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25 The use of PC at work and job satisfaction

- ► There is a strong association between the use of PC at work (and PC literacy) and the overall job satisfaction and intended early retirement, particularly for white collar workers
- ► The analysis shows that individuals with high PC skills and having a job that requires the use of a computer are more satisfied with their jobs and less keen to retire early
- ► Over-skilled women (who have PC skills but do not need them for their jobs) are more satisfied with their jobs and less likely to desire to retire as soon as possible

25.1 Early retirement and job quality

Understanding the determinants of early retirement has been a long standing focus of socio-economic literature, given the low participation rates of the young old in most OECD countries (OECD 2011). Population ageing is challenging the sustainability of the social security system; therefore, increasing the participation of older workers is placed at the core of the policy agenda. Together with sustainability concerns, discouraging early exit from the labour market reduces the risk of enduring consequences on individual and household well-being later in life (Angelini et al. 2009). Furthermore, the psychological literature identifies work as a positive contributor to social inclusion and well-being, since it typically provides opportunities for social interactions and it helps retaining social ties (Spelten et al. 2002).

A strand of the literature has identified poor quality of work as an important determinant of early exits from the labour market. These are observed in employees with physically demanding jobs and with monotonous repetitive work (Henkens et al. 1994). Poor quality of work is frequently associated with an increase in the intention to leave and a reduction in performance and motivation, as shown among others by Siegrist et al. (2006) and Dal Bianco et al. (2015). The role of poor work quality may become particularly important when either working conditions cannot be adapted to the changed needs of the employees or when older workers are not able to adapt their skills to the new needs of the firms.

The skill-biased technology change literature has shown that observed and unobserved workers' skills are among the most important determinants of workers' wages and employment status (Dostie et al. 2010). The high diffusion, in

the last decades, of Information and Communication Technologies (ICTs) across sectors and professions has required workers to update constantly their skills. In this context, older workers with poor technological skills tend to become less and less productive, leading to lower expected wages, worse expected job conditions and job quality. This makes their early retirement more likely (Biagi et al. 2013) or at least more desirable.

In this chapter we investigate how the use of Personal Computer (PC) at work and PC literacy interrelate with job satisfaction and the intention to take early retirement. We consider a sample of employees aged between 50 and 60. To measure the technology skills of workers we take advantage of the new variables on the use of computer at work and the self-reported PC literacy included in the Wave 5 questionnaire. Our estimates show that individuals who have high PC skills and a job that requires the use of PC are more satisfied and less likely to desire to retire as soon as possible compared to workers with low PC skills whose job requires using a PC. This is true for both men and women. Also, over qualified female workers (i.e. women with high PC skills whose job does not require the use of a PC) are more satisfied and less keen to retire as soon as possible. Once our analysis is conducted separately for white collar and blue collar workers, we find that our results are driven by the former group.

25.2 The use of PC in Europe and the relation with job satisfaction and intended early retirement

Despite the large diffusion of ICTs around the world, the use of PC at work and technology skills show a large variability among the European countries participating in SHARE. Figure 25.1 shows the percentage of employees, aged 50–60, using the PC at work by country (left panel), and the level of PC literacy (right panel).

The common distinction between Northern and Southern countries can be observed also in the use of computer at work. For Sweden, Denmark and the Netherlands (and for Switzerland) more than 80 per cent of workers use a PC at work, while this percentage goes down to 50–60 per cent for Mediterranean countries (such as Spain and Italy) and Eastern countries. An analogous pattern arises when looking at the cross-country differences in PC literacy. Denmark has also a large share of workers with advanced computer knowledge and very few individuals declare to have never used the computer. Spain shows the largest share of workers who have basic or poor PC skills.
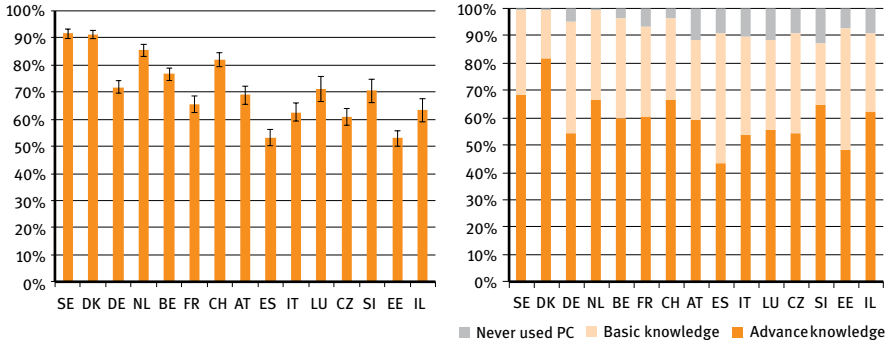
Figure 25.1: Percentage of workers using PC at work (left panel) and distribution of PC literacy levels among workers (right panel)
Notes: n=11,745
Source: SHARE Wave 5 release 0

Figure 25.2 shows the relation between the level of job satisfaction and the use of computer at work. In Estonia, Italy and Slovenia less than 30 per cent of the respondents declare to be strongly satisfied with their job. This percentage approaches 60 per cent for Switzerland, Denmark and Sweden.

The figure shows that the relation between job satisfaction and the use of computer at work is positive. In other words, in countries where there is a higher share of workers using a PC at work there is a higher share of individuals who are satisfied with their job. This finding is consistent with the literature assessing the positive effect of PC use at work and PC literacy on the labour market attachment of the young old. As in the previous figure, a clear cross-country differential arises. Nordic countries are positioned in the upper-right part of the graph (high share of PC users and high share of highly satisfied workers), while Mediterranean countries and Eastern countries are in the bottom-left corner of the figure.

In the same way, Figure 25.3 shows the relation between intended early retirement and the use of computer at work. The graph shows a clear negative relationship between the desire to retire as soon as possible and the use of PC at work. Again we can detect a North-South gradient.
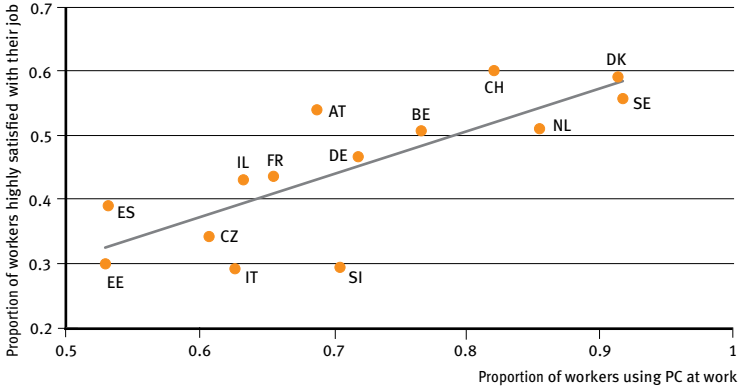
Figure 25.2: Correlation between the level of job satisfaction and the use of PC at work
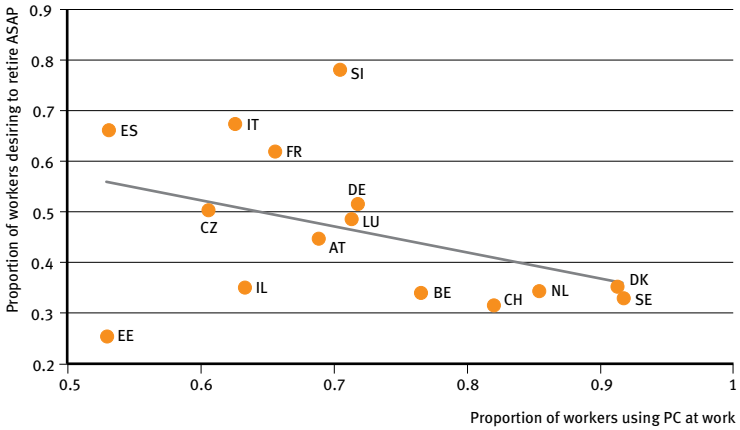Notes: n=5,965
Source: SHARE Wave 5 release 0

Figure 25.3: Correlation between the desire to retire as soon as possible (intended early retirement) and the use of PC at work
Notes: n=5,965
Source: SHARE Wave 5 release 0

25.3 How do PC use and PC literacy relate to job satisfaction and intended early retirement?

To investigate the relation between the use of PC at work (combined with the PC skills level) and the workers' well-being, we estimate a linear probability model (LPM) where the outcome variables are overall job satisfaction (being highly satisfied with own job) and the desire to retire as soon as possible respectively. As before, our estimation sample includes male and female employees aged between 50 and 60 years of age. Additionally, in the analysis we control for individual characteristics, including age, age squared, education, having children, verbal fluency, numeracy and health, job characteristics (public/private sector, white/blue collar and industry) and country dummies. We add a control to capture the institutional characteristics of the pension system, i.e. the number of years to minimum retirement age. We run separate analyses for men and women and for white and blue collar workers. Once missing values for relevant variables are dropped, we are left with a sample of about 2,400 males and 3,200 females.

To capture the effect of the ICT we define four groups. The first group is composed by workers having high PC skills in jobs that require the use of a PC; to the second group belong workers with high PC skills and jobs that do not require the use of a PC; the third group is composed by workers who do not know how to use a PC and do not need to use it at work. Finally, the fourth group is composed by the most disadvantaged workers: they do not have PC skills but have to use a PC at work. In our regressions, these groups are identified by a set of dummy variables. The fourth group is used as reference group.

Table 25.1 presents the estimation results for overall job satisfaction for men and women. The results show that workers who have a good level of PC literacy and have a job requiring the use of a PC are more likely to be highly satisfied with their job than workers who do not have PC skills but have to use it at work. This is true for both men and women, with stronger effect for men (a nine percentage points increase for men versus a five percentage points increase for women). Only for women, the group of workers having good PC skills but not using the PC at work has a significantly higher probability to be highly satisfied than the workers belonging to the control group (+ ten percentage points). This effect might be due to the fact that women in this group are over-skilled with respect to the job tasks they are required to carry out, thus they are probably less stressed. Instead, men are more satisfied when their skills match the job they are doing.

Table 25.1: Linear Probability Model estimation results of the probability to be highly satisfied with own job, by gender

	Male			Female		
	coef	s.e.		coef	s.e.	
PC required, high PC skills	0.085	0.030	***	0.052	0.024	**
PC not required, no PC skills	0.037	0.034		0.031	0.029	
PC not required, high PC skills	0.036	0.046		0.107	0.041	***
Country dummies	YES			YES		
Observations	2,353			3,195		

Significance: *** = 1 %; ** = 5 %; * = 10 %
Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, ISCO (white or blue collar), NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies.
PC required at work and no PC skills, public sector employee, high education, poor health, blue collar, other industry and Germany are used as baseline
Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

In the interpretation of the results, we should take into account that women who are working past age 50 are, particularly in some countries, a selected group and they may have unobservable characteristics related to work attitude that can influence their level of job satisfaction. Additionally, for both genders, there might be a problem of sorting. Individuals with higher job skills sort themselves into jobs requiring the use of PC. Since we do not know the initial level of ICTs knowledge of the individuals when they started their job, we cannot directly control for the problem of sorting. However, we try to attenuate this effect controlling for the type of occupation and industry, using these job characteristics as covariates and running separate analysis for white and blue collar workers.

Tables 25.2a and 25.2b present the estimation results for the overall job satisfaction by gender and type of occupation. We find that the significance of the relationship between PC use, PC literacy and job satisfaction vanishes for the blue collar group, whereas our previous results are overall entirely confirmed for white collars. This evidence is probably driven by the difference between blue collar and white collar jobs in terms of requirements of ICTs knowledge on the workplace.

Table 25.2a: Linear Probability Model estimation results of the probability to be highly satisfied with own job, by type of occupation – Men

	White Collar			Blue Collar	
	coef	s.e.		coef	s.e.
PC required, high PC skills	0.086	0.035	**	0.058	0.058
PC not required, no PC skills	0.032	0.049		0.020	0.049
PC not required, high PC skills	0.058	0.070		0.037	0.064
Country dummies	YES			YES	
Observations	1,571			782	

Significance: *** = 1 %; ** = 5 %; * = 10 %
Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, other industry and Germany are used as baseline
Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

Table 25.2b: Linear Probability Model estimation results of the probability to be highly satisfied with own job, by type of occupation – Women

	White Collar			Blue Collar	
	coef	s.e.		coef	s.e.
PC required, high PC skills	0.065	0.025	**	−0.042	0.079
PC not required, no PC skills	0.040	0.033		−0.035	0.070
PC not required, high PC skills	0.128	0.051	**	0.031	0.081
Country dummies	YES			YES	
Observations	2,651			544	

Significance: *** = 1 %; ** = 5 %; * = 10 %
Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, other industry and Germany are used as baseline
Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

The second outcome we analyse is the probability of intended early retirement. Table 25.3 presents the estimation results by gender for the relevant variables.

Both male and female workers with high PC literacy and using the computer at work are less likely to desire to retire as soon as possible (this probabil-

ity decreases by seven percentage points for men and six percentage points for women). Again, as for the overall job satisfaction, the over skilled women (i.e. women with high PC skills doing a job for which PC use is not required) are less likely to desire to retire as soon as possible (– ten percentage points).

When distinguishing between white and blue collar workers (see Tables 25.4a and 25.4b), the effect is again detected only for the white collar group.

The OLS estimation method we use in all our specifications (the Linear Probability Model) allows us to analyse the associations between the use of PC at work (and the related PC literacy) and the outcomes of interest net of the effect of a set of observable characteristics. However, our analysis does not identify a causal relation and our estimates might suffer from endogeneity due to reverse causality or the omission of relevant factors. More specifically, individuals who are more satisfied of their job and have a higher labour market attachment might invest more on their human capital and end up with higher PC skills. In addition, workers who are keen on their jobs and plan to retire later might be more willing to invest in their PC skills since they face a longer time horizon over which the costs of such investments can be recouped. Therefore, our OLS estimation procedure is likely to produce upward biased estimates of the causal effects of PC skills on job satisfaction and the desire to retire as soon as possible.

Table 25.3: Linear Probability Model estimation results of the probability to desire to retire as soon as possible, by gender

	Male			**Female**		
	coef	s.e.		coef	s.e.	
PC required, high PC skills	−0.073	0.029	**	−0.064	0.023	**
PC not required, no PC skills	0.011	0.034		0.035	0.029	
PC not required, high PC skills	−0.056	0.045		−0.093	0.040	**
Country dummies	YES			YES		
Observations	2,353			3,194		

Significance: *** = 1 %; ** = 5 %; * = 10 %
Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, ISCO (white or blue collar), NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies.
PC required at work and no PC skills, public sector employee, high education, poor health, blue collar, other industry and Germany are used as baseline
Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

Table 25.4a: Linear Probability Model estimation results of the probability to desire to retire as soon as possible, by type of occupation – Men

	White Collar			Blue Collar	
	coef	s.e.		coef	s.e.
PC required, high PC skills	−0.075	0.035	**	−0.015	0.056
PC not required, no PC skills	0.042	0.050		0.020	0.049
PC not required, high PC skills	−0.050	0.070		−0.054	0.063
Country dummies	YES			YES	
Observations	1,571			782	

Significance: *** = 1 %; ** = 5 %; * = 10 %
Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, other industry and Germany are used as baseline
Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

Table 25.4b: Linear Probability Model estimation results of the probability to desire to retire as soon as possible, by type of occupation – Women

	White Collar			Blue Collar	
	coef	s.e.		coef	s.e.
PC required, high PC skills	−0.062	0.024	**	−0.090	0.090
PC not required, no PC skills	−0.034	0.032		−0.065	0.077
PC not required, high PC skills	−0.105	0.050	**	−0.077	0.084
Country dummies	YES			YES	
Observations	2,650			544	

Significance: *** = 1 %; ** = 5 %; * = 10 %
Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, other industry and Germany are used as baseline
Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

25.4 The importance of being trained

In this chapter we investigate the relation between the use of PC at work (and the related PC literacy) with the overall job satisfaction and the intended early retirement.

We make use of the new questions available in the Wave 5 questionnaire regarding the use of computer at work and the self-reported PC skills. We find that having high PC skills and having a job that requires the use of a PC is associated with higher job satisfaction and lower probability to desire to retire as soon as possible for both genders, particularly so for white collar workers. Only for women, we find that over-skilled workers (i.e. those who have high PC skills but are not required to use a PC at work) are more satisfied and less keen to retire as soon as possible. These results suggest that the use of a PC on the job combined with good ICT skills helps to increase the self-perceived quality of work and reduce the intention to retire early. In a policy perspective, our findings call for active labour market policies aimed at training older workers who typically have more difficulties to adapt their skills.

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