
SHARE WORKING PAPER SERIES

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Working Paper Series 29-2017

SHARE-ERIC | Amalienstr. 33 | 80799 Munich | Germany | share-eric.eu

For financial or active ageing reasons? Econometric evidence from SHARE on health of the older precarious workers

Andrej Srakar¹

Institute for Economic Research, Ljubljana, Slovenia and Faculty of Economics, University of Ljubljana, Slovenia, srakara@ier.si

Valentina Prevolnik Rupel

Institute for Economic Research, Ljubljana, Slovenia, rupelv@ier.si

Abstract

We present the results of the analysis about the older precarious workers and their health situation based on the usage of Wave 5 of the SHARE survey and studying the main question: “Are older precarious workers really discriminated in terms of worse health as compared to the older employed people and general older population?” Descriptive statistics and bivariate tests are used to get the basic insight into the problem while finite mixture econometric models are used to model the heterogeneity in the sample. Our results show that, contrary to the expectations, the health of older self-employed workers is generally in no way inferior to the health of older employees. Problems in health of the precarious workers emerge only when the analysis focuses on those who are neither employed nor self-employed, while engaged in paid work (»true« precarious people). Our analysis also points to a strong heterogeneity among precarious workers which fall into two large groups which we label »precarious workers for money reasons« and »precarious workers because of active ageing reasons«, with clearly visible differences among the two groups in income and health. On the basis of our findings and for future policy implementation, measures to improve the condition of (older) precarious workers have to take into account two clearly different and large groups in the data which have completely opposite characteristics and health care needs.

Keywords: precarious workers, older people, self-employed, health indicators, finite mixture models, active ageing

¹ Andrej Srakar, PhD, Research Associate, Institute for Economic Research, Ljubljana, Assistant Professor, Faculty of Economics, University of Ljubljana, Slovenia, T: +386 (0)1 5303 860, GSM: +386 (0)31 643 414, F: +386 (0)1 5303 874, Mailto: srakara@ier.si, URL: www.ier.si.

1. Introduction

Precarious work is an inherent feature and a growing problem of the modern society. It is, however, hard to define precisely, as it is neither a statistical (see ESOPE, 2004) nor a legal (see Gubenšek, 2013) category. A useful definition of precarious employment was provided by ESOPE (2004) according to which it is understood as »a variety of forms of employment (e.g. temporary employment, underemployment, quasi self-employment, on-call work) established below the socially accepted normative standards (typically expressed in terms of rights, of employment protection legislation, and of collective protection) in one or more respects (the four dimensions) which results from an unbalanced distribution towards and amongst workers (towards workers vs. employers, and amongst workers, which leads to the segmentation of labor) of the insecurity and risks typically attached to economic life in general and to the labor market in particular« (ibid.: 9).

Precarious work has been studied for its aspects of gender equality (see e.g. Fudge et al., 2006; Bardasi and Gornick, 2008; Barker, 2005; Bettio et al., 2012; Jaumotte, 2003; Kjeldstad and Nyoem, 2012; Korpi, 2000; Maître, Whelan and Nolan, 2003; Matteazzi, Pailhé and Solaz, 2013; Nieuwenhuis, Need and van der Kolk, 2013; Pettit and Hook, 2005; Perrons et al., 2007; Stier and Mandel, 2009; Tomlinson, 2006); of part-time work (Allaart and Bellmann, 2007; Anxo et al., 2007; Bardasi and Gornick, 2008; Booth and van Ours, 2013; Buddelmeyer, Mourre and Ward, 2004; O'Reilly and Fagan, 1998; Delsen, 1995; Comi and Grasseni, 2012) and social rights (McKay et al., 2012; Rodgers and Rodgers, 1989; Standing, 2011; Besamusca, 2011; Seymour, 2011; EFFAT, 2011; International Labour Organisation, 2011; Malentachhi, 2012; Wilson, 2012; Tucker, 2002).

There are many problems that precarious work and its growing spread brings to European societies. According to the literature (Tucker, 2002; Cardoso et al., 2014; Rodgers and Rodgers, 1989), the main features that generally characterize precarious work can be summarized as:

- The job can be terminated with little or no prior notice by the employer;
- Hours of work are uncertain or can be changed at will by the employer;
- Earnings are uncertain or irregular;

- Functions of the job can be changed at will by the employer;
- There is no explicit or implicit contract for the on-going employment;
- There is, in practice, no protection against discrimination, sexual harassment, unacceptable working practices;
- The job is usually low income – at or below the minimum wage;
- There is little or no access to the ‘standard’ non-wage employment benefits such as sick leave, domestic leave, bereavement leave or parental leave;
- There is limited or no opportunity to gain and retain skills through access to education and training;
- The task performed or the health and safety practices at the workplace make the job unhealthy or dangerous.

Nevertheless, surprisingly few empirical (not to say econometrical) studies have been undertaken to understand the situation of the precarious workers, particularly at older age. It is usually assumed that precarious workers are de-privileged in most socio-economic and health conditions of living as compared to the general population and regular employees (see e.g. ESOPE, 2004; Cardoso et al., 2014; Letourneux, 1998; Rodgers and Rodgers, 1989). An empirical study of the characteristics of older precarious workers on SHARE data (Wave 4) was done by Srakar (2015) who found that several of the established claims on comparisons of precarious workers and their conditions compared to (regular) employees and the general population, do not hold. Also, Mastrogiacomo and Belloni (2015) provided an analysis of the self-employed (they, therefore, include only one type of “precarious” work in our analysis) in the SHARE Wave 5 dataset and showed that those who shift into self-employment are the more motivated wage-employed, while when compared to those who were already self-employed, their job satisfaction is lower.

The aim of this study is to determine whether older precarious workers really are discriminated in terms of worse health outcomes as compared to regularly employed people and the general population of the same age. The structure of the paper is the following: in the second section, we present the dataset and method. In the third section we present the main results, including the short discussion and some additional graphical representations of the findings. In the final section we conclude.

2. Data and method

We use the cross-sectional database of Wave 5 of the Survey of Health, Ageing and Retirement in Europe (SHARE²) (see Börsch-Supan, 2015; Börsch-Supan et al., 2015; Malter & Börsch-Supan, 2015; Börsch-Supan et al., 2013). SHARE is a multidisciplinary and cross-national panel database of micro data on health, socio-economic status and social and family networks of approximately 110,000 individuals (more than 220,000 interviews) from 20 European countries and Israel aged 50 years or older. In our analysis we only include respondents aged between 50 and 64 years, as this is the population of working age in all included countries. This limits our sample to 29,372 respondents from 15 countries: Sweden, Denmark, Netherlands, Austria, Belgium, France, Germany, Switzerland, Luxembourg, Italy, Spain, Czech Republic, Estonia, Slovenia and Israel, of which 18,535 were employed, self-employed or performing other kinds of paid work.

The main dependent variables we use in our analysis³ are:

- *I_Chronic*: number of chronic diseases (count variable, ranging from 0 to 14), incorporating the following: A heart attack including myocardial infarction or coronary thrombosis or any other heart problem including congestive heart failure; High blood pressure or hypertension; High blood cholesterol; A stroke or cerebral vascular disease; Diabetes or high blood sugar; Chronic lung disease such as chronic bronchitis or emphysema; Cancer or malignant tumor, including leukemia or lymphoma, but excluding minor skin cancers; Stomach or duodenal ulcer, peptic ulcer; Parkinson disease; Cataracts; Hip fracture; Other fractures; Alzheimer's disease, dementia, organic brain

² This paper uses data from SHARE Wave 5 (DOI: 10.6103/SHARE.w5.100), see Börsch-Supan et al. (2013) for methodological details. The SHARE data collection has been primarily funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812) and FP7 (SHARE-PREP: N°211909, SHARE-LEAP: N°227822, SHARE M4: N°261982). Additional funding from the German Ministry of Education and Research, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

³ In the econometric analysis using finite mixture models we tried also using other health related variables, like limitations of daily living (ADL, IADL), self-rated health and others but at least at this stage of the analysis the models did not converge properly.

syndrome, senility or any other serious memory impairment; Other affective or emotional disorders, including anxiety, nervous or psychiatric problems; Rheumatoid Arthritis; Osteoarthritis, or other rheumatism; Other conditions, not yet mentioned;

- *I_Depr*: score on the Euro-Depression scale⁴, count variable, ranging from 0 to 12;
- *I_WOutofpocket*: sum of out-of-pocket expenses for health, incorporating expenses for inpatient and outpatient care, drugs and nursing; continuous variable, winsorized to prevent the influence of outliers.

The key independent variables of our interest are:

- *I_SelfEmp*: binary indicator, indicating whether the respondent classified himself or herself as self-employed (0-no; 1-yes);
- *I_Precar*: binary indicator, indicating whether the respondent classified himself or herself as being neither employed nor self-employed but nevertheless working for pay; labeled as »true« precarious workers for the purpose of this analysis (0-no; 1-yes).

In the models we also include the following control variables:

- *I_Gender*: gender, binary variable (0-male; 1-female);
- *I_Age*: age of the respondent, continuous variable (50-64 years);
- *I_EduYears*: years of education, continuous variable;
- *I_Income2*: total household equivalent net income, continuous variable, using the variable *thhinc2* generated by SHARE;
- *I_Settlement*: place of living, binary variable (0-rural, 1-urban);
- *I_BMI*: body mass index, binary variable (0-underweight or normal; 1-overweight or obese);
- *I_Activities*: number of leisure activities (count variable, ranging from 0 to 7), including: Done voluntary or charity work; Attended an educational or training course; Gone to a sport, social or other kind of club; Taken part in a political or community-related

⁴ Measurement of the mental condition on EURO-Depression (EURO-D) scale is realized by covering questions that indicate 12 items: the presence of, respectively, depression, pessimism, suicidality, guilt, sleep, interest, irritability, appetite, fatigue, concentration, enjoyment and tearfulness (see Prince et al., 1999). The scale runs from 0-12; with the number of depressive symptoms denoting the score.

organization; Read books, magazines or newspapers; Did word or number games such as crossword puzzles or Sudoku; Played cards or games such as chess.

- *I_LifeSat*: life satisfaction, a count variable generated by SHARE, ranging from 0 to 10, with higher values indicating higher satisfaction;
- *I_Limited*: limitations of daily life, binary variable (0-less than severely limited; 1-severely limited);
- Welfare regimes: *I_WelfSocDem* – social democratic (Sweden, Denmark); *I_WelfContin* – continental (Austria, Germany, Netherlands, France, Switzerland, Belgium, Luxembourg); *I_WelfMedit* – Mediterranean (Spain, Italy); *I_WelfEast* – Eastern European (comparison group: Czech Republic, Slovenia, Estonia); *I_WelfMixed* – mixed (Israel).

Firstly, we tested some of our initial hypotheses by bivariate tests, using common one sided t-test (supported by nonparametric Wilcoxon rank-sum test) to test the differences between two groups in our sample. In the next step, we used finite mixture econometric models to appropriately model the assumed heterogeneity in the sample. The problem of mixture decomposition and mixture distributions in general have been cited in the literature as far back as 1846, while a common reference is made to the work of Karl Pearson in 1894 (see McLachlan and Peel, 2000). A finite mixture model is a (convex) combination of two or more probability density functions. By combining the properties of the individual probability density functions, mixture models are capable of approximating any arbitrary distribution (Gesteira Costa Filho, 2008). A probability density function (pdf) of a mixture model is defined by a convex combination of K component pdfs:

$$p(x|\Theta) = \sum_{k=1}^K \alpha_k p_k(x|\theta_k) \quad (1)$$

where $p_k(x|\theta_k)$ is the pdf of the k th component, α_k are the mixing proportions (or component priors) and $\Theta = (\alpha_1, \dots, \alpha_K, \theta_1, \dots, \theta_K)$ is the set of parameters, with α_k being non-negative and summing to one.

For a given data X with N observations, the likelihood of the data assuming that x_i are independently distributed is given by:

$$P(X|\Theta) = \mathcal{L}(\Theta|X) = \prod_{i=1}^N \sum_{k=1}^K \alpha_k p_k(x_i|\theta_k) \quad (2)$$

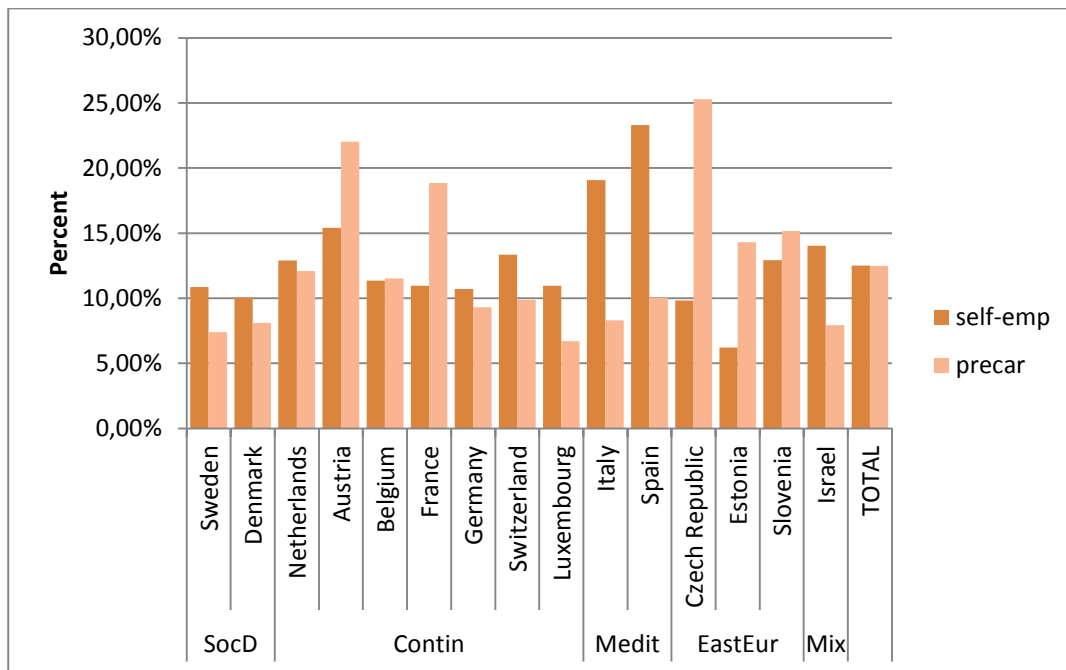
The problem of mixture estimation from data X can be formulated as to find the set of parameters Θ that gives the maximum likelihood estimate (MLE) solution:

$$\Theta^* = \arg \max_{\Theta} \mathcal{L}(\Theta|X) \quad (3)$$

3. Results

Figure 1 shows the distribution of self-employed and »true« precarious workers among the 15 included countries and five welfare regimes. There are significant differences across the countries and welfare regimes: the social democratic countries tend to have a slightly higher percentage of self-employed than true precarious workers in the working population. The difference between the two proportions is most pronounced in the Mediterranean countries (as also found by Srakar, 2015). On the other hand, continental countries are divided between two groups: Austria, France and to a smaller extent Belgium have higher shares of true precarious workers in the workforce, while all other countries of the continental regime have more self-employed workers. Countries of the Eastern European regime have a significantly larger share of true precarious workers in the workforce, while in this respect Israel is closer to the Mediterranean countries, having a significantly larger share of self-employed among the older workforce.

Figure 1: Shares of precarious workers among the 50-64 working population in SHARE countries



Note: Abbreviations for welfare regimes: SocD – social democratic; Contin – continental; Medit – Mediterranean; EastEur – Eastern European; Mix – mixed. Other abbreviations: self-emp – self-employed; precar – »true« precarious workers.

Source: Own calculations on the basis of SHARE, Wave 5 dataset (DOI: 10.6103/SHARE.w5.500).

Main descriptive statistics are shown in Table 1. As observed already by Srakar (2015), there are more males than females among self-employed, while true precarious workers (and employees) tend to be more feminized (see also Čeman, 2010; Pettit and Hook, 2005; Perrons et al., 2007; Stier and Mandel, 2009). Also, the age distribution is significantly different between self-employees, true precarious workers and employees: while the share of true precarious workers tends to rise with age, the share of employees and self-employees tends to fall (this could be explained by considering self-employment as an alternative to employment and therefore having more or less the same age characteristics, while true precarious work being a substitute for all forms of employment, particularly in the older age; see Srakar, 2015).

On average, self-employed and employed workers tend to be more educated than true precarious workers with the latter also being significantly less likely to be included in the upper tertile of the

income distribution. There are no significant differences in the place of living or body mass index, while among true precarious workers there was a significantly larger share of people with severe limitations of daily living than among the other two groups. Finally, true precarious workers have a higher number of diseases and worse mental states than the other two employment groups (which could be partly a consequence of their higher average age, see above). There are no significant differences between the studied groups in terms of the out-of-pocket expenses for health care.

Table 1: Descriptive statistics of main used variables

		Self- Employed	"True" Precarious	Employed
Gender	Male	61.78%	45.72%	45.66%
	Female	38.22%	54.28%	54.34%
Age	50-54	29.79%	13.37%	35.61%
	55-59	39.86%	28.29%	41.96%
	60-64	30.35%	58.35%	22.44%
Years of education	Less than 12	29.14%	50.56%	30.28%
	12 or more	70.86%	49.44%	69.72%
Income	Lower	21.79%	27.34%	18.66%
	Middle	25.29%	30.93%	31.19%
	Upper	52.92%	41.74%	50.14%
Settlement	Rural	37.03%	32.71%	31.25%
	Urban	62.97%	67.29%	68.75%
BMI	Underweight	0.44%	1.28%	1.04%
	Normal	39.99%	36.58%	40.62%
	Overweight	43.42%	39.44%	40.20%
	Obese	16.15%	22.71%	18.14%
Limitations	Less than severe	95.24%	87.84%	94.32%
	Severe	4.76%	12.16%	5.68%
<i>Averages</i>				
	Chronic diseases	0.96	1.44	1.05
	Depression	1.71	2.31	1.91
	Out-of-pocket expen. for health care	315.03	314.76	299.00

Source: Own calculations on the basis of SHARE, Wave 5 dataset (DOI: 10.6103/SHARE.w5.500).

We compare the scores on the three dependent variables between self-employed and general population; self-employed and employed; true precarious workers and general population; and true precarious workers and employed. These are compared for individual included countries and for the pooled sample (Table 2). where »+« stands for the comparison where first category (e.g. self-employed) has greater value than the second (e.g. general population), and »-« for the opposite. The asterisks indicate statistical significance of the difference between the values.

In all countries, the self-employed have a lower number of chronic diseases than the general population, except for Luxembourg and Israel; in all other countries this difference is strongly statistically significant. Older self-employees, therefore, tend to have lower number of chronic diseases than the general older population.

The differences are less statistically significant when the self-employed are compared to employees: only Slovenia remains strongly significant, some countries (Switzerland, Sweden, Denmark, Netherlands and Austria) still have at least a weakly significant difference, while in some others (Luxembourg, Czech Republic, Israel) the difference has the opposite sign, while it is insignificant. The situation is different with true precarious workers. The main difference was in the comparison of true precarious workers and employees: in all countries, with the exception of Luxembourg, precarious workers have worse physical health than employees; this difference is strongly significant in almost all countries except Switzerland, Slovenia, Austria and Italy. Similar relationships, but less strongly statistically significant, could be observed when comparing true precarious workers with the general population.

Mental health using the Euro-Depression scale shows similar patterns. Here, the self-employed again show better health than the general population, while almost no difference could be ascertained when comparing the self-employed to the employed. Also here, the difference becomes of the opposite side when comparing true precarious workers particularly to the employees, but also to the general population.

The situation is different with out-of-pocket expenses as the dependent variable. Here, almost all studied relationships were either insignificant or much weaker in significance than for physical

and mental health. This could sound strange as one would expect that of the people with comparable health, self-employed and »true« precarious workers would be able to spend much less for their health care except in cases when they don't take up private complementary or supplementary insurance due to low income and are hence forced into larger out-of-pocket expenses. Indeed, the comparison of out-of-pocket expenses for »true« precarious workers and employees shows that »true« precarious workers even tend to spend *more* on their health care than employees.

The question is of course, what is driving this strange relationship. In the following analysis we present the answer, which shows that »precarious workers« (self-employed and »true« ones) are a strongly heterogeneous group in income and health. On one side there are those that work precariously due to their financial need; on the other side, there are those who have sufficient finances, but want to work additionally because they want to remain active. We will show that both groups are large in size and strongly different in their characteristics as shown most strongly when analyzing out-of-pocket expenses.

Table 2: Results of bivariate tests

	Nr. of chronic diseases, average				EURO-D score, average				Out-of-pocket expenses, winsorised, average			
	selfemp / general	selfemp / employed	precar / general	precar / employed	selfemp / general	selfemp / employed	precar / general	precar / employed	selfemp / general	selfemp / employed	precar / general	precar / employed
Sweden	- ***	- *	+ **	+ ***	- ***	- **	+	+ **	-	+	+ **	+ ***
Denmark	- ***	- *	+ ***	+ ***	- ***	-	+ ***	+ ***	-	+	+	+ **
Netherlands	- ***	- *	+	+ ***	- **	-	+	+ **	-	+	+	+ **
Austria	- ***	- *	- *	+ *	-	+ **	+	+ ***	+	+	+ *	+ *
Belgium	- ***	-	+	+ ***	- **	-	-	+	-	+	+	+
France	- ***	-	+	+ ***	- **	-	-	+	+	+	+	+
Germany	- ***	-	+ ***	+ ***	- ***	- ***	-	+	+	+	+	+
Switzerland	- ***	- **	+	+	- *	-	+ *	+ **	-	-	+	+
Luxembourg	- *	+	- ***	-	- ***	-	- ***	+	- ***	- **	-	-
Italy	- ***	-	+	+ *	- ***	- ***	+ *	+ ***	-	-	+ **	+ ***
Spain	- ***	-	+	+ ***	- ***	-	+ **	+ ***	+	+	+	+
Czech Republic	- ***	+	+	+ ***	- ***	-	-	+ ***	- *	+	+	+ ***
Estonia	- ***	-	+	+ ***	- **	+	+	+ ***	+	+	+	+ *
Slovenia	- ***	- ***	- *	+	- ***	-	-	+	+ *	+ *	+	+
Israel	- **	+	+ ***	+ ***	- *	-	+ ***	+ ***	+	+ **	+ *	+ **
TOTAL	- ***	- ***	+ ***	+ ***	- ***	- ***	+ **	+ ***	+	+ *	+	+ *

Source: Own calculations on the basis of SHARE, Wave 5 dataset (DOI: 10.6103/SHARE.w5.500).

Note: + indicates a higher value for the first comparison group than the second one, while – indicates the opposite

Statistical significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Own calculations.

In Table 3 we show the results of the finite mixture modelling when including in our sample only working population of age 50-64. Presented are results for all three dependent variables, while for out-of-pocket expenses we include also number of chronic diseases and Euro-Depression score as covariates.

For the physical health, the main variables that separate the two components are income (positive sign for the first and negative for the second component) and precarious work, the latter being of significantly larger size and significance in the second component, particularly for the »true« precarious workers. To this reason, we will label the first component »Active Ageing« and the second one »Financial«. The first component is characterized by no influence of income on health, while the latter has an expected positive (the higher the income, the lower the number of chronic diseases) and significant effect of income on health condition. Also, the second component is much more strongly related to »true« precarious workers which tend to have significantly more chronic diseases in this component. As for the self-employed, the effect is negative and, again, slightly stronger in the second component.

Similar situation can be observed for mental health. Again, income and precarious work are the main separators of the two components. Income is of the expected negative sign in the »Financial« component, while having even a positive (people with higher income tend to have more mental problems) and significant effect in the »Active Ageing« one. Again, »true« precarious workers are more represented in the second component than in the first one. We therefore again label the components as »Active Ageing« (the first one) and »Financial« (the second one).

Finally, as expected, the largest difference regarding the precarious workers can be observed for out-of-pocket payments. Here, the income is not anymore the main separating variable – in both components those with higher income have also higher expenses, as expected. The main difference lies in the precarious work: both self-employed and, particularly, the »true« precarious workers have lower expenses in the second component (with a particularly pronounced effect for the »true« precarious workers) while in the first component both have higher expenses (the sign of the coefficient for both is positive while being significant only for the self-employed). Again, it is clear to label the two groups as »Active Ageing« (the first one) and »Financial« (the second one).

The size of the two groups varies, depending on the used dependent variable. For the number of chronic diseases the »Active Ageing« group is even larger than the »Financial« one – the first one is estimated to 58%, while the second one to 42%. Exactly opposite sizes are for the mental health – the smaller is the »Active Ageing« while the larger is the »Financial«. Finally, even larger difference between the sizes of the two groups can be found for out-of-pocket expenses where the first, »Active Ageing« group amounts to 33% while the second, »Financial«, to 67%.

Table 3: Finite mixture models, comparison group: older employees, only respondents aged 50-64 years

	Nr. of chronic diseases						EURO-Depression score						Out of pocket payments					
	Component 1			Component 2			Component 1			Component 2			Component 1			Component 2		
	Coef.	z	P>z	Coef.	z	P>z	Coef.	z	P>z	Coef.	z	P>z	Coef.	z	P>z	Coef.	z	P>z
Constant	-0.2956	-2.90	***	0.6399	2.33	**	1.3478	8.25	***	6.5328	20.10	***	-249.9130	-1.90	*	-36.4098	-2.41	**
I_Gender	0.0226	1.80	*	0.0551	1.67		0.1642	8.03	***	0.7785	19.66	***	37.3125	2.31	**	11.7671	6.44	***
I_Age	0.0150	9.17	***	0.0323	7.30	***	0.0008	0.31		-0.0085	-1.65		6.9491	3.36	***	0.9903	4.08	***
I_EduYears	0.0020	1.07		-0.0089	-1.82	*	0.0015	0.54		-0.0068	-1.19		3.8081	1.62		0.3659	1.35	
I_Income2	0.0000	-1.37		-0.0000	-2.54	**	0.0000	3.20	***	-0.0000	-2.09	**	0.0043	9.44	***	0.0005	8.53	***
I_Settlement	0.0220	1.66		0.0502	1.41		-0.0283	-1.38		0.0227	0.55		-22.4590	-1.33		0.6323	0.33	
I_BMI	0.1533	12.19	***	0.5394	15.99	***	0.0403	2.11	**	0.1200	3.07	***	-40.4974	-2.53	**	-0.4331	-0.23	
I_Activities	0.0032	0.74		0.0178	1.55		0.0050	0.74		-0.0951	-7.21	***	16.2340	2.99	***	3.7907	5.98	***
I_LifeSat	-0.0428	-10.0	***	-0.1343	-12.8	***	-0.1278	-14.4	***	-0.4878	-39.0	***	5.5034	0.99		-0.4432	-0.69	
I_Limited	0.7370	26.38	***	1.2177	18.81	***	0.4932	9.18	***	1.3188	18.54	***	100.4016	3.52	***	15.0875	3.32	***
I_Chronic													33.5816	5.15	***	22.7528	24.74	***
I_Depr													15.3238	3.57	***	2.6191	4.79	***
I_SelfEmp	-0.0384	-2.05	**	-0.1112	-2.18	**	0.0705	2.55	**	-0.0908	-1.50		46.1089	1.89	*	-3.9352	-1.45	
I_Precar	0.0539	2.72	**	0.2430	4.85	***	0.0439	1.45		0.1478	2.49	**	31.6292	1.33		-8.8196	-3.10	***
I_WelfSocDem	0.0930	3.89	***	0.3634	5.69	***	0.0048	0.13		0.5574	7.62	***	128.6293	4.22	***	72.8715	20.09	***
I_WelfContin	0.0655	3.44	***	0.1796	3.55	***	-0.0069	-0.23		0.5100	8.70	***	271.6718	10.21	***	0.1723	0.07	
I_WelfMedit	0.0500	2.20	**	0.0649	1.07		-0.0884	-2.60	**	0.4395	6.08	***	380.7094	12.25	***	-4.8296	-1.54	

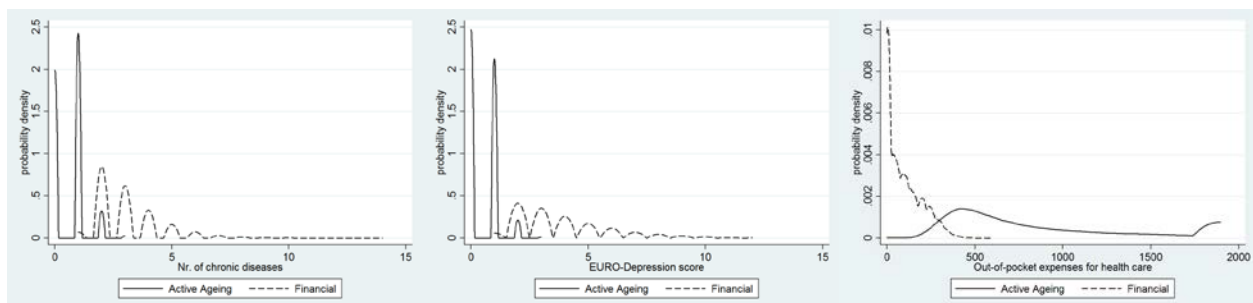
I_WelfMixed	0.0118	0.32	0.3272	3.39	***	-0.1951	-3.80	***	0.1656	1.27	527.3547	11.86	***	7.4928	1.23
Observations	17106					16903					16903				
Wald Chi2	2164.97	***				2809.99	***				2341.84	***			
Log Likelih.	-23666.5					-30819.1					-115977.99				
pi1	0.58					0.42					0.33				
pi2	0.42					0.58					0.67				
imlogitpi1	0.32	***				-0.34	***				-0.69	***			

Note: Statistical significance: *** p<0.01, ** p<0.05, * p<0.10.

Source: Own calculations on the basis of SHARE, Wave 5 dataset (DOI: 10.6103/SHARE.w5.500).

In Figure 2, we graphically present distributions of the dependent variables across the components. From Figure 1 we clearly see the vast difference between the two groups: the »Financial« group being characterized by significantly higher number of chronic diseases and worse mental health than the »Active Ageing« one. Even more pronounced is the difference in out-of-pocket expenses where the »Financial« group is clustered around zero expenses while the »Active Ageing« group has a significantly different, more spread distribution with significantly higher average values of out-of-pocket expenses for health care than the »Financial« one.

Figure 2: Distribution of both groups, chronic diseases (left), Euro-Depression scale (middle) and out-of-pocket expenses (right), Epanechnikov kernel function



Source: Own calculations on the basis of SHARE, Wave 5 dataset (DOI: 10.6103/SHARE.w5.500).

In Table 4 we study the overlap between groups in the data (the percentages denote the share of persons being in both/all groups that we compare). We find a larger overlap in the three »Financial« groups than in the »Active Ageing« ones, although the exact overlap (the individuals,

belonging in a single group in all three dependent variables) is not very large. Comparison between the three dependent variables shows there is significantly more overlap between the groups based on health conditions (physical and mental) than between health condition and expenses for health care. Nevertheless, in all cases the overlap is more than 40% and in case of health conditions more than 50%.

Table 4: Overlap between groups in the data

Overlap in groups		Expen ActAge	Expen Finan
Depr ActAge	Chron ActAge	6.91%	21.51%
	Chron Finan	5.35%	10.63%
Depr Finan	Chron ActAge	8.29%	18.27%
	Chron Finan	11.51%	17.53%
Chron	Depr	57.46%	
Chron	Expen	43.36%	
Depr	Expen	48.06%	

Note: Abbreviations – dependent variable: Chr – Chronic diseases; Depr – Depression; Expen – Out-of-pocket expenses; groups: ActAge – »Active Ageing«, Finan – »Financial«. In yellow: the main overlap categories.

Source: Own calculations on the basis of SHARE, Wave 5 dataset (DOI: 10.6103/SHARE.w5.500).

4. Discussion and conclusion

Our analysis pointed out several main findings. We showed that when comparing the health of older self-employed workers to the employees and general population, the first have significantly better health than the latter two in both physical and mental conditions in almost all the studied countries. The focus changes when taking into account »true« precarious workers which have worse health condition, particularly when compared to the older employees. Importantly, we found no clear statistical differences between groups in the level of out-of-pocket expenses for health care, which we explained by heterogeneity in the sample, including two large groups, which we labeled »precarious workers for money reasons« and »precarious workers because of

active ageing reasons«. The very same heterogeneity with the same two groups can be found when analyzing physical and mental conditions in the older workforce.

The findings have important and clear consequences for policy making. Measures which aim at improving the (material, social and health) conditions of precarious workers should be aware of the two large and completely different groups of precarious workers in the older population. If the measures are addressed generally, to all the precarious population, they might easily achieve exactly the opposite of what they want: they might e.g. financially stimulate the “Active Ageing” group which has absolutely no need to be stimulated, while failing to properly address the other, “Financial” group which is in dire need of such stimulations. To this end, special care needs to be taken to the apparent heterogeneity among older precarious workers which was clearly demonstrated in the study. We also suggest performing additional empirical studies to get a significantly better insight into the economic, social and health conditions of precarious workers in general and in older population – as our study demonstrated, this might be necessary for better targeting of policy measures achieving their purpose appropriately.

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