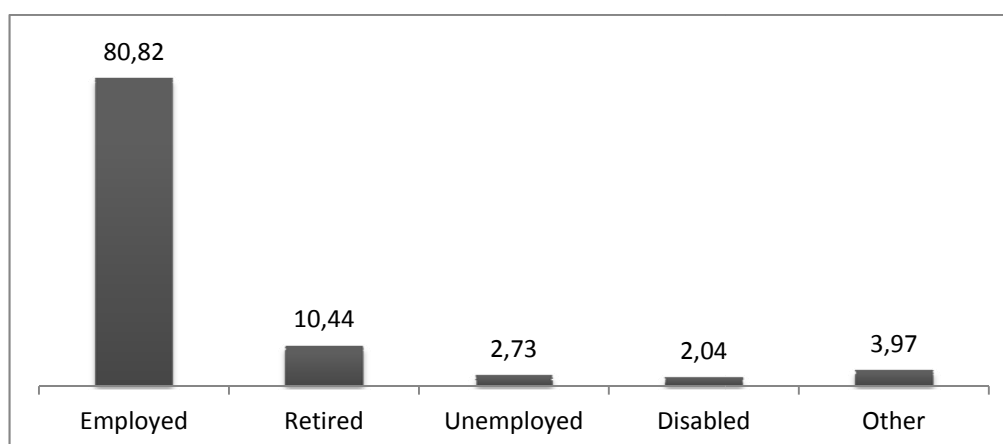*Source: SHARE, wave 1 and 2*

Out of the 4.615 employed individuals in the first wave (2004) (about 54.5% of the 50-65 year old[6]), 80.82% are still employed in the second wave (2006), and 19.18% have exited the labour market (through retirement, disability, unemployment or other inactivity pathways) (figure 2).

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[6] Employment rates by country for both waves are displayed in appendix A. (table 5).

Figure 2.   Wave 2 labour market status of 50-65 year old workers in wave 1 (%)

Source: SHARE, wave 1 and 2

3.3.2.   Participation in social activities (Y2)

The second dependent variable is the participation in social activities in the second wave of the survey. To the question "*Have you done any of these activities last month?*" respondents are proposed a list of activities. The variable is coded 1 when respondents had done at least one of the following activities: "*Done voluntary or charity work*", "*Attended an educational or training course*", "*Gone to a sport, social, or other kind of club*", "*Taken part in activities of a religious organization*", and "*Taken part in a political or community-related organization*", and 0 otherwise.
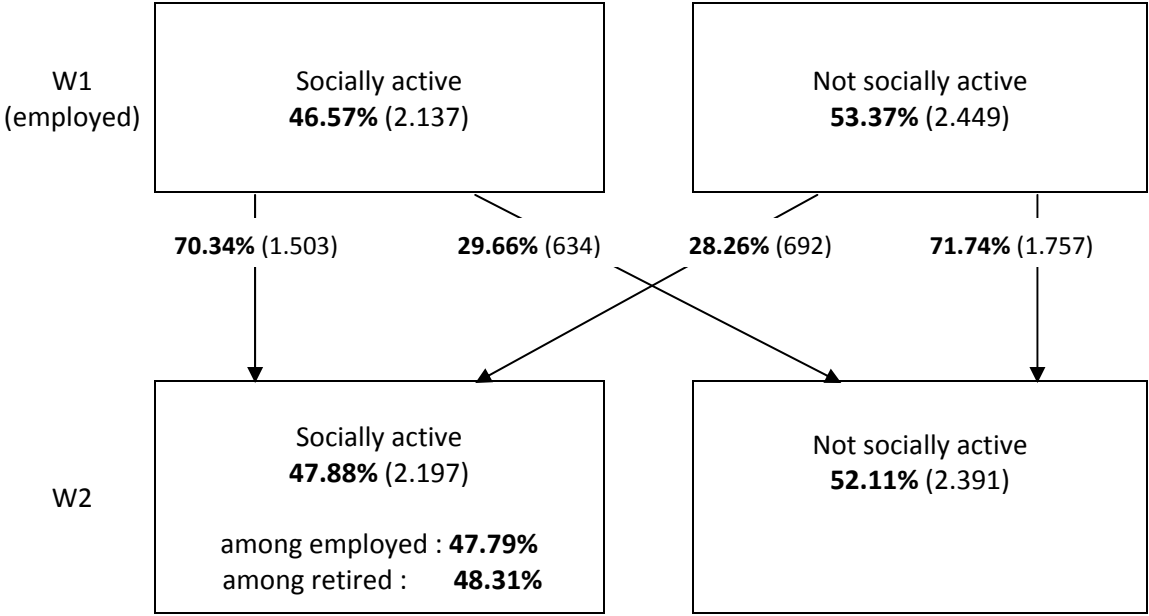
These activities can all be considered as social activities *stricto sensu*. Some studies, such as Lindström (2006) include solitary activities (for instance writing to a journal) as they can be indirect mediators of social norms and values in the society and constitute means of empowerment. Similar solitary activities are however not present in our dataset. On the other hand, we include sport and religious activities as social activities since the questions clearly refer to activities that are led within a social circle (club or organization).

In average, about 43% of all respondents participated in at least one activity in the first wave and 45% in the second wave. The share of social participation was lowest in Spain and Italy, intermediate in Austria, France, above average in Germany and Belgium, and highest in Sweden, Netherlands, Switzerland and Denmark (see appendix A, table 6).

Among the employed population, the share of socially active individuals is a little higher (about 46.5% in the first wave). The working population from the first wave is also more active in the second wave (about 47.9%), but participation is a little higher among those who have exited the labour market (48.3% socially active among retired individuals). The

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transition matrix of social participation between both waves (figure 3) shows that about 30% of the individuals change status between waves, and 70% remain either socially active or socially inactive.

Figure 3.   Social participation transition matrix (50-65 year old)

3.3.3.   Informal care (Y3)

Finally, the third dependent variable is informal care-giving to a relative, a neighbour or a friend within or outside the household. It is constructed from several questions, and equals one in the following cases:

- To the question "*Have you done any of these activities last month?*", individual chose the item "*Care for a sick or disabled adult*"
- To the question "*Is there someone living in this household whom you have helped regularly with personal care such as washing, getting out of bed, or dressing?*", individual responded "*yes*"
- To "*Have you given any kind of help [listed on card] to a family member from outside the household, a friend or a neighbour?*" Individual responded "*yes*" <u>and</u> chose on card item 1) "*personal care (dressing, bathing, showering, eating, getting*

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out of bed, using the toilet)" or item 2) "*practical household help (home repairs, gardening, transportation, shopping, household chores)*"

About 18% of the working age population provides at least one kind of informal care (17.48% in wave 1, 18.78% in wave 2). The share of care-givers is below average in Greece, Denmark, Sweden, about average in France, Germany and Austria, and above average in the Netherlands, Italy, Spain, Switzerland and Belgium (appendix A, table 7).

The share of care-givers is slightly lower among the employed population (15.5% in wave 1, 17.4% in wave 2) than among the unemployed or inactive population (almost 19% of those who exited the labour market between both waves are care-givers in the second wave). Less than half of the care-givers from the first wave remained care-givers in the second wave, and about 12.5 started to be care-givers in the second wave (figure 4).

Figure 4.   Informal care transition matrix (50-65 year old)
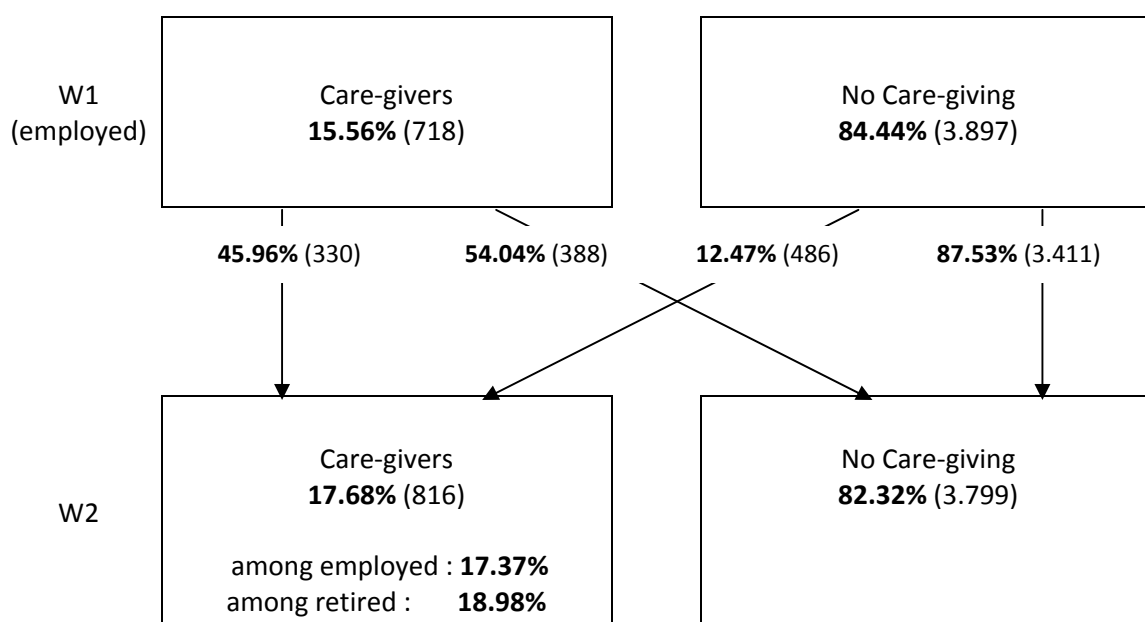
Note: Share of care-providers in wave 1 (among 50-63 year old employed pop.) and wave 2 (among survivors of wave 1). Number of observations in parentheses
Source: SHARE, wave 1 and 2

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4. Method

4.1. Empirical strategy

The first purpose of the study is to isolate the causal impact of working conditions on the transitions to labour market exits, social activities, and care-giving. Given the three binary outcomes, the estimation can be written as follows:

$$dY1_{2006}{}^{*} = \alpha W_{2004} + \beta X1_{2004} + \varepsilon 1$$
$$Y2_{2006}{}^{*} = \alpha W_{2004} + \beta X2_{2006} + \varepsilon 2 \qquad \text{[Model 1]}$$
$$Y3_{2006}{}^{*} = \alpha W_{2004} + \beta X3_{2006} + \varepsilon 3$$

Where for $m = 1, ... ,3$, the observed variables Ym are the three outcomes in 2006 ($dY1$ = labour market participation, $Y2$ = participation in social activities, and $Y3$ = care-giving), and the latent variables are given by $Ym = 1 \; if \; Ym^{*} > 0$ and 0 otherwise.

α and β are the set of estimated parameters of the effect of past working conditions (W_{2004}) and control variables (X_{2006}), and ε_m are the error terms that are assumed to be normally distributed, each with a mean of zero.

We estimate the three equations simultaneously in order to account for the fact that the three outcomes are simultaneously determined (for example, between the two waves, a person may retire and simultaneously decide to engage in social and or care activities to use his or her free time), and for the fact that the same unobserved characteristics may influence several participation outcomes (for example an "extroverted/active" person may be more likely to do any type of these activities than an "introverted/passive" person).

In the trivariate equation model, the error terms are distributed as multivariate normal, so that we have:

$$\begin{pmatrix} \varepsilon 1 \\ \varepsilon 2 \\ \varepsilon 3 \end{pmatrix} \rightarrow N(0, V), \text{ where } V = \begin{pmatrix} 1 & \rho 12 & \rho 13 \\ \rho 21 & 1 & \rho 23 \\ \rho 31 & \rho 32 & 1 \end{pmatrix}$$

where V is the variance-covariance matrix of error terms. V has values of 1 on the leading diagonal and correlations $\rho_{jk} = \rho_{kj}$ are off-diagonal elements to be estimated.

The parameters of a simultaneous probit model can be estimated using simulated maximum-likelihood. We use the MV probit routine developed by Cappellari and Jenkins (2003), which applies the Geweke-Hajivassiliou-Keane (GHK) simulator (Greene, 2006).

If the test $H_0: \rho 21 = \rho 31 = \rho 32 = 0$ can be rejected (i.e. the three error terms are correlated), the multivariate probit is more appropriate than independent probit regressions. This is found to be the case: our hypothesis that several unobservable characteristics (such as

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altruism, sociability, or motivation) similarly influence different types of activities is thus confirmed, and the multivariate probit estimation provides more consistent estimates than independent probits would.

It must be noted that an empirical validation of the cause to effect relationship would ideally require the use of instrumental variables, but no valid instruments of working conditions can be found at the individual level in SHARE (this limitation has been addressed by Bolin et al., 2008). However, taking advantage of the longitudinal character of the data, we can estimate the effect of past working conditions (in the first wave) on the participation outcomes (in the second wave). Thus, the correlations appearing between lagged values of working conditions and present outcomes can be understood as revealing Granger-causality.

4.2. Interdependence : model identification

The second aim of our study it is to undertake the interdependence of choices, by jointly analysing the decisions of social participation (paid work, social activities, and care-giving). These decisions are often interdependent: for instance, individuals may chose to exit the labour market early in order to take care of a dependent relative, or wait for retirement to start engaging in social activities[7].

Simultaneous estimations are an appropriate econometric response to such endogeneity issues and the analysis of trade-offs between outcomes (Calavrezo, 2007; Fontaine, 2009). The multivariate probit enables to introduce different explanatory variables for each outcome as well as endogenous variables. For example, by introducing participation in activities (which are the dependent variables in each equation) as endogenous explanatory variables in other outcomes, we can apprehend the trade-offs between work and other productive activities (social activities and care).

In order to test for the different causality pathways, we may want to estimate a simultaneous probit where each equation has both outcomes as endogenous variables on the right hand side. However, such a model would not be logically consistent (Maddala, 1983). Hence we estimate three different structural equation models in which the responses to two outcomes are predictors for the third outcome.

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[7] This idea closely related to the transitional labour market approach: the transition between work and retirement constitutes a typical "critical transition" (Gazier, Schmid, 2001) where pathways to retirement must be organized in order to conciliate retirement entitlements, family obligations, and perspectives for out of labour market activities.

Formally:

$$dY1_{2006}{}^* = \alpha W_{2004} + \beta X1_{2004} + \gamma Y2_{2006} + \delta Y3_{2006} + \varepsilon 1$$
$$Y2_{2006}{}^* = \alpha W_{2004} + \beta X2_{2006} + \tau IV2 + \varepsilon 2 \qquad \text{[Model 2]}$$
$$Y3_{2006}{}^* = \alpha W_{2004} + \beta X3_{2006} + \tau IV3 + \varepsilon 3$$

$$dY1_{2006}{}^* = \alpha W_{2004} + \beta X1_{2004} + \tau IV1 + \varepsilon 1$$
$$Y2_{2006}{}^* = \alpha W_{2004} + \beta X2_{2006} + \gamma Y1_{2006} + \delta Y3_{2006} + \varepsilon 2 \qquad \text{[Model 3]}$$
$$Y3_{2006}{}^* = \alpha W_{2004} + \beta X3_{2006} + \tau IV3 + \varepsilon 3$$

$$dY1_{2006}{}^* = \alpha W_{2004} + \beta X1_{2004} + \tau IV1 + \varepsilon 1$$
$$Y2_{2006}{}^* = \alpha W_{2004} + \beta X2_{2006} + \tau IV2 + \varepsilon 2 \qquad \text{[Model 4]}$$
$$Y3_{2006}{}^* = \alpha W_{2004} + \beta X3_{2006} + \gamma Y1_{2006} + \delta Y2_{2006} + \varepsilon 3$$

Such models are correctly identified if the number of excluded exogenous variables is equal to the number of included endogenous variables. In our case, as we include two endogenous variables (Y2 and Y3) in the estimation of dY1*, we need to introduce two exogenous variables in the estimations of Y2* and Y3*, and vice versa. These variables are valid if they respect the exclusion restriction, and thus referred to as "instrumental variables"[8]. In other words, IV_m is a set of two instrumental variables whose estimated parameters must be significantly different from 0 in the estimation of the dependent variable Y_m^*, but that should be uncorrelated to other dependent variables.

As a consequence, the inclusion of activities as explanatory variables in the estimations should enable us to detect potential trade-offs between activities. In addition, the estimated parameters of the role of working conditions in Model 1 will be corrected if participation in other activities were omitted variables in the first specification.

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[8] It must be noted that the purpose of these variables is to correctly identify the model, but not to test for causality. Hence they must be understood and interpreted as "weak instruments".

4.3. Model specification

4.3.1. Job quality variables

In all equations the effect of several variables of past working conditions (W_{2004}) is tested.

First, we successively estimate the effect of different job quality variables: starting by job satisfaction only (A), then the set of all available job quality variables (B), and finally a synthetic job quality score (C).

In a second step, we estimate the effort-reward imbalance model (Siegrist et al., 2006). Effort is understood as the physical and psychological demands, and rewards are the monetary (i.e. salary) and non monetary returns (recognition, advancement prospects, and job security) individuals declare receiving in their jobs (D).

Finally, in a third step, we estimate the demand-control model (Karasek and Theorell, 1990). The demand score is equivalent to the effort score. Control is understood as the space for autonomy within the job (freedom, opportunity to develop skills, support received in difficult situations) (E). The variables and constructed scores are presented in detail in table 2.

In order to implement the effort-reward and demand-control models, ratios of imbalance are calculated. This allows to measure imbalance between the dimensions of work conditions without arbitrarily grouping complex job situations into "good" versus "bad" jobs. Ratios are interaction terms that represent the imbalance between effort (or demand) and reward (or control): the higher the ratio, the stronger the imbalance. In order to control for the "intensity" of the job, we also calculate the distance to the origin: the higher the distance, the more intense the work situation (high effort and/or high reward) (see technical note and country means in appendix B, figures 5, 6 and 7).

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Table 2.   Working condition variables set

Questions 4 items: **4** strongly agree / **3** agree / **2** disagree / **1** strongly disagree	Score (score = 1 to 4)	Index
"All things considered, I am satisfied with my job"	**Job satisfaction**	Job quality score = Σ 10 scores
"My job is physically demanding"	**Job physically demanding**	**EFFORT = DEMAND =** (physical dem.+time pressure)/2
"I am under constant time pressure due to a heavy workload"	**Constant time pressure**	
"I have <u>very little</u> freedom to decide how I do my work"	**Freedom** /!\ *reverse coding*	**CONTROL=** (freedom+ skills + support)/3
"I have an opportunity to develop new skills"	**New skills**	
"I receive adequate support in difficult situations"	**Support**	
"I receive the recognition I deserve for my work"	**Recognition**	**REWARD=** (recognition + salary + advancement+ security)/4
"Considering all my efforts and achievements, my [salary is/earnings are] adequate"	**Salary is adequate**	
"My [job promotion prospects/prospects for job advancement] are <u>poor</u>"	**Advancement prospects** /!\ *reverse coding*	
"My job security is <u>poor</u>"	**Job security** /!\ *reverse coding*	

4.3.2. Control and instrumental variables

The set of control variables (X_m) is identical throughout the different estimations[9]. It includes:

- Socio-demographic variables: age, gender, education level, and income
- Employment status (employee, self-employed, or civil servant)
- Subjective and objective health indicators: self-reported health, physical limitations, diagnosed diseases, and depression risk

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[9] A detailed presentation of these variables and their coding is displayed in appendix C.

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- Country dummies
- Variables on the spouse's activity (when he or she has been interviewed): participation on the labour market, in social activities, or care-giving.

Instrumental variables (i.e. "weak instruments") (IV_m) are only included in the multivariate estimations with endogenous variables (Models 2, 3 and 4)[10]. For the labour market estimation, these two variables $(IV1)$ are:

- The distance in years to the legal minimum retirement age: we can indeed assume that a longer distance to standard retirement age increases the incentive to remain on the labour market (Hairault et al., 2010) but does not influence the decision to participate in other activities. Note that in order to avoid collinearity with age, when including this variable in the estimation we excluded the age variable.
- The type of contract: the lower level of job security associated to fixed-term contracts should increase the likelihood of temporarily employed individuals to exit the labour market within the following two years compared to permanently employed individuals. Again, we can assume that the type of contract has no effect on the decision to provide care or to be socially active.

For the participation in social activities, meaningful exogenous variables are extremely difficult to find. The literature widely stresses the major role of human, social, and cultural capital in explaining social participation. Hence, we chose two proxy variables for social and cultural capital $(IV2)$, which are the level of trust and the religious education. Indeed, trust is considered in sociological literature as one aspect of "social capital", and religiosity (in education or practice) as an aspect of "cultural capital", which both make volunteering more likely (Wilson and Musick, 1997; and for examples of empirical validation see Smith, 1994; Choi, 2003).

Finally, for the estimation of care-giving, we include the following variables $(IV3)$:

- Having at least one parent still alive: as the main care-receivers of seniors are their elderly parents, this exogenous variable should be related to the likelihood of providing care.
- Having a strong belief for duty in children's education: we assume that agreeing with the statement that "*parent's duty is to do their best for their children even at the expense of their own well-being*" (cf. questionnaire item) is a proxy for the

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[10] The set of instrumental variables (IV_m) and coding are detailed in appendix D.

priority given to family obligations. As personal motivations for care-giving are likely to be love but also duty, we can reasonably assume that having a strong feeling of duty within the family should increase the likelihood of providing care to a parent or relative.

The statistical justification for using these variables is verified by 1) the explanatory power of each IV variable on the outcome variable of the equation, and 2) the absence of correlation with other outcomes.

5. Results

5.1. Baseline results on individual and contextual factors[11]

The effect of individual characteristics on participation in productive activities concurs with usual findings in the literature.

Concerning gender, quite intuitively and similarly to Fontaine (2009), we find that women are more likely to be care-givers. Gender differences do not appear significant concerning participation in social activities. This result may however obscure country differences: in the French case for example, Prouteau and Wolff (2007) found that social participation was more likely for men. On the other hand, men are more likely to remain longer on the labour market. This indicates that although this generation has witnessed increased labour market participation of women, gender inequalities on the labour market remain, even after controlling for the fact that the standard retirement age is lower for women in some countries (distance to retirement).

Quite intuitively, age is found to have a negative impact on labour market participation. In addition, a longer distance to the legal retirement increases the likelihood of remaining employed (as in Hairault et al., 2010). However the undetermined effect of age on social activities and care-giving can appear quite surprising. Care-giving is usually found to increase with age (Fontaine, 2009), which could be explained by growing dependency needs of parents as seniors - and their parents - age. Social participation is generally found to rise throughout the life-course: in the French case for example, social participation is highest for individuals in their 60's (Prouteau, Wolff, 2007). Our result can probably simply be explained by the sample restrictions imposed by the focus on a restricted age category (50 to 65 years).

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[11] For results on control and instrumental variables see appendix E, table 8.

Feeling healthy is an important factor for participation in the labour market and social activities. On the one hand, this result is rather intuitive, as these activities may require a certain level of physical and mental well-being to be performed. On the other hand, health could also be endogenous, as work and social activities can have positive effects on well-being of individuals, limit risky health related behaviour, encourage physical activity, and thus help maintain ageing individuals in good shape. However, Debrand and Sirven (2009) found that although feedback effects (of social participation on self-reported health) exist, they are less important than the effects of self-reported health on social participation. Surprisingly, the two subjective health indicators have contrasted effects on social participation: contrary to self-reported health, being physically limited (severely or not) increases the likelihood of being socially active. A possible explanation for this could lie in the fact that age-related upcoming physical limitations form an incentive to perform beneficent activities such as sports. Inversely, health variables are not associated with care-giving: although a sufficient level of health may be necessary to provide help to others, intense care-giving can have adverse effects on health in the long run, particularly when it is intense (Fontaine, 2009).

Social background clearly matters: education is an important factor for all types of productive activities, including care-giving; and higher incomes are associated to a higher likelihood of staying employed and providing care. This confirms that human capital is a common factor of social integration (Wilson and Musick, 1997), and that social inequalities remain beyond the labour market: richer and more educated people are also more involved in non-market activities.

Decisions of participation are complementary at the household level: having a partner (or spouse) that is involved in a similar non-market activity significantly increases the likelihood of providing care and participating in social activities. Retirement decisions also seem to be influenced by both the marital status and the partner's activity: single individuals tend to stay longer on the labour market than married couples, except when the spouse is employed. Unsurprisingly, having a living parent is a major determinant for providing care. We must note that the spouse's activity provides only a limited perspective on the decision making process within a family when a parent is in need for care. Indeed, we don't control for family configurations that can also influence the decision to provide care to a parent, like for example the presence of a spouse still living with the frail elderly, and/or of other siblings in the family, in particular when children cohabit with the care-receiver (Fontaine et al., 2007). Although we did not account for such variables in our estimations, the results coincide with

specific studies on care-giving that take into account other family characteristics (age and health of parent and having siblings) (Fontaine, 2009).

Country differences within Europe are striking[12]. Concerning participation in social activities, the groups of countries are perfectly in line with welfare regime typologies (Esping-Andersen, 1990): compared to Germany (reference country), participation in social activities is higher in Northern countries (Sweden), in Switzerland and the Netherlands, and lower in Southern countries (Greece, Spain, Italy), even after controlling for trust and religious education. These results are in line with comparative sociological literature as they confirm the high level of formal social capital in Scandinavian countries and the Netherlands (Pichler and Wallace, 2007). On the contrary, the country effects in the estimation of care-giving do not reveal such a clear distinction, as the probability to provide informal help is higher in the Netherlands, and Italy, and lower in Greece. This result, which doesn't correspond to institutional differences in dependency risk management (Assous and Ralle, 2000), nor to usual sociological distinctions on the level of family support (Pichler and Wallace, 2007), could be due to the sample selection in this study. Since the initial sample is limited to employed seniors (in the first wave) it could be unrepresentative of the general care-givers population.

Finally, the literature usually stresses that personality traits, attitude, and social capital matter greatly to explain social participation (Smith, 1994). The fact that participation in social activities is far more likely for individuals with a religious education and a high feeling of trust in people, and that care-giving is more likely for people who have a strong perception of parent's duty towards their children, confirms the determinant role of personality and beliefs in being socially active. Many other personality traits remain of course unobserved, but the correlation of residuals from the social activity and care-giving estimations are significant and positive. This is a clear indication that most of the unobserved characteristics (which include personality traits, attitudes, and contextual factors) are common factors to both non market outcomes. Weaker correlations with residuals from the labour market outcome estimation indicate that remaining employed is rather the consequence of job opportunities, than of having an "active" or "passive" temper.

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[12] Note that concerning labour market participation, the country effects in the estimations only reflect the likelihood to remain employed once already employed in the first wave without correcting for selection effects. Thus, the country differences in participation rates do not appear in this analysis.

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5.2.   Better job quality improves social participation

The main focus of this analysis was to investigate the medium term effects of job quality on participation in formal and informal productive activities, by testing the effect of several working condition variables. Two types of models were estimated: Model 1 was a three equation simultaneous multivariate probit, and the three following (Model 2, 3, and 4) were multivariate probits with endogenous variables. For the estimation of the labour market outcome, including endogenous variables (participation in social activities and care-giving) significantly reduces the quality of the model (given by the log pseudo-likelihood). Hence, our interpretation of the effect of job quality variables should be based on the first model (Model 1). On the contrary, in social participation and care-giving estimations, including endogenous variables slightly increases the model's quality. This can be explained by the fact that being employed is more likely to affect the decision to participate in other activities than the opposite. Detailed results are displayed in tables 3 and 4, but for simplification, the interpretation of job quality on social activities and care-giving will be based on the latter models (Model 3 and Model 4).

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Table 3.   Results (Model 1) : Working conditions

		Labour market dY1		Social activities Y2		Care-giving Y3	
Step 1: Job satisfaction and work conditions							
A	Job satisfaction	**0.245***	(0.082)	0.052	(0.074)	-0.056	(0.083)
B	Job physically demanding	0.015	(0.025)	**-0.050**	(0.020)	0.000	(0.023)
	Constant time pressure	0.042	(0.027)	0.024	(0.022)	0.025	(0.026)
	Freedom	0.037	(0.026)	**0.048**	(0.023)	0.005	(0.026)
	Opportunity new skills	**0.055***	(0.030)	**0.060**	(0.025)	0.043	(0.029)
	Recognition	0.017	(0.032)	0.038	(0.027)	0.024	(0.031)
	Adequate salary	0.005	(0.030)	-0.033	(0.024)	-0.028	(0.028)
	Advancement	**0.059**	(0.026)	**-0.045**	(0.021)	**-0.043***	(0.025)
	Support	0.039	(0.031)	-0.015	(0.026)	0.014	(0.030)
	Job security	**0.070***	(0.025)	0.000	(0.021)	0.004	(0.025)
C	Job quality Score	**0.042***	(0.011)	**0.024**	(0.010)	-0.006	(0.011)
Step 2: Effort-Reward model							
D	Ratio Effort-Reward	**-0.224***	(0.078)	-0.027	(0.067)	0.064	(0.079)
	Distance Effort-Reward	**0.114**	(0.045)	-0.032	(0.038)	0.000	(0.044)
Step 3: Demand-Control model							
E	Ratio Demand-Control	**-0.168**	(0.078)	**-0.196***	(0.069)	-0.052	(0.077)
	Distance Demand-Control	**0.081**	(0.039)	**0.058***	(0.033)	**0.066***	(0.039)

*Note: * p<0.10, ** p<0.05, *** p<0.01*

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Table 4.　　　Results (Models 2,3,4) : Working conditions

		Labour market dY1 Model 2		Social activities Y2 Model 3		Care-giving Y3 Model 4	
Step 1: Job satisfaction and work conditions							
A	Job satisfaction	0.170**	(0.078)	0.064	(0.074)	-0.055	(0.084)
B	Job physically demanding	0.022	(0.023)	-0.050**	(0.020)	0.007	(0.023)
	Constant time pressure	0.056**	(0.026)	0.026	(0.023)	0.030	(0.026)
	Freedom	0.015	(0.025)	0.050**	(0.023)	0.003	(0.026)
	Opportunity new skills	0.047	(0.029)	0.062**	(0.025)	0.042	(0.030)
	Recognition	-0.001	(0.030)	0.038	(0.027)	0.019	(0.031)
	Adequate salary	-0.006	(0.027)	-0.032	(0.024)	-0.028	(0.028)
	Advancement	0.082***	(0.025)	-0.042*	(0.021)	-0.037	(0.026)
	Support	0.053*	(0.029)	-0.014	(0.026)	0.018	(0.030)
	Job security	0.032	(0.024)	0.002	(0.021)	0.007	(0.025)
C	Job quality Score	0.026**	(0.011)	0.026**	(0.010)	-0.007	(0.011)
Step 2: Effort-Reward model							
D	Ratio Effort-Reward	-0.120	(0.076)	-0.038	(0.068)	0.066	(0.081)
	Distance Effort-Reward	0.089**	(0.043)	-0.029	(0.038)	0.018	(0.045)
Step 3: Demand-Control model							
E	Ratio Demand-Control	-0.072	(0.075)	-0.202***	(0.070)	-0.034	(0.078)
	Distance Demand-Control	0.071*	(0.038)	0.059*	(0.033)	0.071*	(0.039)
Endogenous Variables							
	Y1 (employed w2) Full time			-*(C,D) NS (A,B,E)		-**(C,D) NS (A,B,E)	
	Part time			NS		NS	
	Y2 (social activities w2)	NS				+** (A,B,E) +*** (C,D)	
	Y3 (care-giving w2)	NS		NS			

*Note: * p<0.10, ** p<0.05, *** p<0.01*

The results confirm that being satisfied with one's job (general job satisfaction) is a major determinant for seniors to remain on the labour market (Debrand and Sirven, 2009). The effect is not significant for other forms of productive activities. Indeed, if we understand job satisfaction as the match between job characteristics and personal aspirations, it is coherent that people who are satisfied with their jobs do not have a high incentive to engage in other "compensating" activities in their leisure time.

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However, although job satisfaction is a powerful synthetic variable to explain labour market participation (from its size and significance), it is difficult to draw policy conclusions from the variable itself. When looking closely at the identifiable aspects of job quality and directly introducing working condition variables in the estimation, several factors appear to play a direct role on labour market outcomes but also social activity outcomes.

Workers declaring having a physically demanding job are less likely to pursue social activities: physically straining working conditions may disable exhausted workers to complement paid work with any other activity, and labour market exits are more likely to be followed by more passive activities. On the other hand, time pressure is not associated to lower participation in work and social activities: a certain amount of pressure could often be associated with interesting or challenging activities which are compatible with other external activities. Decision latitude (i.e. freedom in the job) also appears as a predictor social participation. A certain level of latitude may be associated with lower schedule constraints and thus facilitate the combination of work with other activities. In addition, the lack of decision latitude is a factor of social isolation (Vézina et al., 2004). The ability to develop skills in the workplace has a similarly positive and significant effect on paid work and social activities. This indicates that education, social background, but also continuous learning, are factors of empowerment and motivation beyond the labour market. Finally, advancement perspectives in the job intuitively have a positive effect on labour market participation, but the effect is negative on participation in social activities. A possible explanation for this could be that available job opportunities form an incentive for a higher work investment, and hence to a reduction of out-of-work activities.

In the second and third step of the estimations, we tested the effect of "good job quality" which was measured in reference to two theoretical models (effort-reward imbalance and job strain) by ratios and a distance to the origin that provides an approximation of the "intensity" of the work situation. Poor job quality - defined by an imbalanced work situation between demand and control (or between efforts and rewards) – is associated with a lower likelihood of pursuing productive activities. The demand/control model is more adequate for participation in social activities: thus, a work situation that enhances the worker with decision latitude, learning, and adequate support, has many positive outcomes, not only for his or her health, productivity, and willingness to stay on the labour market, but also for his or her willingness and ability to engage in social activities at the end of the career. It also indicates that satisfied workers are likely to compensate for their past high quality work by social non paid activities. As a consequence, it appears clearly that improving working conditions can

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have positive effects on in-work and out-of-work transitions: better working conditions can increase labour market participation and health of older workers, but also social participation.

On the contrary, job quality seems to be independent from care-giving, regardless of which variables are used. Indeed, the timing of the decision to provide care is probably determined by the uprising of a dependency need in the individuals' environment, and not by his or her personal aspirations. For those individuals who have the ability to make a choice, past working conditions could have contradictory effects. On one hand, bad job quality can be a push factor to exit the labour market and compensate lack of realization in the work place by taking care of a dependent relative (and thus low job quality could increase care). On the other hand, a straining and tiring job could reduce the ability to provide care for exhausted workers (and thus low job quality could decrease care). However, the absence of an observed effect of work conditions on care provision may also be due to the absence of data on the availability for work time arrangements.

The trivariate probit enables to study trade-offs between activities by introducing endogenous participation variables in the outcome estimations. Coefficients are not statistically significant except in some cases in the care-giving estimation (see table 4).

On one hand, the positive effect of participating in social activities on the likelihood to be a care-giver indicates that both activities are quite complementary. It is possible that the rewards people receive when participating in a social activity increase their willingness to provide other types of help, and that socially active seniors become care-givers to members of their club, association, or group networks.

On the other hand, being employed full-time has a negative effect on the probability to provide care (models C and D). This can indicate that employed individuals are less available or willing to provide help. They may have difficulties to conciliate an arising care responsibility with their present job, and be less solicited than inactive or part-time employed family members. Finally, the reverse trade-off is not observed: indeed, caring does not appear to influence the retirement decision of workers, as they have either started to be care-givers or were already conciliating care with work.

We must note that the significance of the effect of full time work on care-giving is not robust to the different specifications of the model. There are several possible explanations for this "light" trade-off we observe between work and care-giving. First, this effect is a mean for the pool of countries, but conciliating care with work may be more difficult in some countries than in others, as Fontaine's results suggest (2009). Indeed, countries differ in the availability for externalised and formal care, but also in the opportunities for flexible working time

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arrangements. In Sweden, Belgium and the Netherlands for example, workers can temporarily reduce their working hours or take leaves to provide care to adult relatives (Klammer, 2004; Klammer et al., 2007). Second, in this study, we only focus on the trade-off that employed seniors could face. At this point in the life course and for this generation, it is a sub-group that has been able to pursue a career. Although the employed population represents a significant share of senior care-givers (about half of them), we can not exclude that the burden of care may often be relegated to the inactive members of families, eventually reducing their chances to enter or re-enter the labour market. This may particularly be the case for inactive women. Indeed, the proportion of care-givers is higher among the "inactive" population compared to the employed population[13]. In addition, there is a much higher gender gap among "inactive" care-givers (women represent 75% of "inactive" care-givers[14], and "only" 55% of seniors who cumulate care-giving and work). Hence, the absence of a trade-off between care and work around retirement age does not mean that care and work are complementary activities throughout the life course.

6. Discussion

This article aimed to shed light on the potential role of job quality in favouring participation of seniors in productive activities, since working conditions, known to have long term effects on health, could also have effects on the willingness and the ability to remain in the labour market, but also to participate in other forms of unpaid work.

Based on panel data from SHARE, we estimated the medium term effect of job quality of employed Europeans aged 50-65 on three outcomes of productive activities: labour market participation, participation in social activities, and care-giving. A simultaneous probit regression method was used in order to take the interdependence of these decisions into account.

The effects of individual and contextual characteristics on social participation, care-giving, and labour market participation, were found to generally concur with findings in the literature. A few exceptions could be explained by the nature of the sample, which is restricted to employed seniors, and hence representative of older workers potentially facing a trade-off between work and other activities. Also, due to the simultaneous estimation of three

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[13] Among the 50-64 year old population, 15.6% of employed individuals provide care, versus 19.8% of care-givers among the non-employed population (first wave of SHARE).

[14] That is, 50-64 year old non-employed care-givers.

different participation outcomes, apart from two instruments for each equation, the set of explanatory variables excluded variables which would be related only to one outcome. Hence, our estimations do not aim to provide a complete analysis of the determinants to engage in each of these activities.

The main contribution of this paper is to provide new evidence on the role of job quality on each type of outcome, which is based on a detailed analysis of the role of different job quality variables and takes into account the interdependence of choices.

Job satisfaction was related to labour market participation but not to other activities, which is coherent if job satisfaction is understood as the utility derived from the job, and the match between personal aspirations and the job characteristics. Interestingly, the inclusion of precise aspects of working conditions showed that many had an effect on the participation in social activities. Whereas strong physical demands and good advancement prospects in the job reduce the likelihood of doing extra volunteer work, decision latitude and opportunities for skill development increase it. This was confirmed by applying the demand-control model, in which the "quality" of a work situation can be defined as the level of imbalance between decision latitude and physical and psychological demands. These results indicate that job quality is not only an end in itself for the present well-being of workers, but also a mean of empowerment beyond the labour market.

Finally, the issue of potential trade-offs between activities was addressed, by including endogenous variables in the regressions. On one hand, a trade-off between full time work and care-giving was observed in some cases. Although the necessity to provide care does not appear as a factor of early labour market exits, being full time employed reduces the likelihood to engage in care provision. This may hide a variety of situations, in particular depending on the intensity of care, the possibilities to share obligations within the family, the potential substitution with financial transfers, and the availability of work time arrangements and access to formal care services. However, it confirms that for seniors too, conciliating work with care responsibilities remains a difficult task, and shows that encouraging family friendly work time arrangements in career ends should be part of dependency risk management strategies. In addition, the trade-offs which are observed in this study are only those that concern actively employed seniors. Yet the burden of informal care is to a large extent carried by inactive and unemployed females of this generation. Hence, with the ageing of increasingly active female generations, the issue of substitution between care and paid work may concern an increasing number of seniors in the future. On the other hand, no trade-off between social activities and work appeared. This optimistic result, meaning that

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Europeans from this generation are able to conciliate work with social activities around retirement age, is encouraging, but our results suggest that if prolonged work lives are associated to increasing work intensity, this balance could be challenged.

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Appendix A. Participation in productive activities by country

Table 5.   Employment rates by country (%) (50-65 year old)

	Employed W1	Employed W2
Austria	40,97	31,07
Germany	59,48	50,86
Sweden	78,10	71,32
Netherlands	53,91	46,43
Spain	43,10	37,50
Italy	35,19	27,30
France	55,80	46,11
Denmark	69,59	57,94
Greece	52,61	50,55
Switzerland	74,92	68,34
Belgium	46,37	39,99
Total	**54,59**	**47,34**

Source: SHARE (% among individuals present in waves 1 and 2)

Table 6.   Social participation by country (%) (50-65 year old)

	SP in W1	SP in W2
Austria	46,02	38,99
Germany	44,54	44,89
Sweden	50,53	55,80
Netherlands	54,13	56,95
Spain	18,16	26,17
Italy	21,22	24,19
France	36,19	38,74
Denmark	52,12	61,10
Greece	41,68	36,75
Switzerland	67,40	60,19
Belgium	45,67	48,43
Total	**42,87**	**44,58**

Source: SHARE (% among individuals present in waves 1 and 2)

Table 7.   Informal care across waves (%) (50-65 year old)

	Care in W1	Care in W2
Austria	15,53	18,25
Germany	16,81	19,54
Sweden	15,66	17,57
Netherlands	18,08	23,55
Spain	19,78	18,66
Italy	23,29	24,19
France	14,38	18,64
Denmark	15,03	15,37
Greece	14,03	9,62
Switzerland	18,18	21,32
Belgium	20,75	20,97
Total	**17,48**	**18,78**

Source: SHARE (% among individuals present in waves 1 and 2)

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Appendix B. Job quality ratios

Note: Effort, reward, demand and control are adjusted scores (continuous from 0 to 4)

Figure 5.   Technical note on ratios (Effort-Reward and Demand-Control)
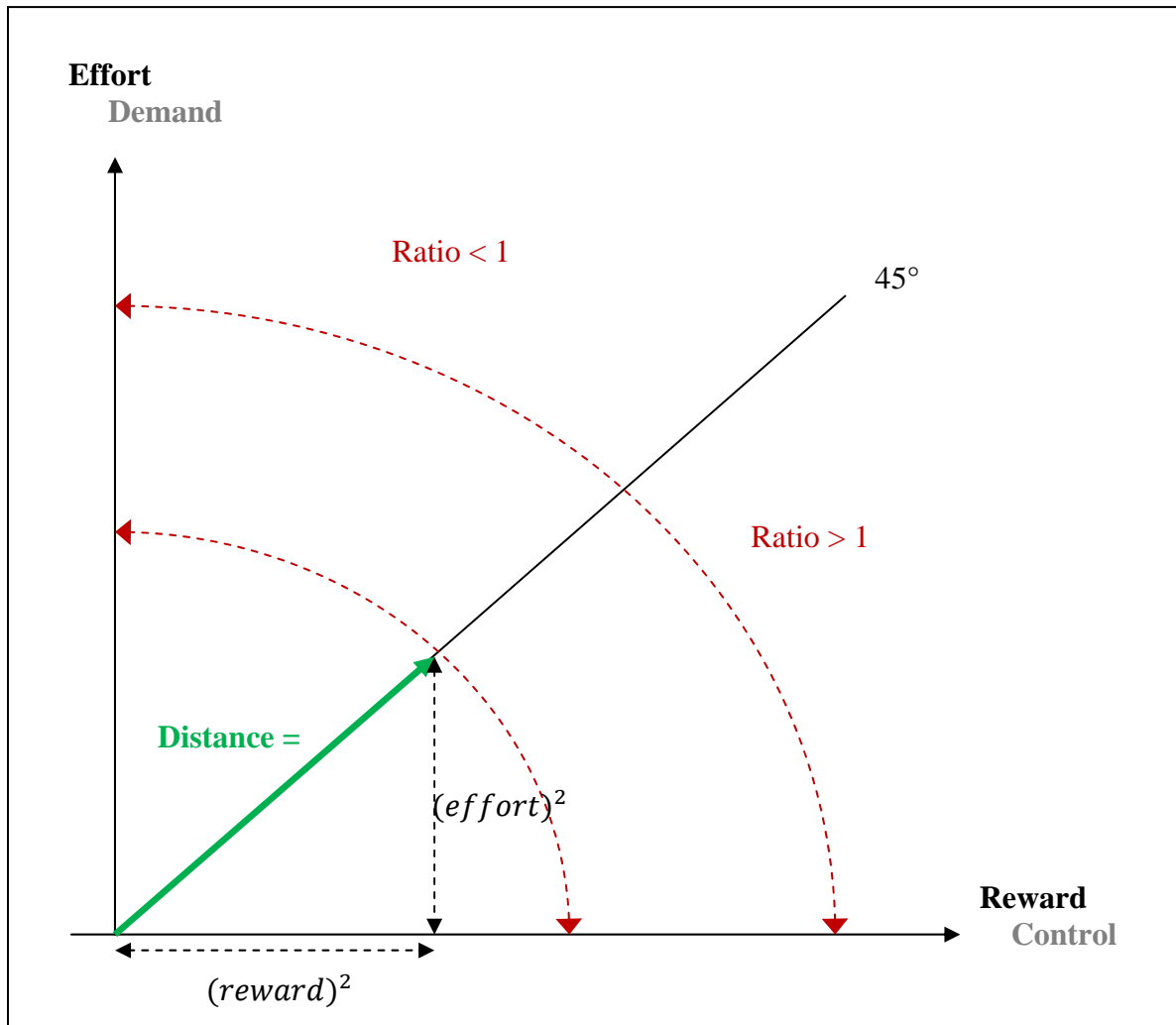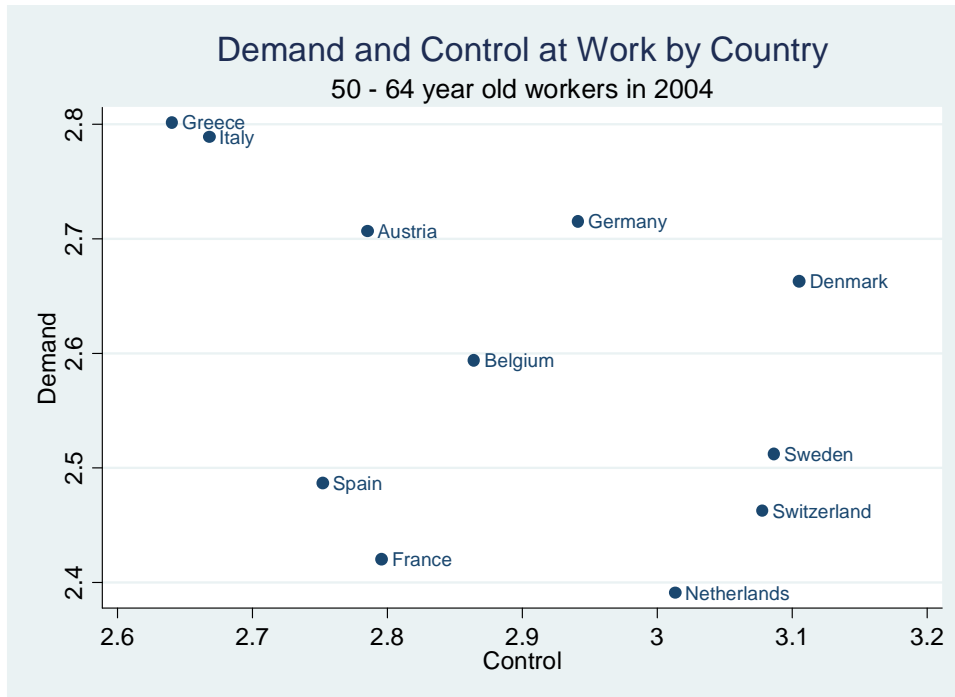

$$Ratio \; = \; (effort + 1) \, / \, (reward + 1)$$

$$Distance \; = \; \sqrt{(effort + 1)^2 + (reward + 1)^2}$$

Figure 6.   Effort and reward in 2004 by country (means)

Figure 7.   Demand and control in 2004 by country (means)

Source: SHARE (% among individuals present in waves 1 and 2)

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Appendix C. Control Variables

Age

Age of respondent in the second wave of observation (2006)

Income

Log of household's total gross income (in ppp) per units of consumption

Employment status

Self reported status in main job:

1. Employee *(ref.)*
2. Civil Servant
3. Self employed

Education

Highest certificate or degree obtained (including further education) (ISCED-97[15])

Major groups of education (ISCED-97)	Dummies
0. Pre-primary education 1. Primary education or first stage of basic education	1. Primary education
2. Lower secondary or second stage of basic education 3. (Upper) secondary education	2. Secondary education
4. Post-secondary non-tertiary education 5. First stage of tertiary education 6. Second stage of tertiary education	3. Tertiary education

Spouses' status

The spouses' participation in each type of activity (labour market status, social activities, and care-giving) is as crossed variable which can be constructed for married respondents whose spouse has also been interviewed. Thus, for each type of activity, we have the following dummies:

-   No spouse *(ref.)*
-   Spouse declares an (employment- /social- /care-) activity
-   Spouse does not declare an activity
-   Spouse was not surveyed

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[15] See for details on International Standard Classification of Education (ISCED-97) coding :
http://www.uis.unesco.org/ev.php?ID=3813_201&ID2=DO_TOPIC

Health

1. Self reported health

Questionnaire item (US-Scale): *"Would you say your health is…"*	Dummies
- *Excellent* - *Very Good*	1. Very good or excellent health *(ref.)*
- *Good* - *Fair* - *Poor*	2. Good or less than good health

2. Chronic diseases

Questionnaire item : *"Please look at card [X]. Has a doctor ever told you that you had any of the conditions on this card? Please tell me the number or number of the conditions"*	Dummies
- Heart attack including myocardial infarction or coronary thrombosis or any other heart problem including congestive heart failure - High blood pressure or hypertension - High blood cholesterol - Stroke or cerebral vascular disease - Diabetes or high blood sugar - Chronic lung disease such as chronic bronchitis or emphysema - Asthma - Arthritis, including osteoarthritis, or rheumatism - Osteoporosis - Cancer or malignant tumour, including leukaemia or lymphoma, but excluding minor skin cancers - Stomach or duodenal ulcer, peptic ulcer - Parkinson disease - Cataracts - Hip fracture or femoral fracture	1. Less than two diagnosed diseases *(ref.)* 2. Two or more diagnosed diseases

3. Physical limitations

Questionnaire item: *"For the past six months at least, to what extent have you been limited because of health problems in activities people usually do?"*	Dummies
- *Severely limited* - *Limited but not severely* - *Not limited*	1. Severely limited 2. Limited but not severely 3. Not limited *(ref.)*

4. Depression risk (Euro-D Score)

Questionnaire items on mental health (Euro-D score = sum of depressive symptoms)	Dummies
- Feelings of sadness or depression - Absence of hopes for the future - Suicidal feelings, or wishing to be dead - Feelings of guilt or self-blame - Trouble sleeping - Loss of interest in things - Irritability - Diminution of appetite - Fatigue - Difficulty in concentrating - Absence of pleasurable activities - Tearfulness	1. High depression risk (4 or more depressive symptoms) 2. Low depression risk (less than 4 depressive symptoms) *(ref.)*

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Appendix D. Instrumental variables

IV1 (labour market estimation):

Distance to retirement (wave 1)

The distance to legal minimum retirement age is the difference in years between the minimum legal retirement age (with respect to country, gender, and time of interview) and the age of respondent in at the first wave. It is coded 0 for all respondents who are older than the minimum retirement age. Note that this variable replaces the age variable in the estimation of dY1, in order to avoid collinearity between the two variables.

Type of contract (wave 1)

Self reported type of contract in main job in the first wave. Having a permanent contract is the reference category, and having fixed-term contract is the instrumental dummy.

IV2 (social activities estimation):

Trust (wave 2)

The trust variable is a 1-10 scale, from the following item:

"I would now like to ask a question about how you view other people. Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a scale from 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted".

Religious education (wave 1)

The religious education is a dummy variable from the following item:

"Have you been educated religiously by your parents?"

Reference category is "No" or "Missing", and IV dummy is "Yes".

IV3 (care –giving estimation):

Parent alive (wave 2)

This dummy variable equals 1 if respondents declared that at least one of their parents was still alive.

Duty (wave 1)

Respondents are asked to give their level of agreement to the following statement:

"Parent's duty is to do their best for their children even at the expense of their own well-being"

The dummy variable equals 1 if respondents "disagree", "strongly disagree", or "neither agree nor disagree", and 0 if respondents "agree" and "strongly agree" with the statement.

Appendix E. Further results

Table 8.   Multivariate probit : control and instrumental variables

Probit regressions		Labour market dY1		Social activities Y2		Care-giving Y3	
Interest variable (*W*)							
Job quality Score		0.035***	(0.011)	0.020**	(0.010)	-0.005	(0.011)
Control variables (*X_m*)							
Age				-0.001	(0.006)	-0.001	(0.007)
Gender	*Ref: Female*						
	Male	0.117**	(0.048)	-0.066	(0.040)	-0.458***	(0.047)
Education	*Ref: Primary*						
	Secondary	0.050	(0.059)	0.212***	(0.050)	0.193***	(0.060)
	Tertiary	0.188***	(0.061)	0.439***	(0.051)	0.189***	(0.060)
Empl. Status	*Ref: Employee*						
	Civil servant	0.072	(0.067)	0.128**	(0.056)	-0.002	(0.065)
	Self-employed	0.135**	(0.065)	-0.020	(0.054)	-0.038	(0.065)
Income	(log)	0.066***	(0.016)	0.009	(0.014)	0.041**	(0.019)
Reported Health	*Ref: Very Good*						
	Less than very good	-0.130**	(0.052)	-0.164***	(0.043)	-0.000	(0.051)
Phys. Limitations	*Ref: No lim.*						
	Not severely	0.012	(0.060)	0.106**	(0.051)	0.032	(0.059)
	Severely lim.	-0.386***	(0.100)	0.167*	(0.094)	0.117	(0.104)
Depression	*Ref: Low risk*						
	High Risk	-0.095	(0.061)	-0.038	(0.053)	0.052	(0.060)
Diseases	*Ref: <2*						
	>= 2	-0.086	(0.055)	0.014	(0.049)	0.059	(0.056)
Country	*Ref: Germany*						
	Austria	-0.048	(0.124)	-0.278**	(0.111)	0.027	(0.132)
	Sweden	0.893***	(0.105)	0.175**	(0.083)	0.045	(0.098)
	Netherlands	-0.384***	(0.105)	0.163*	(0.090)	0.296***	(0.102)
	Spain	0.502***	(0.130)	-0.405***	(0.115)	-0.053	(0.138)
	Italy	0.553***	(0.122)	-0.454***	(0.110)	0.243*	(0.122)
	France	0.847***	(0.109)	-0.129	(0.090)	0.053	(0.104)
	Denmark	0.484***	(0.111)	0.115	(0.094)	-0.101	(0.110)
	Greece	1.756***	(0.129)	-0.358***	(0.093)	-0.381***	(0.122)
	Switzerland	0.570	(0.138)	0.288	(0.109)	0.221*	(0.123)
	Belgium	0.542***	(0.101)	-0.031	(0.085)	0.172*	(0.098)
Spouse LM status	*Ref : No spouse*						
	Employed	-0.092	(0.071)				
	Not employed	-0.292***	(0.069)				

		Model 1		Model 2		Model 3	
	Not surveyed	-0.188**	(0.080)				
Spouse social activities	*Ref : No spouse*						
	Does social activities			0.351***	(0.058)		
	No social activities			-0.289***	(0.056)		
	Not surveyed			0.065	(0.065)		
Spouse care actitivites	*Ref : No spouse*						
	Provides care					0.664***	(0.079)
	No care provision					-0.087	(0.062)
	Not surveyed					0.090	(0.074)

Instrumental variables (IV_m)

		Model 1		Model 2		Model 3	
Distance to retirement		0.162***	(0.008)				
Term of contract	*Ref : Permanent*						
	Fixed-term	-0.336***	(0.096)				
Trust				0.044***	(0.008)		
Religious education	*Ref : No*						
	Yes			0.090**	(0.043)		
Parents alive	*Ref : No*						
	At least one alive					0.259***	(0.047)
Duty	*Ref : Strong*						
	Low					-0.121**	(0.057)
Cons_		-1.187***	(0.212)	-0.660*	(0.392)	-1.391***	(0.485)
Number of obs.		4615		4588		4615	
Log likelihood		-1890.81		-2826.45		-1971.02	
LR chi2		729.75		699.21		364.02	
Prob>chi2		0.000		0.000		0.000	
Pseudo R2		0.1618		0.1101		0.0845	

*Note: * p<0.10, ** p<0.05, *** p<0.01*

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References

Afsa C. (2008), "Estimer la valeur monétaire de la qualité d'un emploi", *Revue Economique*, 3(59) : 595-607.

Agren G., Berensson K. (2006), *Healthy Ageing: A challenge for Europe*, Huksvarna: Swedish National Institute of Public Health.

Akerlof G.A., Rose A.K., Yellen J.L. (1988), "Job Switching and Job Satisfaction in the US Labor Market", *Brookings Papers on Economic Activity*, 2 : 295-594.

Archambault E. (1996), *Le secteur sans but lucratif. Associations et fondations en France*, Paris : Economica.

Arksey H. (2002), "Combining informal care and work: supporting carers in the workplace", *Health and Social Care in the Community*, 10(3) : 151-161.

Assous L., Ralle P. (2000), "La prise en charge des personnes âgées : une mise en perspective internationale", *ISSA Conference: "Social Security in the Global Village"*, Sept. 2000, Helsinki.

Berecki-Gisolf J., Lucke J., Hockey R., Dobson A. (2008), "Transitions into informal care-giving and out of paid employment of women in their 50s", *Social Science and Medicine*, 67(1) : 122-127.

Bettio F., Plantenga J. (2004), "Comparing Care Regimes in Europe", *Feminist Economics*, 10(1) : 85-113.

Blanchet D., Debrand T. (2007), "Souhaiter prendre sa retraite le plus tôt possible: santé, satisfaction au travail et facteurs monétaires", *Economie et Statistique*, 403-404 : 39-60.

Blekesaune M., Solem P.E. (2005), "Working Conditions and Early Retirement: A Prospective Study of Retirement Behaviour", *Research on Aging*, 27(1) : 3-30.

Bolin K., Lindgren B., Lundborg P. (2008), "Your next of kin or your own career? Caring and working among the 50 + of Europe", *Journal of Health Economics*, 27 : 718-738.

Bound J., Burkhauser R.V. (1999), "Economic Analysis of Transfer Programs Targeted on People with Disabilities", in Ashenfelter O., Card D. (eds), *Handbook of Labor Economics*, Elsevier Science, 3 : 3417-3528.

Bourgeois A., Légaré J. (2009), "Comment la démographie façonne la population des grands parents", in Regnier-Loillier A. (ed), *Portraits de famille*, Editions de l'INED, 453-471.

Burricand C., Roth N. (2000), "Les parcours de fin de carrière des générations 1912-1941: L'impact du cadre institutionnel", *Economie et Statistique*, 335 : 63-79.

Calavrezo O. (2007), "Les contrats à durée limitée: quel impact sur la stabilisation en emploi ?", *Relief - Echanges du Cereq*, 22 (July).

Carmichael F., Charles S. (1998), "The labour market costs of community care", *Journal of Health Economics*, 17(6) : 747-765.

CAS (Centre d'Analyse Stratégique) (2010), "La 'grand-parentalité active', un triple enjeu de solidarité, de conciliation travail/hors travail et d'emploi des seniors", *Note d'analyse*, 199 (Nov).

Casado-Marin D., Garcia-Gomez P., Lopez-Nicolas A. (2008), "Labour and income effects of care-giving across Europe: an evaluation using matching", *HEDC Working Paper*, 08-23.

Choi L.H. (2003), "Factors Affecting Volunteerism among Older Adults", *Journal of Applied Gerontology*, 22(2) : 179-196.

Clark A.E. (2001), "What really matters in a job? Hedonic measurement using quit data", *Labour Economics*, 8 : 223-242.

Crespo L. (2007), "Caring for Parents and Employment Status of European Mid-Life Women", *CEMFI Working Paper*.

Currie J., Madrian B. (1999), "Health, Health Insurance and the Labor Market", in Ashenfelter O., Card D., (eds), *Handbook of Labor Economics*, Elselvier, 50 : 3309-3416.

Davoine L., Erhel C. (2007), "La qualité de l'emploi: Une approche comparative et dynamique", *Economie et Statistique*, 410 : 47-69.

Debrand T., Sirven N. (2009), "Les facteurs explicatifs du départ à la retraite en Europe", *Retraite et Société*, 57 : 35-53.

Derrienic F., Saurel-Cubizolles M.J., Monfort C. (2003), "Santé, conditions de travail et cessation d'activité des salaries âgés", *Travail et Emploi*, 96 : 37-53.

De Vaus D., Gray M., Stanton D. (2003), "Measuring the value of unpaid household, caring and voluntary work of older Australians", *Australian Institute for Family Studies Research Paper*, 34.

Erlinghagen M., Hank K., (2006), "The participation of older Europeans in volunteer work", *Ageing and Society,* 26 : 567-584.

Esping-Andersen G. (1990), *The Three Worlds of Welfare Capitalism*, Princeton University Press.

Ettner S., (1995), "The impact of 'parent care' on female labour supply decisions", *Demography*, 32(1) : 63-80.

Fontaine R., Gramain A., Wittwer J. (2007), "Les configurations d'aide familiale mobilisées autour des personnes âgées dépendantes en Europe", *Economie et Statistique*, 403-404 : 97-115.

Fontaine R. (2009), "Aider un parent âgé se fait-il au détriment de l'emploi?", *Retraite et Société*, 58 : 31-61.

Freeman R.B. (1978), "Job satisfaction as an Economic Variable", *American Economic Review*, 68(2) : 135-141.

Frey B.S., Stutzer A. (2002), "What can economics learn from happiness research", *Journal of Economic Literature*, 40 : 402-435.

Fukuyama F. (1995), *Trust: The Social Virtues and the Creation of Prosperity*, New York: The Free Press.

Gazier B., Schmid G., (2001), "*Transitional Labour Markets and Their Impact on Industrial Relations*", Report to the High Level Group on industrial relations and change European Commission, Employment and Social Affairs DG.

Greene W.H. (2006), *Econometric Analysis*, Upper Saddle River (N.J.): Pearson-Prentice Hall, Sixth Edition.

Gustman A.L., Steinmeier T.L. (2004), "Minimum Hours Constraints, Job requirements and Retirement", *NBER Working Paper*, 10876.

Hairault J.O., Langot F., Sopraseuth T. (2010), "Distance to Retirement and Older Worker's Employment: The Case for Delaying the Retirement Age", *Journal of the European Economic Association*, 8(5) : 1034-1076.

Karasek R., Theorell T. (1990), *Healthy Work: Stress, Productivity, and the Reconstruction of Working Life*, New York : Basic Books.

Klammer U. (2004), "Flexicurity in a life-course perspective", *Transfer: European Review of Labour and Research*, 10 : 282-299.

Klammer U., Wilthagen T., Chung H., Thiel A. (2007), "Flexibility and Security over the Life Course. Take it or leave it: flexible working-time arrangements and the synchronization of business cycle and life cycle", *European Foundation for the Improvement of Living and Working Conditions, Working Paper*, 2.

Layard R. (1980), "Human Satisfaction and Public Policy", *The Economic Journal*, 90(360) : 737-750.

Layard R. (2005), *Happiness: Lessons from a New Science*, London : Penguin Press.

Lévy-Garboua L., Montmarquette C. (2004), "Reported job satisfaction: what does it mean?", *Journal of Socio-Economics*, 33 : 135-151.

Lévy-Garboua L., Montmarquette C., Simmonet V. (2007), "Job Satisfaction and Quits ", *Labour Economics*, 14(2) : 251-268.

Lindström M. (2004), "Social capital, the miniaturization of community and self-reported global and psychological health", *Social Science and Medicine*, 59 : 595-607.

Lindström M. (2006), "Psychosocial work conditions, social participation and social capital: A causal pathway investigated in a longitudinal study", *Social Science and Medicine*, 62 : 280-291.

Linn M.W., Sandifer R., Stein S. (1985), "Effects of unemployment on mental and physical health", *American Journal of Public Health*, 75(5) : 502-506.

Lumsdaine R.L., Mitchell O.S. (1999), "New Developments in the Economic Analysis of Retirement", *Handbook of Labor Economics*, Elsevier B.V, 3(49) : 3261-3307.

Maddala G.S. (1983), *Limited-dependent and Qualitative Variables in Econometrics*, Cambridge University Press.

Mathers C.D., Schofield D.J. (1998), "The health consequences of unemployment: the evidence", *Medical Journal of Australia*, 168 : 178-182.

Mooney A., Statham J., Simon A., (2002), "The pivot generation: informal care and work after fifty", *Business & Economics*, Policy Press.

North D.C. (1990), *Institutions, Institutional Change, and Economic Performance*, Cambridge: Harvard University Press.

Pichler F., Wallace C. (2007), "Patterns of Formal and Informal Social Capital in Europe", *European Sociological Review*, 23(4) : 423-435.

Pozzebon S., Mitchell O.S. (1989), "Married women's retirement behaviour", *Journal of Population Economics*, 2(1) : 39-53.

Prouteau L., Wolff F.C. (2007), "La participation associative et le bénévolat des seniors", *Retraite et société*, 50(1) : 157-189.

Putnam R.D., Leonardi R., Nanetti R. (1993), *Making Democracy Work*, Princeton University Press.

Ruiter S., De Graaf N. (2006), "National Context, Religiosity, and Volunteering: Results from 53 Countries", *American Sociological Review*, 71(2) : 191-210.

Siddall C., Kjaeserud G. et al. (2007), "Healthy ageing: keystone for a Sustainable Europe – EU health policy in the context of demographic change", *Discussion paper of the services of DG SANCO, DG ECFIN and DG EMPL*, European Commission (January).

Siegrist J. (1996), "Adverse effects of high-effort/low reward conditions", *Journal of Occupational Health Psychology*, 1 : 27-41.

Siegrist J., Wahrendorf M., Von dem Knesebeck O., Jürges H., Börsch-Supan A. (2006), "Quality of work, well-being, and intended early retirement of older employees – baseline results from the SHARE Study", *European Journal of Public Health*, 17(1) : 62-68.

Sirven N., Debrand T. (2008), "Social participation and healthy ageing: An international comparison using SHARE data", *Social Science and Medicine*, 67(12) : 2017-2026.

Sirven N., Godefroy P. (2009), "Le temps de la retraite est-il improductif?", *Retraite et société*, 57 : 75-97.

Smith D.H. (1994), "Determinants of Voluntary Association Participation and Volunteering: A Literature Review", *Nonprofit and Voluntary Sector Quarterly*, 23(3) : 243-263.

Vézina M., Derrienic F., Monfort C. (2004), "The impact of job strain on social isolation: a longitudinal analysis of French workers", *Social Science & Medicine*, 59 : 29-38.

Wahrendorf M., Siegrist J. (2010), "Working Conditions in Mid-life and Participation in Voluntary Work After Labour Market Exit", *MEA Discussion Paper*, 225-2010.

Wilson J., Musick M. (1997), "Who Cares? Toward an Integrated Theory of Volunteer Work", *American Sociological Review*, 62 (5):694-713.

Woolcock M. (2001), "The Place of Social Capital in Understanding Social and Economic Outcomes", *ISUMA Canadian Journal of Policy Research*, 2.

Ziersch A., Baum F. (2004), "Involvement in civil society groups: Is it good for your health?", *Journal of epidemiology & Community Health*, 58 : 493-500.

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