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Raab, Roman

Keele University

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Workplace Perception and Job-satisfaction of Older Workers

Roman Raab*

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Abstract

This paper addresses the question to what extent workplace perception affects subjective well-being of older workers in their jobs. We use several dimensions of workplace perception in order to estimate their importance for job-satisfaction. Our results show that older workers' happiness in the job strongly depends on opportunities to develop new skills, receiving support in difficult situations, and recognition for their work. These dimensions of workplace attributes are merely psychological by nature; in contrast, salary opportunities and socio-demographic dimensions do not appear to have a strong impact on job-satisfaction, if at all.

JEL Classification: J81 - J28 - J32.

Keywords: Working Conditions - Job-satisfaction; Related Public Policy - Non-wage Labor Costs and Benefits

*Affiliation: Keele University, Keele, Staffordshire, United Kingdom ST5 5BG. E-mail: econ-rraab@gmail.com. (Present address: European Commission - Joint Research Centre, Financial and Economic Analysis Unit, Via Enrico Fermi 2749, 21027 Ispra, Italy.)

1 Introduction

The influence of workplace perception on subjective well-being in the job has been largely investigated, but not in particular for older workforce. We study the impact of a selected set of self-perceived workplace variables on job-satisfaction. This paper attempts to close this gap in the literature by identifying more psychological factors that increase or decrease happiness of older workers.

Legislature in many countries has identified the need for targeting policies to keep older workers in the job. Demographic shifts in the age distributions of developed countries have caused pension systems based on intergenerational redistribution to experience long-term financing issues. Early retirement and lack of demand for older workers have been deteriorating the finances of pay-as-you-go pensions even more. While factors like health and financial incentives were identified to be important considerations in the retirement decision, relatively few studies have dealt with the workplace perception as such and its influence on job-satisfaction of the pre-retirement workforce. The debate about increasing retirement ages often raises the question if workplaces for older workers are designed in a way to hold them in job. This study is a first step in a sequence of policy issues to promote labor supply in the older workforce.

Studies have so far looked at the effect of retirement on subjective well-being, but not at factors that determine subjective well-being of older workers. Therefore, we add to this literature by investigating job-satisfaction of older workforce using a rich set of variables from a most recent survey of older people in Europe. We focus on the influence of workplace perception dimensions on subjective well-being in one's job. These dimensions are self-reported and subjective by nature; we use control variables including objective workplace characteristics, the earnings position, and socio-economic attributes. The overall aim of this work is to micro-estimate the factors older workers consider important in their domain of job-satisfaction.

We build upon the standard methodology of estimating job-satisfaction equations, proposed for instance by authors like Clark and Oswald (1996). A rich set of workplace perception variables is added to the standard estimation.

Our results show that older workers' degree of job-satisfaction strongly depends

on self-perceived workplace attributes. Along with health, these attributes are main contributors to job-satisfaction of older workers. Traditional job attributes seem to be of smaller importance, e.g., income, hours of work, and other socio-demographic descriptors.

We organize this paper as follows. Section 2 discusses the conceptual framework and literature on subjective well-being in relation to the older workforce, but also in general. Section 3 outlines the data and the empirical strategy. In section 4, we present our results; section 5 concludes.

2 Conceptual framework and related literature

The terms *subjective well-being*, *happiness*, and *satisfaction* are often used as more "intuitive" interpretations of *utility*. This paper utilizes all of these terms as equivalents. Subjective well-being may be investigated for economic agents with idiosyncratic preferences and with a reference point of interest for different domains in life or life as a whole. Objective well-being, on the other hand, is deployed as a proxy for wealth or income, typically expressed and compared using a cardinal scale. There are several dimensions or domains (Bonsang and Klein, 2012) into which overall subjective well-being may be decomposed; these domains may include income, leisure time, one's social network, one's job, etc. Here, we consider the domain of someone's job or work place, often referred to as job-satisfaction.

Economic theory models job-satisfaction using a simple utility function for a representative agent. Previous work, for instance by Hamermesh (1977), Freeman (1978) or Clark and Oswald (1996), serve as a guideline for specifying the arguments of the workplace-domain utility function:

$$u_i = f(m, \bar{m}, 1 - l, \delta, \rho) \quad (1)$$

Function u_i represents a worker's utility related to the workplace. We call this worker i ; m is the worker's net wage, \bar{m} is their comparison wage, i.e., i 's position in the wage distribution), l expresses the agent's normalized hours of work per week, δ is a vector of socio-economic characteristics. Finally, ρ is a vector of

self-perceived workplace dimensions.

In a dynamic setting, the theory of subjective well-being over the life-cycle has been outlined by Easterlin (2001). He explains why satisfaction does not necessarily go up when income increases. Furthermore, Easterlin (1995) stresses that within a population, people with higher incomes are, on average, happier. However, raising the incomes of all does not increase the happiness of all. These stylized facts are suggested by data collected in surveys, in a number of countries. People develop higher aspiration levels as income rises over the life-cycle. These norms or aspiration levels increase proportionally to income. The more income people can avail of, the less happy people are with material or immaterial goods affordable with their past income level; aspirations increase. This aspiration effect works in the opposite direction of income effect, and might even mitigate it. The overall effect is, however, theoretically ambiguous, depending on the relative sizes of the two effects. In this paper, we include these important findings by using age as a proxy for aspiration levels, since the level of aspirations as such is latent.

Also, as Stutzer (2004) points out, individuals' well-being depend on their relative levels of well-being rather than their absolute levels. In a direct empirical test, it is found that higher income aspirations reduce someone's utility, *ceteris paribus*. Individual data on reported satisfaction with life are used as a proxy measure for utility, and income evaluation measures are applied as proxies for people's aspiration levels. Consistent with processes of adaptation and social comparison, income aspirations increase with individuals' income as well as with the average income in their social networks. We therefore include an income variable that portrays an individual's position in the income distribution; due to a measurement issue of income across waves in the data used and discussed below, we will not include the absolute levels of income as a separate variable.

Regarding the domain of job-satisfaction, several findings provide the position of this study in the newer literature. As Aristovnik and Jaklič (2013) point out, the degree of job-satisfaction plays an important role in the decision to retire or to participate in the labor force. An important link between human capital variables, individual characteristics, industry affiliation, hours of work, early retirement arrangements and skill mismatch was found in older workers in a study by Groot and van den Brink (1999). However, the authors did not control for workplace

perception variables. The present study attempts to close this gap in the literature for the sub-population of older workforce and by focusing on the domain of job satisfaction.

Abolhassani and Alessie (2013) find that unemployment has a strong negative impact on subjective well-being while voluntary retirement does as such not necessarily increase well-being. There seems to be a causal influence of overall well-being on retirement. Yet, reversing this chain of causality does empirically not hold. The findings by Bonsang and Klein (2012) go into the same direction; while overall subjective well-being does not increase upon retirement, leisure satisfaction increases and income satisfaction decreases at the same time. So, for retirement policies, an important missing piece in this nexus is job-satisfaction of workers at pre-retirement age.

Regarding findings on older workers' job satisfaction, Eichar et al. (1991) point out, that this population group considers autonomy in their job and their job to be meaningful as outstandingly important for their well-being. Another work on the determinants of happiness emphasizes the importance of perceived income fairness in a society (Bjørnskov et al., 2013).

Turning to the perspective of labor demand, Taylor and Walker (1998) descriptively analyze employers' attitudes towards older workers. They find some evidence on the presence of ageism in employers. In fact, employers often perceive older workers as inflexible and less able to do heavy physical work. Together with unhappiness in the job, employers' negative attitudes towards older workforce complement the literature on potential "push factors" into retirement (see for instance Preter et al. (2013)).

Another piece of work that has received a lot of recognition is Sousa-Poza and Sousa-Poza (2000). They analyze the levels and determinants of job-satisfaction in a cross-national setting. Findings show for instance that Denmark is the country with the highest job-satisfaction levels. The authors use a categorization of job characteristics into work-role outputs and work-role inputs. They define work-role outputs as income, job security, advancement opportunities, a job being interesting, the possibility of an independent work style, the opportunity to help people and being useful to society, and the relationship with management and colleagues. On the other hand, work-role inputs include education, working time, job inten-

sity, physical effort and probability of injury. They find that countries with high work-role outputs, in general, have high job-satisfaction scores. Furthermore, having an interesting job and having good relations with management are the two most important work-role outputs; having an exhausting job is the most important work-role input. Also, workers in Eastern European countries tend to value high income. This paper is helpful to our study in two ways. First, it recognizes the importance of workplace perception factors, either categorized as work-role inputs or work-role outputs. Second, it demonstrates that job-satisfaction has considerable variations across countries. We take this into account by using country specific effects in the regression analysis outlined below in order to capture latent social norms and perceptions inherent within a single country.

The empirical framework for the analysis in this study relies on the standard approach of multinomial ordered logit models. Ferrer-i Carbonell and Frijters (2004) use a fixed effects ordered logit model in order to estimate the effect of various variables on subjective well-being. They recommend to use more personality variables often latent in the fixed effects.

3 Empirical strategy

3.1 Econometric model

We now turn to the discussion of the empirical strategy. First, we present the econometric model, then we discuss the data used for our study and the summary statistics. Finally, we clarify the expected outcomes in the estimates and the hypotheses they are based on.

We attempt to estimate the causal effect of several dimensions of workplace perception on job-satisfaction. To this end, a measurement for job-satisfaction is needed that approximates a worker's utility in the workplace domain. The dependent variable is representing categories of response that exhibit a natural ordering, i.e., the degree of agreement with the survey question asking whether a worker is satisfied in his or her job. For this reason, the model is estimated as an ordered logit model. The continuous metric y_i underlying the categorical and ordered dependent variable is latent in this type of estimation model. The specification for

the multinomial ordered logit model we use in this study is therefore as follows:

$$\begin{aligned}
 y_i &= \beta_1 \rho_i + \beta_2 x_i + \varepsilon_i \\
 \varepsilon_i &\sim F(z) = e^z / (1 + e^z) \\
 y_i &= \begin{cases} 1 & \text{if } \bar{y}_i < c_1. \\ 2 & \text{if } c_1 \leq \bar{y}_i < c_2. \\ 3 & \text{if } c_2 \leq \bar{y}_i < c_3. \\ 4 & \text{if } c_3 \leq \bar{y}_i. \end{cases} \quad (2)
 \end{aligned}$$

The dependent variable is y_i ; it is approximated by the observed variable *Jobsat*, an index reporting self-perceived job-satisfaction. The over-bar indicates estimated values for y_i . *Jobsat* embodies a worker's response to the following survey question:

Survey question: "All things considered, I am satisfied with my job. Would you say you strongly agree, agree, disagree or strongly disagree?"

The possible answer categories which relate to each other in an ordered way are coded using the following values; they correspond to the cases in (2):

1. *Strongly agree*,
2. *Agree*,
3. *Disagree*,
4. *Strongly disagree*.

Vector ρ denotes workplace perception variables; x is a vector of controls including an agent's position in the income distribution, hours of work, age, sex, education, marital status, health, number of kids, and country. Moreover, ϵ is an error term following a logistic distribution with the cumulative distribution function $F(z)$. Values of c are auxiliary parameters of the latent y_i . These "cut-points" provide the link between the discrete categories of *Jobsat* and the corresponding portions of continuous y_i .

3.2 Data

For the empirical analysis, data from the Survey of Health, Aging and Retirement in Europe (SHARE) are used. Included are observations from waves 1, 2, and 4 in order to construct a panel of older workers, not yet retired, in the age interval 50 through 70. We include people reporting to be an employee or civil servant at the time of the interview. Interviews for wave one were conducted in 2004 and 2005, for wave 2 in 2006 and 2007 (Israel in 2009 and 2010), and for wave four in 2011 (Poland collected all interviews in 2012, in Germany, Estonia and the Czech Republic, a minority of interviews are from 2010 and 2012). Wave 3 was designed to reconstruct work histories, and is therefore not following the standard questionnaire of other waves. The panel is unbalanced, and therefore not every person is observed in all three waves.

We now discuss the ways we dealt with some shortcomings of the data. Several observations were dropped due to missing values in key variables. From an inspection of the data, we conclude that these values are missing at random, so no imputations are attempted. In particular, we dropped an observations in case job-satisfaction was missing or unknown (3133 observations deleted). Also, particular observations were dropped if the key variables of workplace perception were unknown or not reported: physically demanding job (8 observations deleted), time pressure due to heavy workload (12 observations deleted), little freedom to decide how to do work (22 observations deleted), opportunity to develop new skills (21 observations deleted), support in difficult situations (66 observations deleted), received recognition for work (65 observations deleted), prospects for job advancement poor (231 observations deleted), job security poor (112 observations deleted), looking for early retirement (96 observations deleted), income percentile (604 observations deleted). For implausible codings of gender within a unique person, one observation was deleted, years of education had 1550 missing or unknown values; furthermore, marital status (40 observations deleted), self-perceived health (2 observations deleted), and number of children (39 observations deleted) had some unknown or missing values.

Having dropped non-reported or implausible observations, the resulting panel consists of 20338 person-year observations originating from 16289 individuals. The

panel is rather comprehensive in terms of countries and subpopulations within countries. However, with respect to the time dimension, the panel is rather short. Due to wave participation patterns - only 24.94 percent of observations are coming from people interviewed in all three waves - we use pooled rather than panel data estimators in the logit model specified above.

3.3 Summary statistics

Next, we discuss summary statistics of all variables used. A description of variables is reported in Table 1; the exact coding of the variables can be found in the appendix. The mean of the dependent variable *Jobsat* is 1.662 (see Table 1), showing a skew of the distributions towards a higher satisfaction level.

The main explanatory variables of workplace perception in someone's main job are constructed according to the degree of agreement to the following interview questions. There are four response categories for each variable, "strongly agree", "agree", "disagree" or "strongly disagree":

- *Phys*: My job is physically demanding.
- *Press*: I am under constant time pressure due to a heavy workload.
- *Free*: I have very little freedom to decide how I do my work.
- *Develop*: I have an opportunity to develop new skills.
- *Support*: I receive adequate support in difficult situations.
- *Recogn*: I receive the recognition I deserve for my work.
- *Advance*: My job promotion prospects/prospects for job advancement are poor.
- *Secure*: My job security is poor.

Table 2 shows frequency distributions for responses to the above statements. In summary, older workers in European countries are physically little demanded, they are mainly free in their way to do their work. Also, workers may develop new

Table 1: Summary statistics

Variables	Description	Mean	SD	Min	Max
Dep. var.					
<i>Jobsat</i>	Job satisfaction index	1.662	0.658	1	4
Workplace perception					
<i>Phys</i>	Job physically demanding	2.607	1.006	1	4
<i>Press</i>	Time pressure due to a heavy workload	2.485	0.874	1	4
<i>Free</i>	Little freedom to decide how I do my work	2.873	0.892	1	4
<i>Develop</i>	Opportunity to develop new skills	2.178	0.861	1	4
<i>Support</i>	Receive support in difficult situations	2.095	0.777	1	4
<i>Recogn</i>	Receive recognition for my work	2.207	0.808	1	4
<i>Advance</i>	Poor prospects for job advancement	2.138	0.87	1	4
<i>Secure</i>	Poor job security	3.031	0.86	1	4
<i>ERet</i>	Look for early retirement: yes=1, no=0	0.447	0.497	0	1
Workplace					
<i>Inc</i>	Income decile	6.889	2.629	1	10
<i>WH</i>	Weekly hours of work	3.177	1.132	0	4
Socio-economics					
<i>Age</i>	Age at interview	56.164	3.933	50	70
<i>Age2</i>	Age squared/100	31.698	4.515	25	49
<i>Sex</i>	Gender dummy: female=1, male=0	0.514	0.5	0	1
<i>Educ</i>	Years of education	12.348	4.084	0	25
<i>Marital</i>	Marital status	1.894	1.62	1	6
<i>Health</i>	Self-perceived health	2.655	0.988	1	5
<i>Kids</i>	Number of children	2.068	1.199	0	16
Countries					
<i>Dummies for</i>	Austria	0.049	0.216	0	1
	Germany	0.048	0.213	0	1
	Sweden	0.083	0.276	0	1
	Netherlands	0.074	0.261	0	1
	Spain	0.04	0.196	0	1
	Italy	0.047	0.211	0	1
	France	0.089	0.284	0	1
	Greece	0.032	0.177	0	1
	Switzerland	0.081	0.273	0	1
	Belgium	0.096	0.295	0	1
	Israel	0.019	0.137	0	1
	Czech Republic	0.086	0.28	0	1
	Poland	0.021	0.142	0	1
	Hungary	0.024	0.152	0	1
	Portugal	0.015	0.123	0	1
	Slovenia	0.019	0.138	0	1
	Estonia	0.083	0.275	0	1
	Denmark	0.095	0.293	0	1
N			20338		

Notes: Descriptive statistics are based on data from SHARE, waves 1, 2 and 4.

skills in their job. They receive support in difficult situations and recognition for their work. Job security is perceived as being high. On the other hand, workers seem to be pressurized and have poor prospects for job advancement. In terms of responses, 56.17 percent of observations report to disagree that their job was physically demanding, even 71.07 percent disagree that they had little freedom to decide how to do their work. 69.64 percent are in a situation where new skills may be developed, 75.77 percent receive support in difficult situations, and 69.66 percent the recognition they deserve. Concerning job security, 77.38 percent of observations report that their job is secure. Yet, 67.64 percent of observations fall into the categories of "agree" or "strongly agree" with not having the prospects of promotion or advancement in their job. Almost half the observations, 47.43 percent, report constant pressure due to heavy workloads.

An additional variable related to one's employment is *ERet*, coded as a dummy. The underlying question for this variable is "Thinking about your present job, would you like to retire as early as you can from this job?" 44 percent of respondents answer this question with "yes" which seems to be quite a high share. Table 1 reports descriptive statistics for other covariates used. Workers are on average in the 7th income percentile. The variable *WH* is values of 0 if less than 10 hours are worked, 1 if less than 20, 2 if less than 30, and 3 if less than 40 hours are worked per week. Value 4 indicated hours greater or equal to 40. On average, people work between 30 and 40 hours per week.

The mean age of respondents is 56.164 years with the youngest respondents being 50 years old, the oldest are 70 years of age. 51 percent of the sample is female, years of education are on average 12.348 years. The unordered categorical variable *Marital* represents a person's family situation, where a value of 1 means married and living together with spouse, 2 means registered partnership, 3 is married, but living separated from spouse, 4 is never married, 5 means divorced, and 6 is widowed. The largest portion of respondents, 74.22 percent report to fall into the first category. *Health* is self reported health where 1 is excellent, and 5 means poor health. The mean health status 2.655 may be interpreted as very good to good. Finally, the older workers in the sample have on average 2.068 children. In addition, the data set also includes a set of country dummies.

Table 2: Workplace perception variables, shares of response categories

Variables	Strongly agree	Agree	Disagree	Strongly disagree
<i>Phys</i>	17.10	26.73	34.56	21.61
<i>Press</i>	14.91	32.52	41.73	10.83
<i>Free</i>	8.98	19.94	45.85	25.22
<i>Develop</i>	21.14	48.50	21.76	8.60
<i>Support</i>	20.35	55.42	18.64	5.59
<i>Recogn</i>	17.06	52.60	22.97	7.37
<i>Advance</i>	25.21	42.43	25.70	6.66
<i>Secure</i>	6.16	16.97	44.48	32.39

Notes: Descriptive statistics are based on data from SHARE, waves 1, 2 and 4.

3.4 Hypotheses

The main focus of this paper is on workplace perception variables for which we now discuss the hypotheses about the signs on coefficient estimates hoped for. We would expect workplace the perception variables to have strong causal effects on job-satisfaction. In particular, it is tested if the coefficients on *Phys*, *Develop*, *Support*, *Recogn* are positive, and the coefficients on *Press*, *Free*, *Advance* and *Secure* are negative. We expect that *Phys* would yield a positive coefficient; in other words, a physically demanding job is perceived as positive or challenging and therefore contributes to job-satisfaction. However, we could also legitimately hypothesize that a physically demanding job is a source of discomfort with one's job, for instance in case health deteriorating work environments are paired with a high degree of physical input required in production. Developing new skills, receiving support in difficult situations, and getting recognition for one's work are likely to increase job-satisfaction. On the other hand, increasing pressure, little freedom, poor career advancement opportunities, and poor job security are most likely inversely related to job-satisfaction, in other words, we hypothesize that these will decrease *Jobsat*.

4 Results

In general, all of the workplace perception variables yield high magnitudes in the regression results; the majority of them is significant as well. The coefficient signs are also correct according to the hypotheses, with a few exceptions for sub-categories

of some workplace perception variables. Since coefficients in logit regressions do not have an intuitively meaningful interpretation, we discuss here the results in terms of odds-ratios. Variables with high odds ratios and high significance levels are *Develop*, *Support*, and *Recogn*. Significance paired with moderately high odds ratios are *Phys*, *Press*, *Free*, *Advance*, and *Secure*. As an example of the extent of the estimated magnitudes, let us consider the variable *Develop*. For its response categories, *Develop* has odds ratios of 1.911 at response "agree" (value of 2), 2.7 at response "disagree" (value of 3), and 3.367 at response category "strongly disagree" (value of 4). So, when *Develop* goes from "strongly agree" to "agree", the odds of *Jobsat* going down (from strongly agree=1 towards strongly disagree=4) is 1.911 times higher than the odds of *Jobsat* going up. All odds ratios are greater than one, therefore, job-satisfaction increases as the degree of agreement with "able to develop new skills" increases.

Table 3: Results ordered logit regression

Dependent variable:	Job satisfaction	Coefficient	Odds ratio
<i>Phys</i>	agree	0.205*** (3.98)	1.227*** (3.98)
	disagree	0.144** (2.81)	1.155** (2.81)
	strongly disagree	0.0970 (1.65)	1.102 (1.65)
<i>Press</i>	agree	-0.244*** (-4.64)	0.784*** (-4.64)
	disagree	-0.317*** (-6.02)	0.728*** (-6.02)
	strongly disagree	-0.491*** (-6.53)	0.612*** (-6.53)
<i>Free</i>	agree	-0.166* (-2.35)	0.847* (-2.35)
	disagree	-0.343*** (-5.09)	0.710*** (-5.09)
	strongly disagree	-0.721*** (-9.86)	0.486*** (-9.86)
<i>Develop</i>	agree	0.648*** (13.67)	1.911*** (13.67)
	disagree	0.993*** (17.86)	2.700*** (17.86)
	strongly disagree	1.214*** (15.44)	3.367*** (15.44)
<i>Support</i>	agree	0.557*** (11.23)	1.745*** (11.23)
	disagree	0.954*** (15.92)	2.596*** (15.92)
	strongly disagree	1.409*** (14.38)	4.092*** (14.38)
<i>Recogn</i>	agree	0.779*** (14.49)	2.180*** (14.49)
	disagree	1.339***	3.815***

		(21.66)	(21.66)
	strongly disagree	1.810***	6.109***
		(19.90)	(19.90)
<i>Advance</i>	agree	0.0531	1.055
		(1.23)	(1.23)
	diagree	-0.210***	0.811***
		(-4.29)	(-4.29)
	strongly disagree	-0.295***	0.745***
		(-3.54)	(-3.54)
<i>Secure</i>	agree	0.110	1.116
		(1.36)	(1.36)
	disagree	-0.154*	0.857*
		(-2.01)	(-2.01)
	strongly disagree	-0.500***	0.607***
		(-6.25)	(-6.25)
<i>ERet</i>		0.639***	1.895***
		(19.37)	(19.37)
<hr/> <i>Inc</i>	2nd	0.0424	1.043
		(0.41)	(0.41)
	3rd	-0.0954	0.909
		(-0.98)	(-0.98)
	4th	-0.0311	0.969
		(-0.34)	(-0.34)
	5th	-0.106	0.899
		(-1.21)	(-1.21)
	6th	-0.145	0.865
		(-1.71)	(-1.71)
	7th	-0.103	0.902
		(-1.25)	(-1.25)
	8th	-0.0757	0.927
		(-0.95)	(-0.95)
	9th	-0.0433	0.958
		(-0.54)	(-0.54)
	10th	-0.157	0.855
		(-1.93)	(-1.93)
<i>WH</i>	$10 \leq WH < 20$	0.240*	1.272*
		(2.42)	(2.42)
	$20 \leq WH < 30$	0.0786	1.082
		(0.91)	(0.91)
	$30 \leq WH < 40$	0.0411	1.042
		(0.53)	(0.53)
	$40 \leq WH$	-0.0404	0.960
		(-0.55)	(-0.55)
<hr/> <i>Age</i>		0.132	1.141
		(1.38)	(1.38)
<i>Age2</i>		-0.136	0.872
		(-1.63)	(-1.63)
<i>Sex</i>		-0.0166	0.984
		(-0.51)	(-0.51)
<i>Educ</i>		0.00273	1.003
		(0.63)	(0.63)
<i>Marital</i>	reg.partnership	0.0674	1.070
		(0.71)	(0.71)
	married, living separated	0.0662	1.068
		(0.50)	(0.50)
	never married	0.0201	1.020
		(0.31)	(0.31)
	divorced	0.0552	1.057
		(1.07)	(1.07)
	widowed	-0.0704	0.932
		(-0.87)	(-0.87)

<i>Health</i>	very good	0.213*** (3.98)	1.237*** (3.98)
	good	0.424*** (8.10)	1.528*** (8.10)
	fair	0.470*** (7.53)	1.599*** (7.53)
	poor	0.644*** (5.34)	1.904*** (5.34)
<i>Kids</i>		-0.0375** (-2.71)	0.963** (-2.71)
<hr/>			
<i>Countries</i>	Austria	-0.130 (-1.43)	0.878 (-1.43)
	Germany	0.216* (2.42)	1.241* (2.42)
	Sweden	0.212** (2.66)	1.236** (2.66)
	Netherlands	0.482*** (6.21)	1.619*** (6.21)
	Spain	0.505*** (5.56)	1.657*** (5.56)
	Italy	0.269** (2.91)	1.308** (2.91)
	France	0.0522 (0.66)	1.054 (0.66)
	Greece	0.673*** (6.59)	1.960*** (6.59)
	Switzerland	-0.174* (-2.15)	0.840* (-2.15)
	Belgium	0.00702 (0.09)	1.007 (0.09)
	Israel	0.483*** (3.55)	1.620*** (3.55)
	Czech Republic	0.127 (1.65)	1.135 (1.65)
	Poland	0.312** (2.68)	1.366** (2.68)
	Hungary	0.145 (1.17)	1.156 (1.17)
	Portugal	0.430** (3.05)	1.538** (3.05)
	Slovenia	0.276* (2.46)	1.318* (2.46)
	Estonia	0.671*** (8.12)	1.956*** (8.12)
Denmark	omitted	1	
<hr/>			
<i>Cutpoints</i>	c_1	4.666 (1.70)	
	c_2	8.236** (3.01)	
	c_3	10.12*** (3.70)	
<hr/>			
	N	20338	20338
	Log pseudo-likelihood	-15645.053	
	Wald χ^2 , 69 df	4735.86	
	Prob > χ^2	0.0000	
	Correctly pred. outcomes	0.653	
	Pseudo R^2	0.1845	

Notes: t statistics in parentheses. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The other covariates are rather mixed in their magnitudes and significance.

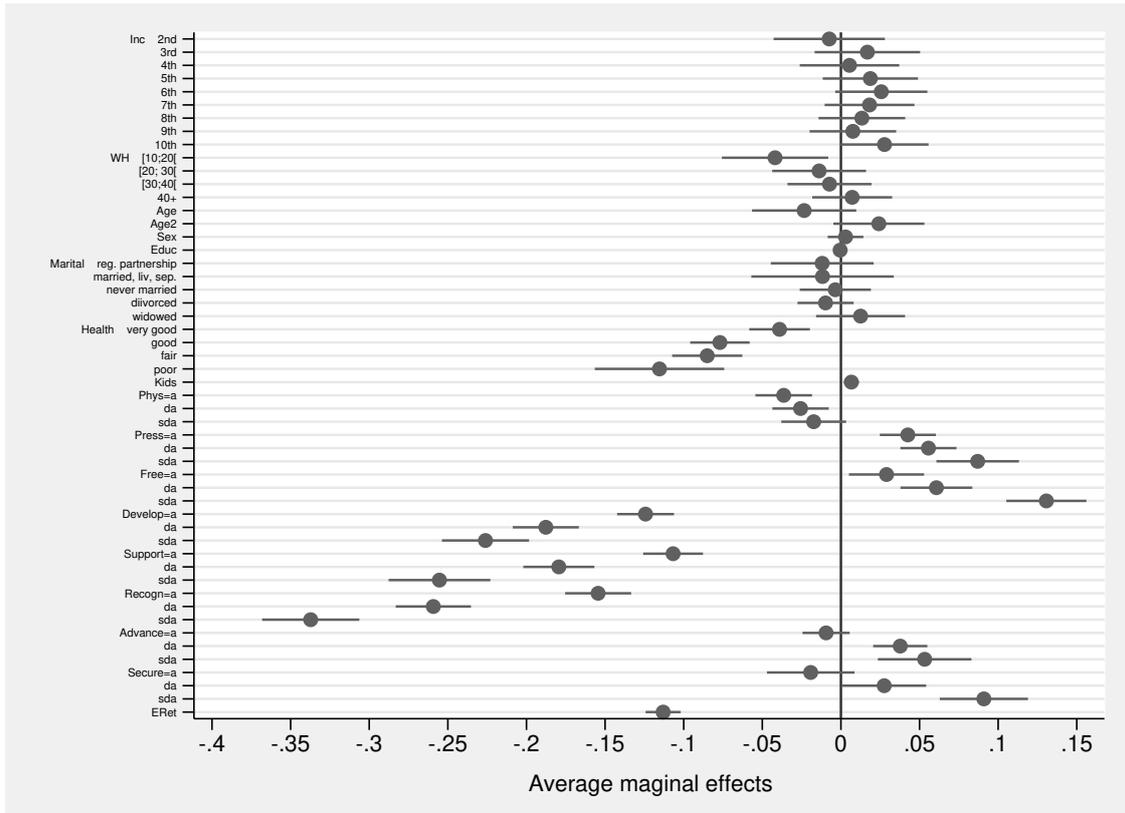


Figure 1: Average marginal effects and their confidence intervals

Health and *ERet* have quite a strong effect on job-satisfaction, while working hours, kids and countries have a moderate effects. Income, age, sex, education and marital status are of minor importance in their impact or lack significance.

Looking at the overall goodness of fit of the estimated model, the regression results imply a share of 65.3 percent correctly predicted outcomes compared to the overall number of observations.

Another way to interpret the regression results is to evaluate the average marginal effects (Figure 1). Marginal effects for the country dummies are omitted for graphical reasons. Average marginal effects represent the average percentage point change in probability of a certain outcome of the dependent variable when one explanatory variable goes up from the base category "strongly agree" to a higher response category leaving all other variables at their actual values

(Cameron and Trivedi, 2005). Again, workplace perception variables have strong marginal effects. Let us consider the variable *Develop* again. In case the dependent variable has the outcome "1", a person strongly agrees to experience a high job-satisfaction. When now the response for *Develop* goes from "strongly agree" to "agree", the change in probability to report a high job-satisfaction decreases by -12.35 percentage points. When *Develop* goes from "strongly agree" to "disagree", the probability of having a high job-satisfaction decreases by -18.77 percentage points. This demonstrates that *Develop* is a strong determinant of *Jobsat*. The majority of the workplace perception variables have significant marginal effects, and their magnitudes are great.

Turning to the marginal effects for the other covariates, the extent of the effects are mainly smaller, and the only significant variables are *WH* at response category one, *Health* at all response categories, *Kids*, *ERet*, and most country dummies. Overall, marginal effects are strongest for the workplace perception variables.

Let us now turn to the discussion of predicted probabilities based on the estimates. Figure 2 pictures the matrix of predicted probabilities of the four possible outcomes for job-satisfaction at different response categories of the workplace perception variables while all other variables are at their means. The probability that someone is very satisfied in their job is highest for *Recogn* being very important with more than 60 percent. Reporting lower levels of agreement for *Recogn* lowers this probability which is intuitively plausible. The same pattern applies to *Develop* and *Support*. The probability of being just satisfied with one's job increases in the strength of non-agreement for these variables. The counterfactual situation that someone reports to (strongly) disagree with *Recogn* increases the probability of low job-satisfaction. We may interpret this as a strong influence of these variables on job-satisfaction.

For the more negatively connoted variables *Phys*, *Press*, *Free*, *Advance*, and *Secure*, the above pattern is reversed. Taking the example of *Free*, in case someone strongly agrees to have little freedom how to do their work, the probability of very high work satisfaction is only about 30 percent. Growing disagreement increases this probability. Overall, predicted probabilities draw a plausible picture of the impact of workplace perception variables on job-satisfaction.

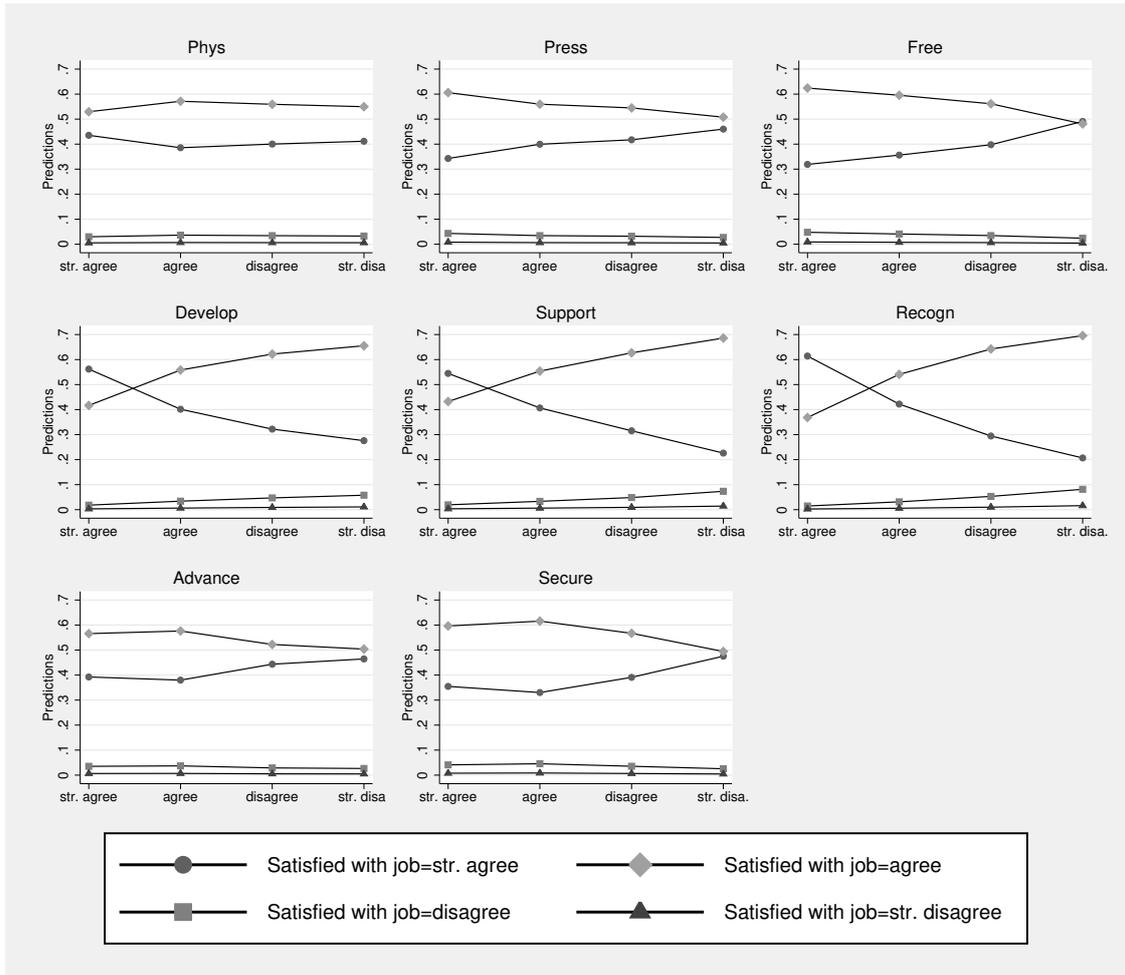


Figure 2: Predicted probabilities

5 Conclusions

Workplace perception is important to older workers, in particular the dimensions of the ability to develop new skills, support in difficult situations, as well as the recognition someone receives for their work. Income opportunities, working hours, age, gender, and marital status seem to play minor roles in older workers in the domain of job-satisfaction. We analyzed a contemporary large dataset on pre-retirement workforce including individuals from most European countries. Only health, the number of children and the country someone is living in play an im-

portant role along with workplace perceptions in the determination of the degree of job-satisfaction.

For policies aiming at holding older workers in the job, these factors are key triggers in order to increase job-satisfaction. Some of these factors are feasible areas of policy changes, some may not be influenced by policy at all. Since the nature of workplace perception variables is more psychological, the transmission of policies targeting the micro levels of the firm and their workers is difficult to accomplish. Policy makers will need to unleash a great deal of creativity succeed in reaching individuals and their employers in order to make workplaces more motivating, more supportive, and healthier for the older workforce.

References

- Abolhassani, M. and Alessie, R. (2013). Subjective well-being around retirement. *De Economist*, 161(3):349–366.
- Aristovnik, A. and Jaklič, K. (2013). Job satisfaction of older workers as a factor of promoting labour market participation in the EU: The case of Slovenia. *University Library of Munich, Germany, MPRA Paper*.
- Bjørnskov, C., Dreher, A., Fischer, J. A., Schnellenbach, J., and Gehring, K. (2013). Inequality and happiness: When perceived social mobility and economic reality do not match. *Journal of Economic Behavior and Organization*, 91:75 – 92.
- Bonsang, E. and Klein, T. (2012). Retirement and subjective well-being. *Journal of Economic Behavior and Organization*, 83(3):311–329.
- Cameron, A. C. and Trivedi, P. K. (2005). *Microeconometrics: methods and applications*. Cambridge University Press.
- Clark, A. E. and Oswald, A. J. (1996). Satisfaction and comparison income. *Journal of Public Economics*, 61(3):359 – 381.
- Easterlin, R. A. (1995). Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior Organization*, 27(1):35–47.
- Easterlin, R. A. (2001). Income and happiness: Towards a unified theory. *The Economic Journal*, 111(473):465–484.
- Eichar, D. M., Norland, S., Michael Brady, E., and Fortinsky, R. H. (1991). The job satisfaction of older workers. *Journal of Organizational Behavior*, 12(7):609–620.
- Ferrer-i Carbonell, A. and Frijters, P. (2004). How important is methodology for the estimates of the determinants of happiness? *The Economic Journal*, 114(497):641–659.
- Freeman, R. B. (1978). Job satisfaction as an economic variable. *The American Economic Review*, 68(2):135–141.
- Groot, W. and van den Brink, H. M. (1999). Job satisfaction of older workers. *International Journal of Manpower*, 20(6):343–360.
- Hamermesh, D. S. (1977). Economic aspects of job satisfaction. *Essays in Labor Market Analysis*. New York: John Wiley, pages 53–72.
- Preter, H. D., Looy, D. V., and Mortelmans, D. (2013). Individual and institutional push and pull factors as predictors of retirement timing in europe: A multilevel analysis. *Journal of Aging Studies*, 27(4):299 – 307.

- Sousa-Poza, A. and Sousa-Poza, A. A. (2000). Well-being at work: A cross-national analysis of the levels and determinants of job satisfaction. *Journal of Behavioral and Experimental Economics (formerly The Journal of Socio-Economics)*, 29(6):517–538.
- Stutzer, A. (2004). The role of income aspirations in individual happiness. *Journal of Economic Behavior and Organization*, 54(1):89–109.
- Taylor, P. and Walker, A. (1998). Employers and older workers: Attitudes and employment practices. *Ageing and society*, 18(06):641–658.

Appendix

The following list gives the exact codings of all variables used in the analysis:

Dependent variable

Job satisfaction index: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Workplace perception variables

Job physically demanding: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Time pressure due to a heavy workload: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Little freedom to decide how I do my work: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Opportunity to develop new skills: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Receive support in difficult situations: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Receive recognition for my work: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Poor prospects for job advancement: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Poor job security: categorical, 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree

Look for early retirement: categorical, yes=1, no=0

Workplace variables

Income decile: categorical variable, 1 if first decile,...

Weekly hours of work: categorical variable, 0 in [0,10[1 in [10,20[, 2 in [20,30[, 3 in [30,40[, 4 if above 40

Socio-economic variables

Age at interview: real number

Age2: Age squared/100

Sex: female=1, male=0

Marital status: categorical, 1=married and living together with spouse, 2=registered partnership, 3=married, living separated from spouse, 4=never married, 5=divorced, 6=widowed

Self-perceived health: categorical, 1=excellent, 2=very good, 3=good, 4=fair, 5=poor

Number of children: integer

Country dummies

Austria: yes=1, no=0

Germany: yes=1, no=0

Sweden: yes=1, no=0

Netherlands: yes=1, no=0

Spain: yes=1, no=0

Italy: yes=1, no=0

France: yes=1, no=0

Greece: yes=1, no=0

Switzerland: yes=1, no=0

Belgium: yes=1, no=0

Israel: yes=1, no=0

Czech Republic: yes=1, no=0

Poland: yes=1, no=0

Hungary: yes=1, no=0

Portugal: yes=1, no=0

Slovenia: yes=1, no=0

Estonia: yes=1, no=0

Denmark: yes=1, no=0

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I certify that I have the right to deposit the contribution with MPRA.