# Self-employment and Early Retirement:
# The Moderating Role of Well-being

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## Abstract

As the ageing of the population has become a concern in most Western countries, scholarly research on workers' retirement behavior has grown accordingly. While the literature has widely explored the retirement behavior of paid employees, the self-employed have received less attention despite the impact of their retirement on the economy. In this paper, we compare these two groups in terms of their likelihood of engaging in early retirement. In addition, we follow recent trends in the literature by exploring the moderating effect of well-being in the decision to retire early. We posit that self-employed workers are less likely to engage in early retirement due to the non-pecuniary benefits that they enjoy, and because they tend to identify themselves with their firms and to show higher levels of commitment to work. Moreover, we theorize that such aspects also make them less sensitive to well-being when evaluating retirement. Using data from the Survey of Health, Ageing and Retirement in Europe (SHARE), we find support for these hypotheses. Self-employed are less likely to retire early, and the usual negative relationship between well-being—measured as job satisfaction—and retirement is present for paid employees but not for the self-employed.

**Keywords:** Self-employment; early retirement; well-being; job satisfaction; life satisfaction; interaction effects; SHARE.

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# 1. Introduction

The study of workers' retirement behavior and the different aspects that motivate it has become particularly relevant nowadays, as the ageing of the population represents a threat to economic development, the labor force and the sustainability of the pension systems in many Western countries (Ilmarinen, 2001; OECD, 2006; European Commission, 2011; Eurostat, 2017). Some of the baby boomers are already retiring (Martin et al. 2009; De Preter et al., 2013; Stafford et al., 2019) while the birth rate is decreasing and life expectancy is increasing (Alley and Crimmins, 2007). In fact, the current predictions suggest that the share of the working-age population in the total population —which in 2014 accounted for 65,9%— will drop below 60% by 2035 while the elderly will increase steadily (Eurostat, 2015). Hence, a smaller number of active individuals in the workforce will have to provide financial coverage to an increasing number of older people dependent on public funds (Siegrist et al. 2007; European Commission, 2010). In particular, early retirement constitutes a great challenge both for social and health policy in developed countries (Siegrist et al., 2007; Eurostat, 2017). As a result, governments have started to design policies focused on discouraging early retirement decisions (Johnson et al., 2011), for example by increasing the legal retirement age, making early retirement less appealing in monetary terms, or concentrating efforts on the labor continuity of older workers (O'Loughlin et al., 2010; Truxillo and Fraccaroli, 2013; European Commission, 2010, 2015; Eurostat, 2017).

The literature suggests that early retirement is determined by the interplay of a wide set of personal (e.g., Schalk et al., 2010; van den Berg et al., 2010; Wang and Shultz, 2010; Christensen and Kallestrup-Lamb, 2012) and work-related factors (Lund et al., 2001; Morris et al., 2020). Among the several drivers of retirement, past studies have highlighted the role of well-being (Horner, 2014; Davies et al., 2017). In particular, the

literature suggests that individuals with higher well-being are more likely to delay their retirement (Davies and Cartwright, 2011; Kautonen et al., 2012; Oakman and Wells, 2013). To date, scholars have focused on how well-being shapes the early retirement behavior of paid employees (e.g. Mein et al., 2000; Zappalà et al., 2008; Topa et al., 2009; Kubicek et al., 2010), but little is known about its potential impact on the retirement behavior of self-employed workers.

The retirement of self-employed workers has a direct impact on the continuity of their firms (Wennberg et al., 2010), which implies not only that they would add to the increasing number of retired workers, but also that their employees may lose their jobs, and that the business fabric or even economic sustainability could be affected (Gimmon et al., 2018; Bonsdorff et al. 2019; Morris et al., 2020). Yet, only a few studies have delved into the early retirement decision of the self-employed workers (Parker and Rougier, 2007; Axelrad and Mcnamara, 2017; Chevalier et al., 2018) and they have rarely been compared to paid employees in that regard. Thus, there are at least to questions in the literature that remain unanswered by the time of writing: Is the probability of early retirement different for self-employed workers compared to paid employees? Does well-being moderate that difference in early retirement behavior between the two groups? This paper aims at providing an answer to such questions.

Several studies show that self-employed workers report higher levels of well-being compared to paid employees (Andersson, 2008; Lange, 2012), especially in terms of job satisfaction (Blanchflower, 2004; Benz and Frey, 2008; Binder and Coad, 2013; Kautonen et al., 2017). Since individuals with high satisfaction rates tend to retire later in life (Zappalà et al., 2008), we first posit that the self-employed are more likely than paid employees to delay their retirement. Notably, the higher self-reported well-being of self-employed workers has often been linked to their increased autonomy, job control, and

flexibility, which allow them to manage their work environment and adapt their work schedules as required by their particular necessities (Birley and Westhead, 1994; Croson and Minniti, 2012; Carter et al., 2013). In addition, the literature provides evidence that self-employed workers tend to be more identified with and more passionate about their work, and to develop a stronger sense of work commitment and attachment (Shane et al., 2003; Cardon et al., 2005; Cardon et al., 2009). Hence, we theorize that their higher levels of job control and attachment to work make self-employed workers less sensitive to well-being when evaluating their retirement, as they may have more alternatives to improve their well-being without resorting to retirement.

We test these hypotheses with data drawn from the Survey of Health, Ageing and Retirement in Europe (SHARE), which allows identifying around five thousand individuals from 11 European countries who are susceptible of retiring. In particular, we evaluate whether the likelihood of early retirement is different for self-employed workers as compared to paid employees, and whether the role of well-being in the decision to retire early is different between these groups. In order to capture different aspects of well-being, we use two different proxies: job satisfaction and life satisfaction. Our results provide two main contributions that may be of interest to academics, self-employed workers and policy makers. First, we find that self-employed workers are significantly less likely than wage employees to go into early retirement, conditioned on a wide set of demographic and work-related characteristics. Second, we find differential effects of well-being for self-employed workers and paid employees, but only in terms of job satisfaction. Specifically, results suggest that, while higher levels of job satisfaction reduce the likelihood of early retirement for paid employees, the effect is not significant for the self-employed. We interpret these results as evidence of a lower sensitivity of self-

employed workers to well-being, which could be driven by their power to make changes at work and their higher level of commitment and attachment to work.

The rest of the article proceeds as follows. In section 2, we review the pertinent literature on early retirement and its link to self-employment and well-being and develop our hypotheses. Section 3 describes the empirical approach. The data, sample construction, and measures used are described in section 4. Section 5 presents and discusses our findings and, finally, section 6 concludes this paper.

## 2. Literature Review and Hypotheses

### 2.1. Self-employment and Early Retirement

Entrepreneurship at old ages —also called "gray or senior entrepreneurship"— has generated a special interest among academics and politicians in recent years (Parker and Rougier, 2007; US Senate Special Committee on Aging, 2014; Morris et al., 2020). However, very few studies have focused on the retirement behavior of the self-employed workers (e.g. Parker and Rougier, 2007; Axelrad and Mcnamara, 2017; Chevalier et al., 2018), in contrast with paid employees, who have received substantial attention. In fact, to the best of our knowledge, no other study has directly analyzed whether self-employed individuals are more likely than paid employees to engage in early retirement. However, despite the lack of direct evidence, the literature provides different reasons to expect that self-employed workers will be less likely to retire early.

Self-employment is a type of occupation that entails a series of non-pecuniary benefits that can cause changes in retirement plans (Blanchflower and Oswald, 1998; Hamilton, 2000; Hundley, 2001; Benz and Frey, 2008a,b). Autonomy, or job control, is one of the most prominent non-pecuniary characteristics of self-employment (Hundley, 2001; Croson and Minniti, 2012). As the self-employed are essentially their own bosses, they enjoy greater levels of autonomy than paid employees. The higher autonomy of the self-

employed translates into an increased freedom to manage the work environment (Benz and Frey, 2008a), which also encompasses the decision of when and how to retire (Mutran et al., 1997; Carter and Cook, 1995; Chevalier et al., 2013). In general, autonomy is likely to positively influence the prolongation of the work stage, as older people show a high preference for working alone and having greater decision-making power at work (Wang and Shultz, 2010). Similarly, the increased flexibility associated with being self-employed is also expected to play a prominent role in adjusting retirement (Loscocco and Roschelle, 1991). Specifically, being able to decide the time and place of work, having the possibility of dealing with the issue of work-life balance or being able to delegate tasks as the years go by are adaptations that also favor a delay in retirement (Hurd and McGarry, 1993).

Such non-pecuniary aspects are behind the fact that the self-employed have higher levels of *procedural utility* (Benz and Frey, 2008a,b), which implies that they enjoy what they do and not merely the outcome of it. This sense of joy and job control makes them more likely to develop a sense of entrepreneurial identity and to find meaning through their entrepreneurial work (Hoang and Gimeno, 2010), which may lead them to show higher levels of organizational commitment and attachment to work (Adams and Beehr, 1998; Wanberg et al., 1999) and, ultimately, to postpone their retirement (Kim and Moen, 2002). Furthermore, other studies have highlighted the role of entrepreneurial passion, defined as a "consciously accessible intense positive feeling that results from the commitment to activities with meaning of identity and notoriety for the entrepreneur" (Cardon et al., 2009). This feeling translates into an involvement, and even love (Shane et al., 2003) to the entrepreneurial activity, as well as paternal feelings towards the venture (Shepherd and Haynie, 2009; Hoang and Gimeno, 2010), which causes the entrepreneur

to never fully retire, unless her health status becomes a serious hindrance (Morris et al., 2020).

In addition, when considering retirement and developing a strategy to leave the labor market, self-employed workers face a more complex process because they need to decide what to do with their firms. While self-employed workers may decide to liquidate their businesses in favor of a relatively rapid exit, other alternatives such as transferring or selling the business or even going public —all of which can be more attractive to the business owners— entail numerous time-consuming challenges such as assessing the state of the company, finding possible successors or buyers, as well as planning the replacement of their figure in the company (Wennberg et al., 2010) which generally lengthen the retirement decision.

In sum, the above arguments lead us to expect that self-employed workers will be less inclined to opt for early retirement. While some factors may prompt self-employed workers to precipitate their retirement —for example, some studies have linked retirement decisions of the self-employed to poor venture performance and family pressures (Raymo and Sweeney, 2006)— these are likely overshadowed by those mentioned above, as well as by other aspects ranging from age and experience (DeTienne and Cardon, 2012) to personal feelings and values (DeTienne and Chirico, 2013; Wang and Shi, 2014), all of which have the ability to motivate self-employed workers to continue with their businesses, even in situations of poor performance or even risk of bankruptcy (DeTienne et al., 2008; Holland and Shepherd, 2013). Our first hypothesis is, therefore, as follows:

*H1: Compared to paid employees, self-employed workers are less likely to engage in early retirement.*

## 2.2. The Role of Well-being on Retirement

The literature has explored multiple work-related and personal sociodemographic determinants involved in the retirement decision.[1] For instance, individuals at pre-retirement age are more likely to engage in early retirement when their overall health status is poor (Schalk et al., 2010), when their household finances are solid (Kim and Feldman, 2000; van Dam et al., 2009; Forster-Holt, 2013; De Wind et al., 2014), or when they have grandchildren (Gerke and Lauridsen, 2013). In contrast, those who are highly educated (Blöndal and Scarpetta, 1999; Fisher et al., 2016) or have good prospects of climbing up the ladder at their current firms (Damman et al., 2013) tend to delay their labor market exit.

Among the many factors influencing retirement, recent studies have highlighted the relevance of psychological aspects, including individual well-being (Mein et al., 2000; Kim and Moen, 2002; Wang, 2007; Bender, 2012; Horner, 2014). Well-being can be defined as a state characterized by sustained feelings of happiness and satisfaction as well as by a generalized psychological stability (Ryan and Deci, 2001; Warr, 2013). The literature has approached the relationship between well-being and retirement in two different directions. In general, most studies on the field have focused on the impact of retirement on the well-being of the elderly (Reitzes and Mutran, 2004; Bonsang and Klein, 2012; Luhmann et al. 2012; Halleröd et al., 2013; Gorry et al. 2018), with the reverse analysis being far less underexplored. This is somewhat surprising given the growing global interest in understanding the drivers of early retirement and studying the well-being of workers (Bender, 2012).

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[1] See, among others, Schalk et al. (2010), Topa et al. (2009, 2018) and Wang and Shultz (2010) for recent, in-depth reviews on the determinants of retirement intentions and behavior.

Since retirement implies abandoning work, past research has typically focused on well-being at work when looking at the role that well-being plays on the decision to retire (Mein et al., 2000; Adams et al., 2002; Davies and Cartwright, 2011; Kautonen et al., 2012; Oakman and Wells, 2013). Work is a key element in workers' lives not only because it is the main income source, but also due to the opportunities and benefits it offers, for example in terms of personal development, establishing social relationships, acquiring new skills or avoiding functional loss (Houlfort et al., 2015). As such, it is unsurprising that the overall conclusion from such studies is that well-being at work is a key determinant of retirement decisions. Specifically, attitudes of positivity, commitment and attachment towards work, as well as high job satisfaction are negatively related to early retirement (Hayward et al., 1998; Houlfort et al., 2015). Conversely, if workers do not enjoy their work or do not feel identified with it, they tend to try to leave that job or even retire as soon as they can (Davies et al., 2017).

Importantly, the overall negative relationship between well-being and retirement behavior may not be universal across several dimensions. For example, Davies et al., (2017) recently found that, although increases in job satisfaction were related to a decrease in the likelihood of retirement for the case of low income employees, the relationship was non-significant for the case of high income employees. They argue that this result is explained by the lower freedom that lower income employees have to react to a situation of low satisfaction at work compared to higher income employees. Along this line, a differential effect of well-being on the decision to retire early may also exist when comparing self-employed workers and paid employees.

As stated in the previous section, self-employed workers enjoy higher levels of autonomy and flexibility which allow them to implement changes at work to a larger extent than paid employees. This should grant them more freedom to react to situations

in which well-being is low, at least when such low well-being is driven by dissatisfaction at work. For instance, in cases of conflict with certain employees or discontent with work environment (e.g. material resources, establishment location, office arrangement…), they have a higher power to replace them, whereas paid employees might need to live with it or find another solution such as changing jobs or, when they are close to the retirement age, exit the labor market. In addition, the higher levels of emotional attachment, commitment, passion and identity that self-employed workers have towards their work arguably makes them more likely to decide to continue with their ventures even in cases when well-being is low and their power to influence it through changes at work is limited. Beyond these arguments, the fact that retirement plans tend to be more complex for self-employed workers than for paid employees can result in delayed retirement even when the intention to retire is equal among both groups.

In summary, while well-being —and particularly well-being at work— is expected to be negatively related to early retirement, we posit that the effect will be different for self-employed and paid employees. In particular, we hypothesize that the effect of well-being on early retirement will be less pronounced for the self-employed, as they have more tools to react to situations of low well-being without resourcing to abandoning the labor market, and due to their higher emotional attachment, feeling of identity and more complicated retirement strategies. Thus, our second and last hypothesis refers to the moderating role of well-being on the relationship between type of occupation and early retirement:

*H2: The effect of well-being on early retirement will be different for self-employed workers and paid employees. Specifically, the likelihood of early retirement for the self-employed workers is less sensitive to well-being than for the case of paid employees, thus making the difference in early retirement behavior between these two groups smaller as well-being increases.*

## 3. Empirical Approach

The goal of our analysis is to identify the role of occupational status (distinguishing self-employed workers and paid employees) and well-being on the decision to retire early. Empirically, we approach this analysis by estimating the probability of early retirement as follows:

$$Prob.(ER_{it}) = \beta_0 + \beta_1 SE_{it-1} + \beta_2 WB_{it-1} + \beta_3 X_{it-1} + u_{it} \qquad (1)$$

where $ER_{it}$ takes value 1 when the individual $i$ is an early retiree in the current time period $t$, and 0 otherwise, $SE_{it-1}$ is equal to 1 when the individual was a self-employed worker in the previous period and 0 when she was a paid employee, $WB_{it-1}$ represents the individual's well-being in the previous period, $X_{it-1}$ is a set of individual-level controls measured at *t-1* and including demographic and employment characteristics as well as country, industry, and wave dummies, and $u_{it}$ captures the unobserved heterogeneity. Because of the binary nature of the dependent variable, we estimate the model in equation (1) through *logit* regressions and compute and report marginal effects.

Because we are not only interested in the isolated role of self-employment and well-being on the probability of early retirement, but also on their combined effect, we expand the model in equation (1) by adding an interaction term between these two independent variables. The extended model is thus the following:

$$Prob.(ER_{it}) = \beta_0 + \beta_1 SE_{it-1} + \beta_2 WB_{it-1} + \beta_3 SE_{it-1} \times WB_{it-1} + \beta_4 X_{it-1} + u_{it} \quad (2)$$

where the combined effect of previous self-employment and well-being on the current likelihood of early retirement is given by $\beta_3$. In robustness tests, we tackle the potential bias coming from reverse causality by incorporating a measure of early retirement

intentions as an additional control variable.[2] The next section describes the data used to perform the analysis.

## 4. Data

In our analysis of the role of occupational status and well-being on the decision to retire early, we make use of the Survey of Health, Ageing, and Retirement in Europe (SHARE). SHARE is a longitudinal and cross-country database which gathers socio-economic and health information on individuals aged 50 or older in Europe. More specifically, participants in SHARE are asked to provide details about their retirement, occupation, income, wealth, household finances, demographics, mental and physical health, as well as different aspects of well-being, among others. The first wave of this survey was run in the years 2004 and 2005 for 11 countries (Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden, and Switzerland), with more countries being included in subsequent waves. In our case, we employ waves 1, 2, 4 and 5, covering the years 2004 to 2013, and restrict our sample to the EU-11 countries, due to data availability in the different waves.

We exploit the longitudinal dimension of the SHARE dataset to identify transitions from either self-employment or paid employment into early retirement. Hence, we focus on individuals whose age is below the country-specific mandatory retirement age, who we can observe in at least two consecutive waves[3] and who were either self-employed or paid employees in their first appearance. All these restrictions leave us with a total of 5,314 observations (5,204 individuals).

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[2] See section 5.2 for further details on such robustness tests.

[3] Out of the total number of individuals, 97.94% appeared in two consecutive waves, while only 2.06% appeared in more than two consecutive waves.

### 4.1. Measures and Variables

Our dependent variable is early retirement, and it indicates whether an individual is an early retiree or a non-retiree in the current time period. In the SHARE dataset, individuals self-report their occupational status by answering the question "*In general, which of the following best describes your current employment situation?*". The respondents must choose between (i) retired, (ii) employed or self-employed, (iii) unemployed, (iv) permanently sick or disabled, (v) homemaker, and (vi) other. We code individuals as early retirees when they answer "retired" and their age is below the country-specific mandatory retirement age.

Individuals who claim to be employed or self-employed are further asked the question "*In your main job, are you an employee, a civil servant, or a self-employed?*". We utilize the participants' answer to this question to precisely identify their occupational status, thus distinguishing between employees and self-employed workers.[4]

In order to measure well-being, we use two alternative proxies that have been widely used in the literature. Our first measure is job satisfaction, which is commonly considered an important component of overall well-being (Andersson, 2008; Binder and Coad, 2016; Böckerman and Ilmakunnas, 2019) and has been shown to be highly correlated with happiness (Blanchflower and Oswald, 1998; Seligman, 2012). Job satisfaction is measured as the extent to which participants agree to the item "*All things considered I am satisfied with my job*". The answer to this question is coded as a 4-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (4).

In addition to job satisfaction, we use life satisfaction as a proxy of well-being, following past studies (e.g. Sim et al., 2011; Binder and Coad, 2013, 2016; Sëva et al.,

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[4] We do not include civil servants in our analysis, as they may have different motivations and be subject to special regulations in relation to early retirement.

2016; Sohier et al., 2020). Life satisfaction has been established as a valid proxy for subjective well-being (Diener et al., 1999; Sim et al., 2011; Naudé et al., 2014; Binder and Coad, 2016), and although it is associated with job satisfaction (Seligman, 2002), these measures can be interpreted as complementary, as they encompass different aspects of an individual's well-being. SHARE includes the question "*How satisfied are you with your life?*", with the possible answers ranging from completely dissatisfied (1) to completely satisfied (4). Hence, we utilize the answers to that question to account for individuals' life satisfaction.

Beyond these variables of interest to our study, we further incorporate a wide range of control variables in our analysis. In terms of demographic characteristics, we include individuals' age and gender, whether or not they are foreigners, married, have children and grandchildren, provide help to other people (including family members, friends, and neighbors), their self-perceived mental and physical health status,[5] their education level, information on household financial situation and household savings for long-term investments, and country dummies. As for employment characteristics, we account for the respondents' number of working hours, prospects for job advancement, job security, whether they are entitled to pension benefits, as well as industry dummies, and whether they had early retirement intentions.

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[5] To measure mental health, we employ a dummy variable based on EURO-D, as provided by SHARE. The EURO-D variable lists 12 different symptoms of mental illness. When individuals report having 4 or more of these symptoms, they are classified as being depressed (Mehrbrodt et al., 2017). Hence, our measure of mental health takes value 1 when EURO-D is 4 or higher, and 0 otherwise. Our measure of self-perceived physical health is based on the SD-36 questionnaire (Ware and Gandek, 1998; Mehrbrodt et al., 2017) ranging from excellent (1) to poor (5).

### 4.2. Descriptive Statistics

Table 1 exhibits descriptive statistics for the full sample, as well as for the groups of early retired and non-retired workers separately. Out of the total number of individuals in our sample, we observe 272 (5.12%) early retirees and 5,042 (94.88%) non-retirees. The share of non-retirees who were previously self-employed is 18%, whereas among early retirees it is just 9% (see table A1 in the Appendix for descriptive statistics by self-employment status). On average, satisfaction levels with the previous job appear to be higher among non-retired workers (3.41) than among those who retired early (3.38). Yet, there appears to be no difference in terms of life satisfaction in the previous period between non- and early retirees.

Regarding the demographic characteristics of the individuals in our sample, the average age of those who retire early is roughly 60 years old, whereas among non-retirees it is slightly below 57. The shares of women and foreigners are larger among non-retirees (49% and 9%, respectively) than among early retired individuals (42% and 7%). Early retired workers are married and have children and grandchildren more often than non-retirees. Moreover, early retirees tend to have individuals who need their help more often than non-retirees. This may suggest that early retirees have higher pressure from family members or other relatives in terms of caring obligations as compared to non-retirees. We also observe that the share of non-retirees who report a bad self-perceived mental health is higher than that of early retirees, but the latter score higher in our measure of poor physical health than the former. In terms of academic background, non-retirees seem to be more educated than early retired workers. Additionally, around 83% of early retired workers report a good household financial situation (measured as the ability of the household to make ends meet) while this figure is only 74% among non-retired workers. Yet, the latter seem to have higher household savings than the former.

Differences between non- and early retirees also exist as regards employment characteristics in the previous year. Early retired individuals worked fewer hours per week (36.27 compared to 37.55) in the previous year, and they report having good prospects for job advancement less often (28% compared to 39%). However, the share of early retirees who report having good job security in the previous year is 83%, which is slightly higher than among non-retired workers (79%). Importantly, they differ substantially in terms of their access to pension benefits. While 85% of non-retirees are entitled to pension benefits, this figure is only 46% for early retirees. Cuts in the amount of pension benefits associated to early retirement are common in several countries (Blöndal and Scarpetta, 1997), and this may prevent those workers who are entitled to it from retiring before the mandatory age. Differences are also found in relation to the industries where they worked in the previous year. Most notably, non-retirees were more represented in wholesale and retail trade, health and social work, and other social and personal services, whereas early retired were more prominent in construction, financial intermediation, and, especially, manufacturing.

In sum, there are numerous differences in terms of observable characteristics between individuals who retire early and those who do not. This highlights the relevance of accounting for a wide range of control variables in regression methods aiming at isolating the effects of previous occupational status as well as well-being levels (in terms of job and life satisfaction) on the probability of early retirement. Next, we present and discuss our results.

## 5. Results

### 5.1. Main Results

Results from the analysis of the probability of early retirement are presented in table 2. The table contains three different specifications (models I, II and III), each of them

structured in two different columns. The first column of each model shows marginal effects—obtained from *logit* regressions—of the independent and control variables, while the second column displays the associated z-statistic. The predicted probability of early retirement estimated in each model is showed at the bottom of the table. All models include controls for demographic and employment characteristics, as well as industry, country and wave dummies.

Model I in table 2 shows the relationship between self-employment status in the previous wave and the probability of early retirement in the current wave. Compared to those who were paid employees the period before, the probability of retiring early among those who were self-employed is 5.1 percent points smaller. This result is statistically significant at the 99% confidence level.[6] This result is supportive of previous studies. Self-employed workers have been found to retire later than the average worker (Axelrad and Mcnamara, 2017; Kelley et al., 2014; Blöndal and Scarpetta, 1999), and to be more likely to engage in partial retirement strategies (Morris et al., 2020; Ekerdt et al., 1996). Moreover, the literature provides evidence that early retirement is rare among the self-employed. For example, in a sample of Swiss workers, Dorn and Sousa-Poza (2005) found that only 2% of early retirees had been self-employed as their last occupation, and only around 18% of small business owners in the study performed by Morris et al. (2020) planned to pursue early retirement.

Results concerning the relationship between job satisfaction and the probability of early retirement are presented in model II. As expected, the relationship between job satisfaction and early retirement is negative. Specifically, an increase of 1 point in a 4-point liker scale of job satisfaction leads to a decrease of 1.1 percentage points in the

[6] The predicted probability of early retirement obtained from our estimation for the case of paid employees was 5.93%, whereas it was only 2.09% for the self-employed.

probability of early retirement. Similar conclusions have been found in some past studies. For instance, lower levels of job satisfaction were associated to a higher likelihood of early retirement among British civil servants (Mein et al., 2000), and general practitioners (Sibbald et al., 2003). Similarly, individuals with higher levels of job satisfaction were less likely to retire early in a sample of high-school graduates from the Wisconsin Longitudinal Studies (Kubicek et al., 2010). In Finland, Kautonen et al. (2012) found that job satisfaction was positively related to delayed retirement, and Böckerman and Ilmakunnas (2019) reached similar results in terms of the intention and the decision to retire early when combining survey and panel register data. Similarly, Kalokerinos et al. (2015) gathered survey data of over 600 older employees at a large Australian organization and found that job satisfaction was negatively related to interest in phased retirement. In addition, in meta-analysis studies of early retirement antecedents, Topa et al. (2009, 2018) found negative relationships between job satisfaction and early retirement.

The third specification in table 2 (model III) suggests that life satisfaction is not directly associated with the probability that individuals engage in early retirement, conditioned on demographic and employment-related characteristics, as well as controlling for the individuals' previous self-employment status. Not much evidence has been documented in terms of the effect of life satisfaction on early retirement, with the work by von Bonsdorff et al. (2010) in Finland being a notable exception. Our results are in line with theirs.

In sum, results in table 2 support our first hypothesis, i.e. self-employment is negatively associated with the probability of early retirement. In all models, control variables remain stable and work as expected based on past studies. For example, we find a positive relationship between age and the probability of early retirement, which is in

line with previous works by Gustmann and Steinmeier (1986, 2000), among others. Moreover, having grandchildren (Gerke and Lauridsen, 2013) and good household financial situation (van Dam et al., 2009; Forster-Holt, 2013; De Wind et al., 2014) are positively related to early retirement, whereas having tertiary education (Blöndal and Scarpetta, 1999; Fisher et al., 2016) and good prospects of job advancement (Damman et al., 2013) are negatively associated. Interestingly, although having a poor physical health status is positively related to early retirement in the next period, the relationship for the case of poor mental health is the opposite. This may suggest that individuals with poor mental health might seek refuge in their daily routine, or that they simply foresee a loss of overall well-being after retirement. This could be particularly true if the source of their mental distress comes from their personal rather than professional life. In this sense, research shows that retirees are more likely to suffer from poor mental well-being than those who are still working (Bosse et al. 1987), which probably has to do with a loss of financial stability, purpose and social activity (Moen, 1996). In addition, recent studies suggest that work can help older individuals to have a more active ageing (World Health Organization, WHO, 2015). In any case, this goes beyond the scope of our analysis.

### 5.2. Robustness Tests

Although results in table 2 come from regression models in which information from previous periods is utilized to explain the current likelihood of early retirement, potential endogeneity concerns might still be present. In particular, the relationship between well-being and the probability of early retirement might be subject of reverse causality if the decision to retire in the next period is taken during the current one. Retirement planning is a long, complex and serious process (Benitez-Silva and Dwyer, 2005; Damman et al., 2011), which for the case of entrepreneurs also entails developing an exit strategy (DeTienne, 2010; DeTienne and Cardon, 2012). Given that this process likely happens

during the individuals' last years in the labor market, their well-being—measured while still in the labor market—might be reflecting the effect of the plans to retire in the near future.

In order to alleviate such reverse causality concerns, we run additional tests in which we incorporate a variable capturing early retirement intentions into our models. Intentions of early retirement is a widely accepted predictor of the actual decision to retire early (e.g. Benitez-Silva and Dwyer, 2005; Damman et al., 2011; Morris et al., 2020). The SHARE survey includes the question "*Thinking about your present job, would you like to retire as early as you can from this job?*", which provides information about retirement intentions of individuals who are still active in the labor market. Descriptive statistics in table 1 hint that the decision and the intention to retire early appear to be rather correlated, as 65% of early retired workers were looking for early retirement in the previous year, compared to only 41% among those who are not retired. We thus incorporate that variable in our estimations to account for the potential influence of retirement intentions.

Results of these robustness tests are presented in table 3. Results indicate that having intentions to retire as soon as possible increases the probability of early retirement in 3.5 to 3.8 percentage points depending on the specification, which supports results of other studies (e.g. Riedel et al., 2015). Self-employment is still associated with a significantly smaller likelihood of engaging in early retirement, thus validating our first hypothesis. However, we observe that early retirement intentions absorb the significance of job satisfaction. Hence, we can conclude that our data supports the notion that self-employed workers are less likely to retire early even when controlling for early retirement intentions, but also that the significant result that we obtained in table 2 for job satisfaction was likely due to its relation with such intentions.

### 5.3. The Moderating Role of Well-being

While results so far suggest that self-employed workers are consistently less likely to engage in early retirement, it is possible that the role of well-being is different for self-employed workers and wave employees, as theorized in hypothesis 2. In order to test that hypothesis, we add interaction terms in our models as in equation (2). Tables A2 and A3 report the estimates of the probability of early retirement when adding interaction terms between self-employment status and the different measures of well-being, while excluding and including early retirement intentions, respectively. In both tables, we find differential effects of job satisfaction for self-employed and paid employees on the probability of early retirement. Notably, the direct effect of job satisfaction regains its significance when including the interaction term, even in the presence of a control for early retirement intentions. Yet, the interaction term of life satisfaction and self-employment status is not significant in either table.

Results are best appreciated in figures 1 and 2, which plot the predicted probability of early retirement for paid employees and self-employed workers for each level of job and life satisfaction. As before, the difference between figures 1 and 2 is the exclusion and inclusion, respectively, of early retirement intentions in the estimations. Consistent with the strong negative coefficient of self-employment in tables A1 and A2, we observe that the probability of early retirement is always significantly smaller for self-employed workers compared to paid employees across all graphs.

Focusing on the results for job satisfaction, we observe that the probability of early retirement decreases with higher levels of job satisfaction for the case of paid employees, while the trend appears to go slightly upwards for self-employed workers. Importantly, the upward trend of self-employment is not significantly different from zero, while the trend for paid employees is indeed significantly negative (p-value 0.08 in figure 2). Thus,

it is the combination of both these converging trends what drives the significant result of the interaction term. That is, the gap in the likelihood of early retirement between self-employed and paid employees is significantly reduced as job satisfaction increases. For instance, when controlling for early retirement intentions (figure 2), the predicted probability of early retirement at the lowest level of job satisfaction is 8.13% for paid employees but only 0.88% for self-employed workers, meaning employees are roughly 9 times as likely as self-employed to retire early when job satisfaction is very low. Yet, when job satisfaction is the highest possible, the predicted probabilities are 5.31% and 2.74% respectively, making employees only twice as likely as self-employed to engage in early retirement. In contrast, when looking at life satisfaction, we find that the trends of self-employed and paid employees are parallel, thus driving a non-significant interaction term.

Therefore, we find partial support for hypothesis 2, as only work-related well-being appears to affect the likelihood of early retirement of self-employed workers and paid employees differently. Nevertheless, the non-significant result of life satisfaction provides an interesting picture. On the one hand, life satisfaction encompasses more aspects beyond job satisfaction, and self-employed workers and paid employees may be equally sensitive to those other aspects. On the other hand, this result reinforces the idea that self-employed workers enjoy a comparatively larger power to make changes in their jobs. As explained in section 2, self-employed workers have increased levels of autonomy and flexibility, which may allow them to improve their well-being at work to a certain extent. For example, in situations of low job satisfaction, self-employed workers may decide to modify their time schedules, or even change their work environment in terms of both material and human resources. Thus, self-employed workers have a variety of alternatives at their disposal to improve their well-being without resourcing to early

retirement options. Alternatively, the fact that business owners may feel identified with and have emotional attachment to their firms, and usually have to deal with more complex retirement plans, implies that retirement is a less easy option than for paid employees, which in turn hinders their intention to retire even if job satisfaction is very low.

## 6. Conclusion

The increase in longevity worldwide has led to a host of policies aimed at lengthening working life with the aim of maintaining positive national pension systems (OECD, 2006). Designing effective measures to discourage early retirement is not trivial, as there is a large number of factors that affect the retirement decision (Schalk et al., 2010; Wang and Shultz, 2010; Topa et al., 2018). Moreover, the retirement patterns of workers may be different based on their type of occupation, particularly when comparing self-employed workers and paid employees (Morris et al., 2020). This paper directly compares the likelihood of early retirement of self-employed workers to that of paid employees while simultaneously considering the moderating role of well-being, which has been identified as a relevant factor on the retirement of workers (Mein et al., 2000; Wang, 2007; Davies et al. 2017; Sohier et al., 2020).

Although the retirement behavior of the self-employed has been investigated in the past (e.g. Parker and Rougier, 2007; Axelrad and Mcnamara, 2017; Chevalier et al. 2018), to the best of our knowledge, a direct comparison between self-employed workers and paid employees in terms of their probability of engaging in early retirement has not been established yet. We argue that self-employed workers are less likely to retire early due to several reasons. First, the self-employed workers are more likely to report a feeling of procedural utility (Benz and Frey, 2008a,b) —meaning that they enjoy what they do—, resulting in higher levels of job satisfaction compared to paid employees (Blanchflower, 2004; Benz and Frey, 2008; Binder and Coad, 2013; Kautonen et al., 2017). This is related

to the non-pecuniary benefits of being your own boss (e.g. Blanchflower and Oswald 1998; Hamilton, 2000; Hundley, 2001) —such as increased levels of autonomy, job control, and flexibility—, which should grant them more freedom to decide when and how to retire (Chevalier et al., 2013). Moreover, the self-employed workers tend to be driven by an entrepreneurial passion (Cardon et al., 2009) and to develop a strong sense of identity, attachment and commitment to their work (Adams and Beehr, 1998; Wanberg et al., 1999; Hoang and Gimeno, 2010).

In addition, we argue that such characteristics can also outweigh the role of well-being in the decision to retire early. While the literature firmly establishes that well-being — particularly well-being at work— is negatively related to early retirement (e.g. Mein et al. 2000), little is known as to whether its effects are different for different types of individuals, with only a few studies focused on finding such differential effects of well-being (e.g. Davies et al., 2017). In this paper, we posit that self-employed workers and paid employees exhibit a different degree of sensitivity to well-being when considering early retirement. We theorize that self-employed workers are less sensitive to well-being when evaluating the decision to retire early or continue working precisely because of their increased job control, and sense of identity, attachment and commitment. Thus, in situations of low well-being at work, self-employed workers close to retirement age may have more room to react than paid employees of similar age, being able to make changes to help improve such well-being rather than opting for exiting the labor market. Moreover, even when such power to make changes is limited, their personal attachment and their sense of identity towards their firm might prevent them from retiring even in cases of low well-being. In addition to that, the more complex retirement procedure for the self-employed (Morris et al., 2020) may represent an additional barrier to retirement.

We make use of the SHARE dataset to identify self-employed workers and paid employees close to the retirement age of their specific countries and we analyze their likelihood of engaging in early retirement. In addition, we test for differential moderating effects of well-being in the relationship between type of occupation and early retirement. Our results point to an interesting picture. First, we find support for the hypothesis that the self-employed workers are less likely to engage in early retirement. Second, our results suggest that the self-employed are indeed less sensitive to well-being when considering early retirement, compared to paid employees. In particular, while the negative relationship of well-being and early retirement is present for paid employees, we find no significant effect of well-being on the probability of early retirement for the case of self-employed workers. However, this is only observable when measuring well-being as job satisfaction, as we did not find a differential effect when using life satisfaction as a proxy of well-being. This reinforces the idea that the power to make changes at work and the higher attachment to work of the self-employed may be behind these results.

All in all, the findings in this paper may be of interest for both policy makers and scholars. In particular, our results may be useful for the design of effective social and economic measures focused on lengthening working lives. In addition, we contribute to the literature in, at least, three ways. First, we make a direct test of differences between paid employees and self-employed workers in terms of their probability of engaging in early retirement. Second, this work provides the first empirical evidence of differential effects of well-being on early retirement behavior between paid employees and self-employed workers. Finally, our results suggest that such differential effects mostly come from work well-being rather than overall well-being, which further emphasizes the necessity of distinguishing between different components of well-being.

Notwithstanding the above contributions, this paper is not exempt of limitations. First, although our dataset allows us to control for a wide set of individual-level characteristics, including relevant aspects that are usually unobservable and that can explain the decision to retire early —such as early retirement intentions— we cannot rule out that other unobserved factors may influence to a certain extent our results. Second, our results might be hiding a more detailed picture due to the fact that we cannot distinguish between incorporated and unincorporated entrepreneurs in our sample, which have been shown to have different characteristics, goals, and motivations (Levine and Rubinstein, 2017), and who might also differ in terms of their retirement patterns. Thus, we suggest that our results are taken with a grain of salt and we avoid making causal statements. Finally, we encourage scholars to further deep into the potential differential effects of well-being on retirement decisions across different dimensions.

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**Table 1.** Descriptive statistics.

| | Full sample | | Non-retirees | | Early retirees | |
|---|---|---|---|---|---|---|
| | N=5,314 | | N=5,042 | | N=272 | |
| | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| *Dependent variable* | | | | | | |
| Early retirement | 0.05 | 0.22 | 0.00 | 0.00 | 1.00 | 0.00 |
| *Independent variables* | | | | | | |
| Self-employed $_{a\,t-1}$ | 0.17 | 0.38 | 0.18 | 0.38 | 0.09 | 0.29 |
| Job satisfaction $_{t-1}$ | 3.40 | 0.66 | 3.41 | 0.65 | 3.28 | 0.70 |
| Life satisfaction $_{t-1}$ | 3.35 | 0.58 | 3.34 | 0.58 | 3.34 | 0.55 |
| *Demographic characteristics* | | | | | | |
| Age | 57.05 | 3.19 | 56.86 | 3.11 | 60.33 | 2.78 |
| Female $_a$ | 0.49 | 0.50 | 0.49 | 0.50 | 0.42 | 0.49 |
| Foreigner $_a$ | 0.10 | 0.29 | 0.09 | 0.29 | 0.07 | 0.25 |
| Married $_{a\,t-1}$ | 0.70 | 0.46 | 0.70 | 0.46 | 0.77 | 0.42 |
| Children $_{a\,t-1}$ | 0.91 | 0.28 | 0.91 | 0.28 | 0.94 | 0.24 |
| Grandchildren $_{a\,t-1}$ | 0.38 | 0.49 | 0.37 | 0.48 | 0.62 | 0.49 |
| Help given to others $_{a\,t-1}$ | 0.43 | 0.49 | 0.43 | 0.49 | 0.55 | 0.50 |
| Poor mental health $_{a\,t-1}$ | 0.19 | 0.39 | 0.19 | 0.40 | 0.13 | 0.34 |
| Poor physical health $_{t-1}$ | 2.46 | 0.98 | 2.44 | 3.11 | 2.68 | 1.01 |
| Education $_{t-1}$ | | | | | | |
|   Primary | 0.27 | 0.45 | 0.27 | 0.44 | 0.37 | 0.48 |
|   Secondary | 0.42 | 0.49 | 0.43 | 0.49 | 0.41 | 0.49 |
|   Tertiary | 0.30 | 0.46 | 0.31 | 0.46 | 0.22 | 0.42 |
| Good household financial situation $_{a\,t-1}$ | 0.75 | 0.43 | 0.74 | 0.44 | 0.83 | 0.38 |
| Savings for long-term investments $_{t-1}$ (logs) | 5.79 | 5.14 | 5.80 | 5.15 | 5.60 | 5.02 |
| *Employment characteristics* | | | | | | |
| Working hours $_{t-1}$ | 37.49 | 14.26 | 37.55 | 14.25 | 36.27 | 14.31 |
| Prospects for job advancement $_{a\,t-1}$ | 0.38 | 0.49 | 0.39 | 0.49 | 0.28 | 0.45 |
| Job security $_{a\,t-1}$ | 0.79 | 0.41 | 0.79 | 0.41 | 0.83 | 0.38 |
| Entitled to pension benefits $_{a\,t-1}$ | 0.83 | 0.38 | 0.85 | 0.36 | 0.46 | 0.50 |
| Industry $_{t-1}$ | | | | | | |
|   Agriculture, hunting, forestry and fishing | 0.03 | 0.16 | 0.03 | 0.16 | 0.04 | 0.20 |
|   Mining and quarrying | 0.01 | 0.08 | 0.01 | 0.08 | 0.00 | 0.06 |
|   Manufacturing | 0.16 | 0.36 | 0.15 | 0.36 | 0.26 | 0.44 |
|   Electricity, gas and water supply | 0.01 | 0.12 | 0.01 | 0.11 | 0.02 | 0.15 |
|   Construction | 0.07 | 0.26 | 0.07 | 0.26 | 0.10 | 0.30 |
|   Wholesale and retail trade | 0.11 | 0.32 | 0.12 | 0.32 | 0.07 | 0.26 |
|   Hotels and restaurants | 0.03 | 0.18 | 0.03 | 0.18 | 0.01 | 0.13 |
|   Transport, storage and communication | 0.06 | 0.23 | 0.06 | 0.23 | 0.07 | 0.25 |
|   Financial intermediation | 0.04 | 0.19 | 0.04 | 0.19 | 0.06 | 0.24 |
|   Real estate, renting and business activities | 0.06 | 0.24 | 0.06 | 0.24 | 0.05 | 0.22 |
|   Public administration and defense | 0.05 | 0.23 | 0.05 | 0.23 | 0.05 | 0.21 |
|   Education | 0.07 | 0.26 | 0.07 | 0.26 | 0.07 | 0.26 |
|   Health and social work | 0.18 | 0.39 | 0.19 | 0.39 | 0.13 | 0.33 |
|   Other social and personal services | 0.11 | 0.31 | 0.11 | 0.31 | 0.06 | 0.24 |
| Early retirement intentions $_{a\,t-1}$ | 0.44 | 0.50 | 0.41 | 0.49 | 0.65 | 0.48 |
| Country | | | | | | |
|   Austria | 0.10 | 0.30 | 0.09 | 0.29 | 0.19 | 0.39 |
|   Belgium | 0.05 | 0.23 | 0.05 | 0.22 | 0.07 | 0.25 |
|   Denmark | 0.13 | 0.33 | 0.13 | 0.33 | 0.11 | 0.31 |
|   France | 0.08 | 0.28 | 0.08 | 0.28 | 0.08 | 0.28 |
|   Germany | 0.06 | 0.24 | 0.06 | 0.24 | 0.06 | 0.24 |
|   Greece | 0.06 | 0.23 | 0.05 | 0.22 | 0.10 | 0.29 |
|   Italy | 0.10 | 0.30 | 0.11 | 0.31 | 0.05 | 0.22 |
|   Netherlands | 0.10 | 0.30 | 0.10 | 0.30 | 0.10 | 0.28 |
|   Spain | 0.05 | 0.21 | 0.05 | 0.22 | 0.03 | 0.17 |
|   Sweden | 0.13 | 0.33 | 0.13 | 0.34 | 0.06 | 0.24 |
|   Switzerland | 0.14 | 0.35 | 0.14 | 0.35 | 0.17 | 0.37 |

*Notes:* $_a$ Dummy variable

**Table 2.** Estimates of the probability of early retirement.

| | I | | II | | III | |
|---|---|---|---|---|---|---|
| DV: Prob.(early retirement) | dy/dx | z | dy/dx | z | dy/dx | z |
| *Main independent variables* | | | | | | |
| Self-employed $_{t-1}$ | -0.051*** | -5.44 | -0.051*** | -5.40 | -0.045*** | -4.75 |
| Job satisfaction $_{t-1}$ | | | -0.011*** | -2.70 | | |
| Life satisfaction $_{t-1}$ | | | | | 3$e$–4 | 0.06 |
| *Demographic characteristics* | | | | | | |
| Age | 0.015*** | 13.20 | 0.015*** | 13.26 | 0.014*** | 11.64 |
| Female | 0.013* | 1.95 | 0.013** | 1.98 | 0.018*** | 2.61 |
| Foreigner | -0.001 | -0.12 | -0.001 | -0.14 | -0.007 | -0.59 |
| Married $_{t-1}$ | -0.007 | -1.06 | 0.007 | 0.95 | 0.009 | 1.21 |
| Children $_{t-1}$ | -1$e$–4 | -0.01 | 1$e$–4 | 0.01 | 0.004 | 0.38 |
| Grandchildren $_{t-1}$ | 0.018*** | 3.35 | 0.018*** | 3.44 | 0.012** | 2.12 |
| Help given to others $_{t-1}$ | 0.012** | 2.19 | 0.011** | 2.09 | 0.011* | 1.83 |
| Poor mental health $_{t-1}$ | -0.016** | -2.01 | -0.018** | -2.19 | -0.012 | -1.50 |
| Poor physical health $_{t-1}$ | 0.007** | 2.32 | 0.006** | 2.00 | 0.009*** | 2.92 |
| Education $_{t-1}$ | | | | | | |
|    Primary *(ref.)* | | | | | | |
|    Secondary | -0.005 | -0.76 | -0.004 | -0.63 | -0.007 | -0.90 |
|    Tertiary | -0.018** | -2.44 | -0.017** | -2.30 | -0.015* | -1.85 |
| Good household financial situation $_{t-1}$ | 0.025*** | 3.39 | 0.026*** | 3.50 | 0.018** | 2.34 |
| Household savings $_{t-1}$ (logs) | 0.001 | 1.16 | 0.001 | 1.16 | 3$e$–4 | 0.54 |
| *Employment characteristics* | | | | | | |
| Working hours $_{t-1}$ | -1$e$–4 | -0.46 | -1$e$–4 | -0.35 | -2$e$–5 | 0.13 |
| Prospects for job advancement $_{t-1}$ | -0.015** | -2.48 | -0.013** | -2.15 | -0.015** | -2.38 |
| Job security $_{t-1}$ | 0.009 | 1.25 | 0.011 | 1.56 | 0.010 | 1.30 |
| Entitled to pension benefits $_{t-1}$ | -0.081*** | -14.63 | -0.081*** | -14.67 | -0.073*** | -12.19 |
| Industry dummies | Yes | | Yes | | Yes | |
| Country dummies | Yes | | Yes | | Yes | |
| Wave dummies | Yes | | Yes | | Yes | |
| N | 5,314 | | 5,312 | | 4,474 | |
| *Predicted probability* | 0.051 | | 0.051 | | 0.048 | |

*Notes:* Marginal effects from logit regressions. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level

**Table 3.** Estimates of the probability of early retirement. Robustness test: early retirement intentions.

| DV: Prob.(early retirement) | I | | II | | III | |
|---|---|---|---|---|---|---|
| | dy/dx | z | dy/dx | z | dy/dx | z |
| *Main independent variables* | | | | | | |
| Self-employed t-1 | -0.047*** | -5.03 | -0.047*** | -5.02 | -0.041*** | -4.32 |
| Job satisfaction t-1 | | | -0.005 | -1.30 | | |
| Life satisfaction t-1 | | | | | 0.003 | 0.62 |
| Early retirement intentions t-1 | 0.037*** | 2.06 | 0.035*** | 6.04 | 0.038*** | 5.88 |
| Demographic controls | Yes | | Yes | | Yes | |
| Employment controls | Yes | | Yes | | Yes | |
| Industry dummies | Yes | | Yes | | Yes | |
| Country dummies | Yes | | Yes | | Yes | |
| Wave dummies | Yes | | Yes | | Yes | |
| N | 5,293 | | 5,291 | | 4,467 | |
| *Predicted probability* | 0.051 | | 0.051 | | 0.048 | |

*Notes:* Marginal effects from logit regressions. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level
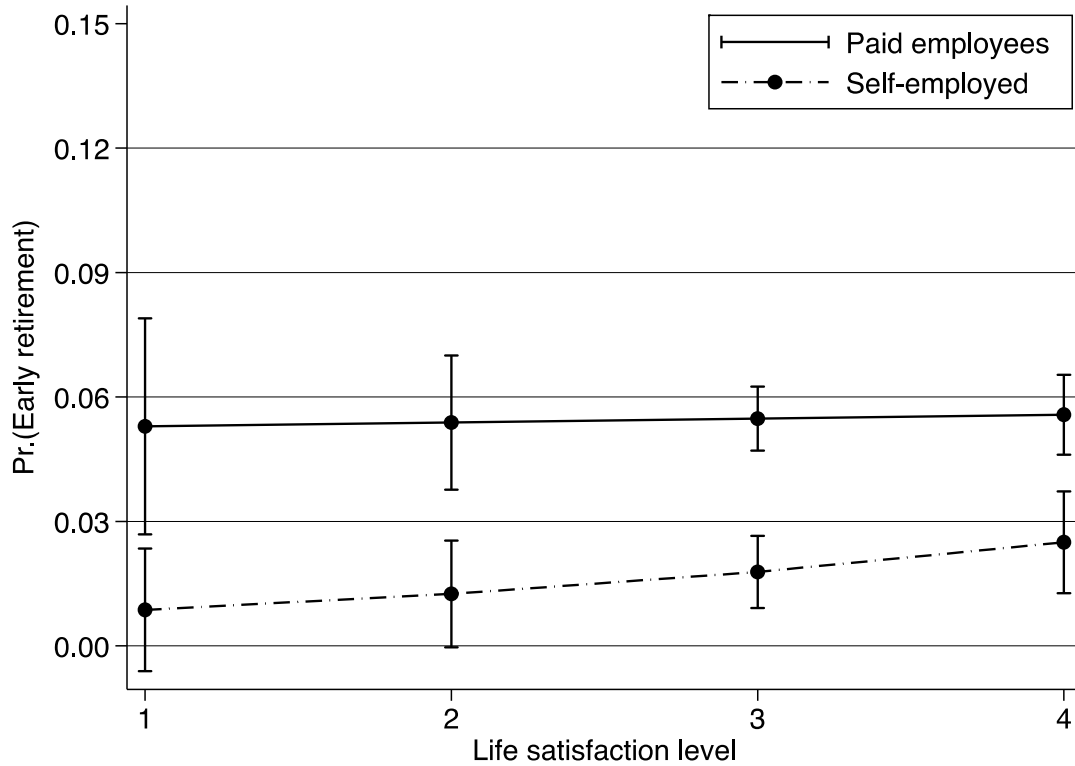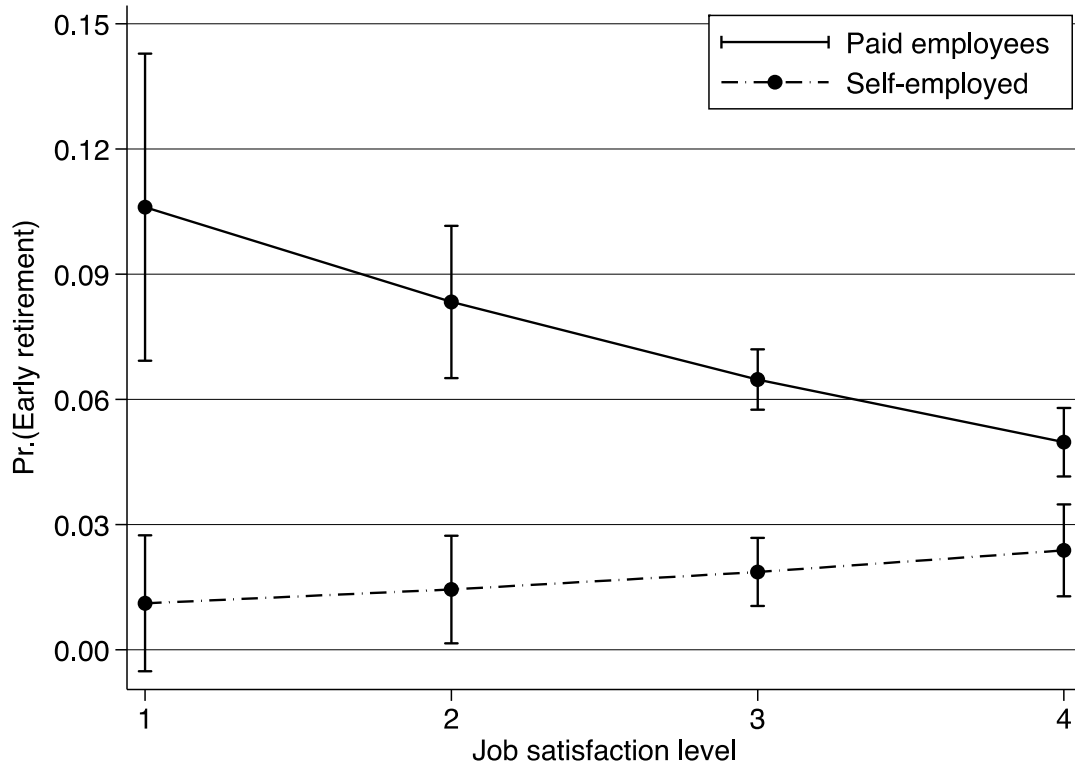
**Figure 1.** Predicted probability of early retirement Interaction effects.

*Notes:* Predicted probabilities obtained from logit regressions. Controls included as in table 2.
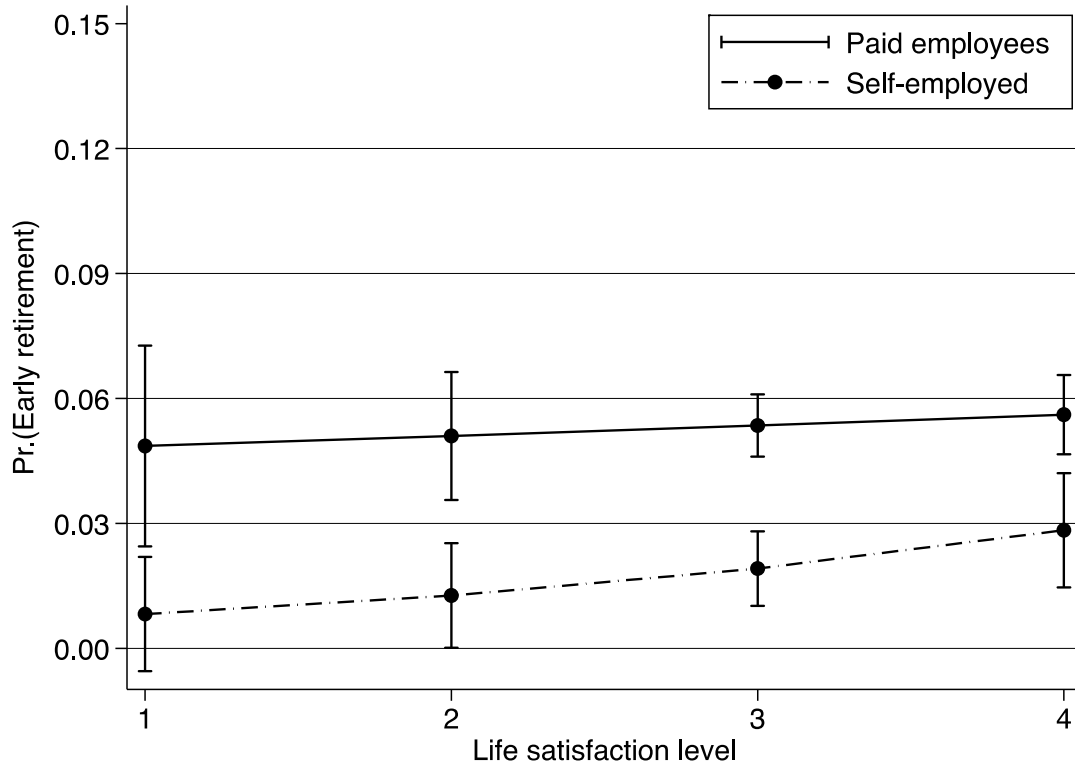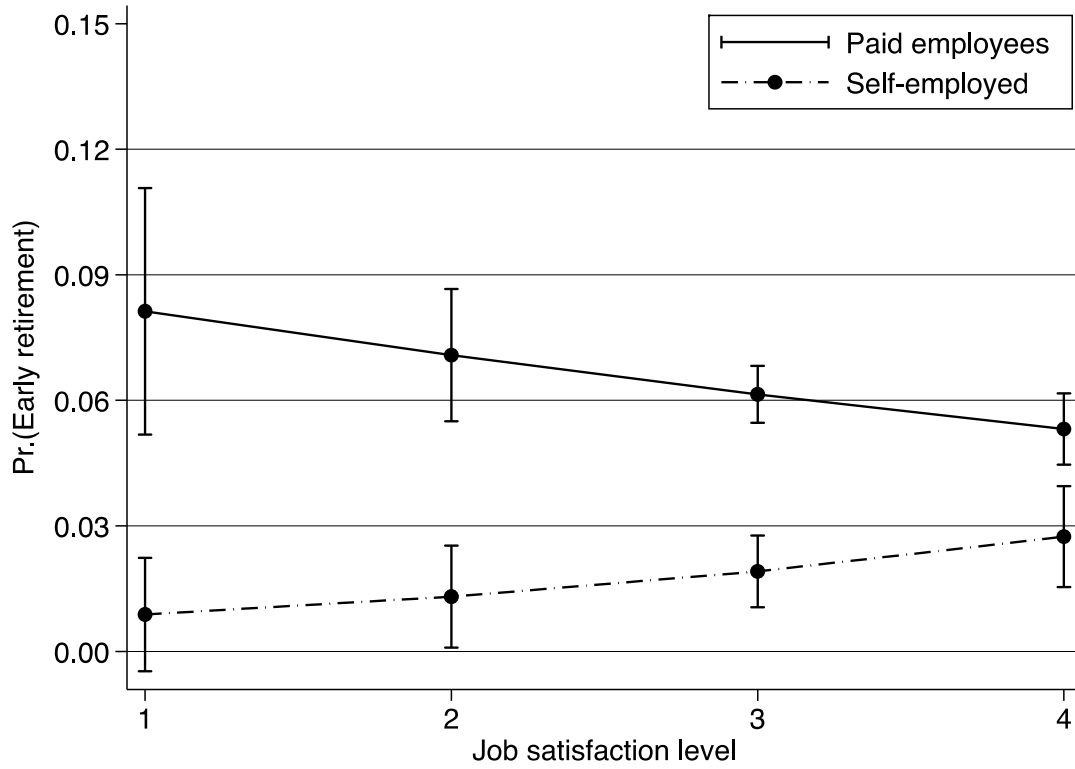
**Figure 2.** Interaction effects. Robustness tests: early retirement intentions.

*Notes:* Predicted probabilities obtained from logit regressions. Controls included as in table 3.

**Table A1.** Descriptive statistics by self-employment status.

| | Former employees | | Former self-employed | |
|---|---|---|---|---|
| | N=4,396 | | N=918 | |
| | Mean | S.D. | Mean | S.D. |
| *Dependent variable* | | | | |
| Early retirement | 0.06 | 0.23 | 0.03 | 0.16 |
| *Independent variables* | | | | |
| Self-employed [a] $_{t-1}$ | 0.00 | 0.00 | 1.00 | 0.00 |
| Job satisfaction $_{t-1}$ | 3.39 | 0.66 | 3.45 | 0.66 |
| Life satisfaction $_{t-1}$ | 3.34 | 0.57 | 3.37 | 0.61 |
| *Demographic characteristics* | | | | |
| Age | 57.01 | 3.17 | 57.21 | 3.26 |
| Female [a] | 0.51 | 0.50 | 0.36 | 0.48 |
| Foreigner [a] | 0.10 | 0.29 | 0.08 | 0.27 |
| Married [a] $_{t-1}$ | 0.70 | 0.46 | 0.71 | 0.45 |
| Children [a] $_{t-1}$ | 0.91 | 0.28 | 0.91 | 0.29 |
| Grandchildren [a] $_{t-1}$ | 0.39 | 0.49 | 0.32 | 0.47 |
| Help given to others [a] $_{t-1}$ | 0.44 | 0.50 | 0.37 | 0.48 |
| Poor mental health [a] $_{t-1}$ | 0.19 | 0.39 | 0.18 | 0.39 |
| Poor physical health $_{t-1}$ | 2.46 | 0.98 | 2.44 | 0.95 |
| Education $_{t-1}$ | | | | |
|   Primary | 0.27 | 0.45 | 0.28 | 0.45 |
|   Secondary | 0.43 | 0.50 | 0.38 | 0.49 |
|   Tertiary | 0.29 | 0.46 | 0.34 | 0.47 |
| Good household financial situation [a] $_{t-1}$ | 0.77 | 0.42 | 0.67 | 0.47 |
| Household savings for long-term investments $_{t-1}$ (logs) | 5.98 | 5.08 | 4.88 | 5.35 |
| *Employment characteristics* | | | | |
| Working hours $_{t-1}$ | 36.06 | 12.56 | 44.27 | 19.13 |
| Prospects for job advancement [a] $_{t-1}$ | 0.35 | 0.48 | 0.55 | 0.50 |
| Job security [a] $_{t-1}$ | 0.79 | 0.41 | 0.78 | 0.42 |
| Entitled to pension benefits [a] $_{t-1}$ | 0.85 | 0.36 | 0.73 | 0.44 |
| Industry $_{t-1}$ | | | | |
|   Agriculture, hunting, forestry and fishing | 0.01 | 0.11 | 0.10 | 0.29 |
|   Mining and quarrying | 0.01 | 0.08 | 0.01 | 0.07 |
|   Manufacturing | 0.17 | 0.37 | 0.10 | 0.30 |
|   Electricity, gas and water supply | 0.02 | 0.13 | 0.00 | 0.06 |
|   Construction | 0.07 | 0.25 | 0.10 | 0.30 |
|   Wholesale and retail trade | 0.09 | 0.29 | 0.23 | 0.42 |
|   Hotels and restaurants | 0.03 | 0.17 | 0.05 | 0.22 |
|   Transport, storage and communication | 0.06 | 0.24 | 0.05 | 0.22 |
|   Financial intermediation | 0.04 | 0.20 | 0.02 | 0.15 |
|   Real estate, renting and business activities | 0.06 | 0.23 | 0.09 | 0.29 |
|   Public administration and defense | 0.07 | 0.25 | 0.00 | 0.07 |
|   Education | 0.08 | 0.28 | 0.03 | 0.16 |
|   Health and social work | 0.20 | 0.40 | 0.10 | 0.29 |
|   Other community, social and personal services | 0.10 | 0.30 | 0.13 | 0.34 |
| Early retirement intentions [a] $_{t-1}$ | 0.45 | 0.50 | 0.36 | 0.48 |
| Country | | | | |
|   Austria | 0.09 | 0.29 | 0.13 | 0.34 |
|   Belgium | 0.06 | 0.24 | 0.03 | 0.17 |
|   Denmark | 0.15 | 0.36 | 0.01 | 0.09 |
|   France | 0.09 | 0.29 | 0.06 | 0.24 |
|   Germany | 0.05 | 0.22 | 0.11 | 0.31 |
|   Greece | 0.05 | 0.21 | 0.09 | 0.29 |
|   Italy | 0.11 | 0.31 | 0.09 | 0.28 |
|   Netherlands | 0.11 | 0.31 | 0.06 | 0.24 |
|   Spain | 0.03 | 0.16 | 0.16 | 0.36 |
|   Sweden | 0.13 | 0.33 | 0.13 | 0.34 |
|   Switzerland | 0.15 | 0.35 | 0.13 | 0.33 |

*Notes:* [a] Dummy variable.

**Table A2.** Estimates of the probability of early retirement. The role of well-being.

| DV: Prob.(early retirement) | I Coef. | z | II Coef. | z |
|---|---|---|---|---|
| *Main independent variables* | | | | |
| Self-employed t-1 | -3.917** | -3.00 | -2.817* | -1.90 |
| Job satisfaction t-1 | -0.398** | -3.11 | | |
| Job satisfaction t-1 * Self-employed t-1 | 0.721* | 1.92 | | |
| Life satisfaction t-1 | | | 0.026 | 0.17 |
| Life satisfaction t-1 * Self-employed t-1 | | | 0.419 | 1.00 |
| Demographic controls | Yes | | Yes | |
| Employment controls | Yes | | Yes | |
| Industry dummies | Yes | | Yes | |
| Country dummies | Yes | | Yes | |
| Wave dummies | Yes | | Yes | |
| N | 5,312 | | 4,473 | |
| *Predicted probability* | 0.051 | | 0.048 | |

*Notes:* Coefficients from logit regressions. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level.

**Table A3.** The role of well-being. Robustness test: early retirement intentions.

| DV: Prob.(early retirement) | I | | II | |
|---|---|---|---|---|
| | Coef. | z | Coef. | z |
| *Main independent variables* | | | | |
| Self-employed $_{t-1}$ | -3.851*** | -2.78 | -2.878* | -1.92 |
| Job satisfaction $_{t-1}$ | -0.224* | -1.74 | | |
| Job satisfaction $_{t-1}$ * Self-employed $_{t-1}$ | 0.721* | 1.84 | | |
| Life satisfaction $_{t-1}$ | | | 0.074 | 0.47 |
| Life satisfaction $_{t-1}$ * Self-employed $_{t-1}$ | | | 0.467 | 1.09 |
| Early retirement intentions $_{t-1}$ | 1.034*** | 6.03 | 1.131*** | 5.54 |
| Demographic controls | Yes | | Yes | |
| Employment controls | Yes | | Yes | |
| Industry, country and wave dummies | Yes | | Yes | |
| N | 5,291 | | 4,454 | |
| *Predicted probability* | 0.051 | | 0.048 | |

*Notes:* Coefficients from logit regressions. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level.