

# Workplace Perception and Job Satisfaction of Older Workers

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## Abstract

This paper attempts to address 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 in nature; in contrast, salary opportunities and socio-demographic dimensions appear not to have a strong impact on job satisfaction, if at all.

**JEL Classification:** J81 - J28 - J32.

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

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# 1 Introduction

The influence of various job characteristics 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. The 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 well being of older workers. Therefore, we add to this literature by investigating subjective well being of older workforce from different angles. We consider the domains of well being to determine which characteristics experienced in a job increase or decrease subjective well being. We include workplace characteristics, self reported and objective workplace variables as well as variables on occupational and private pension coverage. Our aim is to identify those factors that older workers consider important in their domains of well being.

We build upon the methodology proposed by authors like Clark and Oswald (1996). Basically, we estimate a parsimonious utility function for the happiness domain of job satisfaction. We attempt to reintegrate subjective well being domains from overall life satisfaction, job satisfaction, income and health satisfaction to generate a holistic image of older workforces well being aspects.

Our results show that older workers' degree of job satisfaction strongly depends on self-perceived workplace attributes of psychological nature. 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 will utilize all of these terms as equivalents. Subjective well being may be investigated for different economic agents and for different domains in life. Subjective well being usually refers to utility, a concept that is purely ordinal and non-comparable between people. Objective well being on the other hand is deployed as a proxy for wealth or income, typically measured in terms of a cardinal scale. There are several dimensions or domains (Bonsang and Klein, 2012) into which overall subjective well being may be decomposed: satisfaction with income, with leisure time, with one's social network, with one's job, etc. Here, we consider subjective well being with respect to one's job or work place, often referred to as job satisfaction.

The theory on job satisfaction is based upon to a simple utility function for a representative agent. Previous work, for instance by Hamermesh (1977), Freeman (1978) or Clark and Oswald (1996), suggested the following framework. They specify a utility function

$$u_i(m, \acute{m}, h, i, j) \tag{1}$$

where  $u_i$  is the utility from the workplace of person  $i$ ,  $m$  is net wage,  $\acute{m}$  is the comparison wage,  $h$  is hours of work,  $i$  is a vector of individual characteristics, and  $j$  is a vector of job-specific characteristics. The rationale of this model is to estimate the parameters in the utility function increasing or decreasing utility or subjective well-being in one's job. The theory of subjective well-being over the life-cycle has been outlined by Easterlin (2001) who explains why subjective well-being does not necessarily go up with increasing income. Furthermore, Easterlin (1995) stresses that today, as in the past, within a country at a given time those with higher incomes are, on average, happier. However, raising the incomes of all does not increase the happiness of all. This is because the material norms on which judgments of well-being are based increase in the same proportion as the actual income of the society. These conclusions are suggested

by data on reported happiness, material norms, and income collected in surveys in a number of countries over the past half century. People develop higher aspiration levels as income rises over the life-cycle. This aspiration effect works into the opposite direction as the income effect and might even mitigate it. In this paper, we include the important findings of Easterlin (2001) by using age as a proxy for aspiration levels, since the level of aspirations as such is latent. The overall effect is, however, theoretically ambiguous, since the relative size of these effects is exogenous. Also, as Stutzer (2004) points out, individuals' well-being depend on the relative level of well-being rather than the absolute level. 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 the community they live in. 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 level of income per year and per individual.

Regarding the domain of job satisfaction, several findings form the space for the present paper 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 belonging to the older workforce with respect to their subjective well-being in the job. Abolhassani and Alessie (2013) find that unemployment has a strong negative impact on subjective well-being while voluntary retirement does not *per se* increase well-being. Therefore, there seems to be a causal influence of overall well-being in life on retirement, but reversing the chain of causality does not hold empirically. The findings by Bonsang and Klein (2012) go into the same direction; while overall subjective well-being is not increased by the event of retirement, retirement does increase leisure satisfaction and also decreases income satisfaction. So, for retirement policies, an important dimension to consider is the degree of satisfaction of older workers in their jobs. Furthermore, as Eichar et al. (1991) point out, older workers appreciate autonomy in their job as well as like their job to be meaningful. Another work on determinants of happiness empha-

sizes the importance of perceived income fairness in a society (Bjørnskov et al., 2013). Approaching older workers from the labor demand side, Taylor and Walker (1998) descriptively analyze employers' attitudes towards older workers. They find some evidence on the presence of ageism in workplaces; employers in fact think that older workers are inflexible and cannot satisfactorily do heavy physical work. Together with unhappiness in the job, employers' negative attitudes towards older workforce complement the literature on "push factors" into retirement (see for instance Preter et al. (2013)). A work which 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 that Denmark is the country with the highest job-satisfaction level. They use a categorization of job characteristics into work-role outputs and work-role inputs. Work-role outputs are income, job security, advancement opportunities, interesting job, work independently, help people, useful to society, relationship with management and colleagues. They define work-role inputs as education working time, exhausting job, physically demanding and dangerous job. Countries with high work-role outputs, in general, have a high job-satisfaction ranking. 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. 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 in a country. In empirical terms, a multinomial ordered logit framework appears to be the natural tool to conduct the analysis. 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 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 degrees of happiness in one's job. The dependent variable is representing

categories of response and has a logical internal ordering between the possibilities of response. Therefore, the model is estimated as an ordered logit model. The continuous metric  $y_i$  underlying the ordered responses that are actually observed requires the use of this latent class model. The specification for the multinomial ordered logit model of job satisfaction is therefore as follows:

$$\begin{aligned}
 y_i &= \beta_1 X_i + \beta_2 Y_i + \beta_3 Z_i + \varepsilon_i \\
 \varepsilon_i &\sim \text{logistic} \\
 y_i &= \begin{cases} 1 & \text{if } \bar{y}_i < c_1. \\ 2 & \text{if } c_1 \leq \bar{y}_i < c_2. \\ 3 & \text{if } c_2 \leq \bar{y}_i < c_3. \\ 4 & \text{if } c_3 \leq \bar{y}_i. \end{cases} \quad (2)
 \end{aligned}$$

The latent  $y_i$  is approximated by the observed variable *Jobsat*, an index reporting self-perceived job satisfaction. An over-bar indicates estimated values for  $y_i$ . This dependent variable expresses a person's response to the following exact wording in the survey questionnaire:

**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.*

$X$  is a vector of workplace perception variables,  $Y$  is a vector of controls for income, hours of work, gender, education, marital status, health, and number of kids. The empirical model also includes a vector of country dummies  $Z$ ;  $\varepsilon$  is an error term. Values of  $c$  are the estimated cut-points on the latent job satisfaction variable used to distinguish the categories of the dependent variable.

## 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 to 2010, and for wave four in 2010, 2011 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, therefore not every person is observed in all three waves.

Several observations were dropped due to missing values in key variables. We assume that these values are missing at random, so no imputations are attempted. In particular, we dropped an observations in case job satisfaction is missing or unknown (3133 observations deleted). Also, an observation was 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), adequacy of salary or earnings (6 observations deleted). For implausible reporting of gender, 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) has some unknown or missing values.

Having dropped non-reported or implausible observations, the panel consists of 20338 person-year observations originating from 16289 individuals. The panel is very comprehensive in terms of countries and subpopulations within countries. However, with respect to the time dimension, the panel is rather short.

## 3.3 Summary statistics

A description of variables used in the regressions is reported in Table 1. In order to capture happiness, this paper deploys a workplace satisfaction index *Jobsat* which represents the level of satisfaction in someone's main job. It is derived from four alternative responses to the question outlined above. The mean of *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 response 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 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 workers 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 think their job is secure. Yet, 67.64 percent of workers agree or strongly agree with not having the prospects of promotion or advancement in their job. Almost half the workforce, 47.43 percent feel 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.



**Table 1:** Summary statistics

<b>Variables</b>	<b>Description</b>	<b>Mean</b>	<b>Std.Dev.</b>	<b>Min.</b>	<b>Max.</b>
<i>Jobsat</i>	Job satisfaction index	1.662	0.658	1	4
<i>Inc</i>	Income percentile	6.889	2.629	1	10
<i>WH</i>	Weekly work hours	3.177	1.132	0	4
<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
<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
<i>Countries</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			

**Table 2:** Frequencies of responses to workplace perception variables

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

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.

### 3.4 Hypotheses to be tested

The main focus of this paper is on workplace perception variables for which we now discuss the hypotheses about the empirical outcomes hoped for. We would expect workplace the perception variables above 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. 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, i.e., 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>Inc</i>	2nd	0.0424 (0.41)	1.043 (0.41)
	3rd	-0.0954 (-0.98)	0.909 (-0.98)
	4th	-0.0311 (-0.34)	0.969 (-0.34)
	5th	-0.106 (-1.21)	0.899 (-1.21)
	6th	-0.145 (-1.71)	0.865 (-1.71)
	7th	-0.103 (-1.25)	0.902 (-1.25)
	8th	-0.0757 (-0.95)	0.927 (-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)
<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***	1.237***
		(3.98)	(3.98)
	good	0.424***	1.528***
		(8.10)	(8.10)
	fair	0.470***	1.599***
		(7.53)	(7.53)
	poor	0.644***	1.904***
		(5.34)	(5.34)
<i>Kids</i>		-0.0375**	0.963**
		(-2.71)	(-2.71)
<i>Phys</i>	agree	0.205***	1.227***
		(3.98)	(3.98)
	disagree	0.144**	1.155**
		(2.81)	(2.81)
	strongly disagree	0.0970	1.102

		(1.65)	(1.65)
<i>Press</i>	agree	-0.244***	0.784***
		(-4.64)	(-4.64)
	disagree	-0.317***	0.728***
		(-6.02)	(-6.02)
	strongly disagree	-0.491***	0.612***
		(-6.53)	(-6.53)
<i>Free</i>	agree	-0.166*	0.847*
		(-2.35)	(-2.35)
	disagree	-0.343***	0.710***
		(-5.09)	(-5.09)
	strongly disagree	-0.721***	0.486***
		(-9.86)	(-9.86)
<i>Develop</i>	agree	0.648***	1.911***
		(13.67)	(13.67)
	disagree	0.993***	2.700***
		(17.86)	(17.86)
	strongly disagree	1.214***	3.367***
		(15.44)	(15.44)
<i>Support</i>	agree	0.557***	1.745***
		(11.23)	(11.23)
	disagree	0.954***	2.596***
		(15.92)	(15.92)
	strongly disagree	1.409***	4.092***
		(14.38)	(14.38)
<i>Recogn</i>	agree	0.779***	2.180***
		(14.49)	(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)
<i>Countries</i>	Austria	-0.130	0.878
		(-1.43)	(-1.43)
	Germany	0.216*	1.241*
		(2.42)	(2.42)
	Sweden	0.212**	1.236**
		(2.66)	(2.66)
	Netherlands	0.482***	1.619***
		(6.21)	(6.21)
	Spain	0.505***	1.657***
		(5.56)	(5.56)
	Italy	0.269**	1.308**
		(2.91)	(2.91)
	France	0.0522	1.054
		(0.66)	(0.66)
	Greece	0.673***	1.960***
		(6.59)	(6.59)
	Switzerland	-0.174*	0.840*
		(-2.15)	(-2.15)
	Belgium	0.00702	1.007
		(0.09)	(0.09)
	Israel	0.483***	1.620***
		(3.55)	(3.55)
	Czech Republic	0.127	1.135
		(1.65)	(1.65)
	Poland	0.312**	1.366**
		(2.68)	(2.68)
	Hungary	0.145	1.156
		(1.17)	(1.17)
	Portugal	0.430**	1.538**
		(3.05)	(3.05)
	Slovenia	0.276*	1.318*
		(2.46)	(2.46)
	Estonia	0.671***	1.956***
		(8.12)	(8.12)
	Denmark	omitted	1
<i>Cutpoints</i>	$c_1$	4.666	
		(1.70)	
	$c_2$	8.236**	
		(3.01)	
	$c_3$	10.12***	
		(3.70)	
	N	20338	20338

Log pseudo-likelihood	-15645.053
Wald $\chi^2$ , 69 df	4735.86
Prob > $\chi^2$	0.0000
Correctly pred. outcomes	0.653
Pseudo $R^2$	0.1845

Note: 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. *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 minor 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.

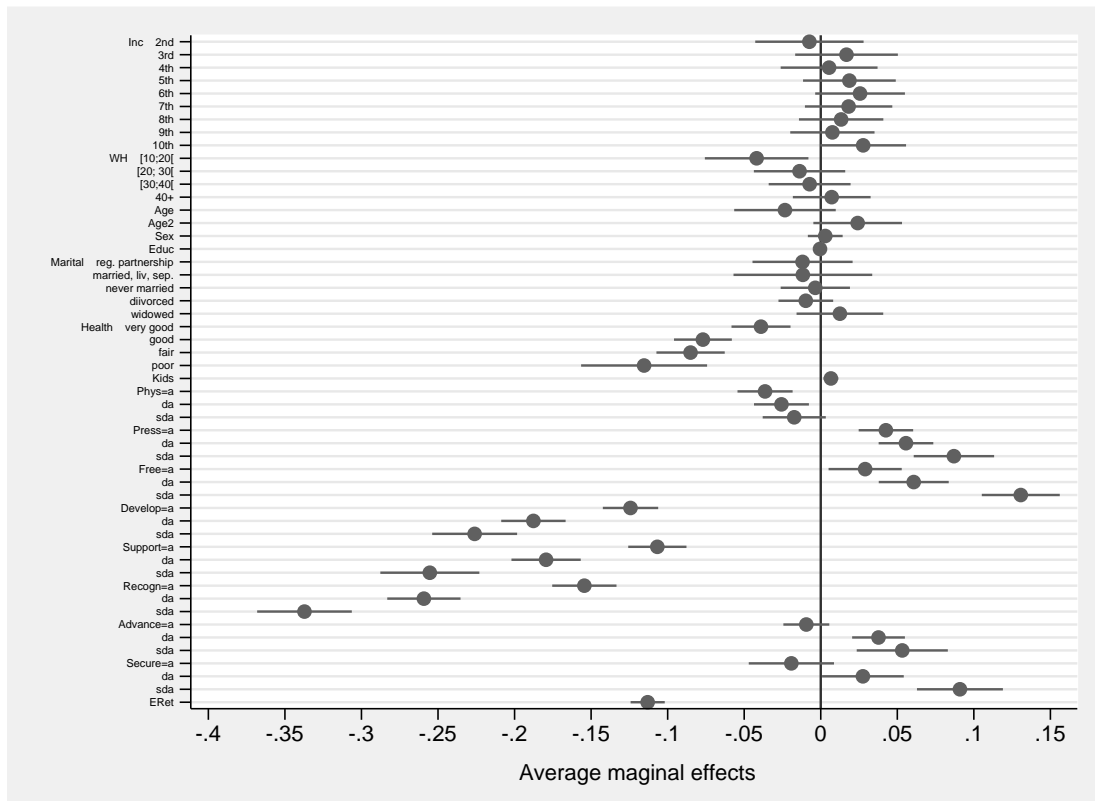


Figure 1: Average marginal effects and their confidence intervals

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.



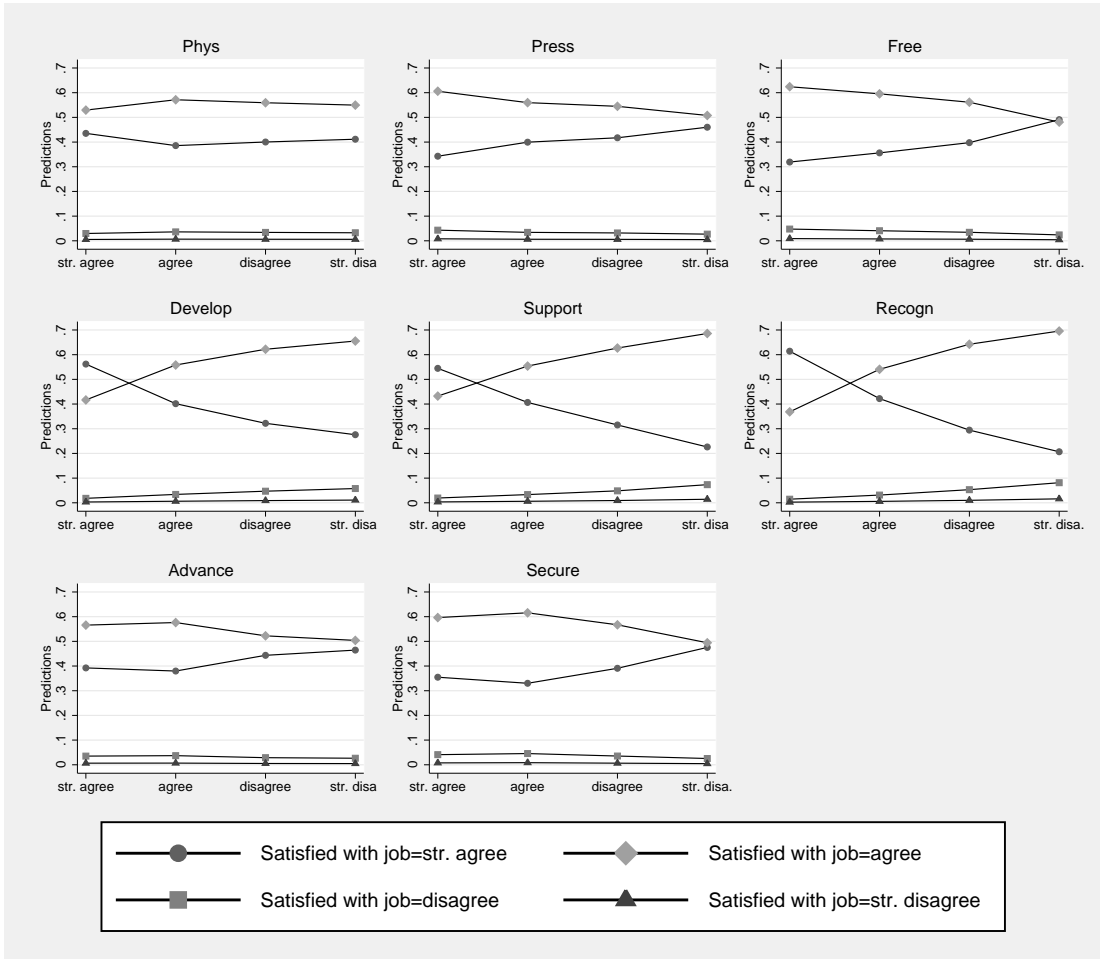


Figure 2: Predicted probabilities

## 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 important 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.

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