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Health Effects of Temporary Jobs in Europe

Abstract

Over the last two decades, temporary employment has gained importance in the European Union. The implications of this development for the health of the workforce are not yet established. Using a unique individual-level data set for 27 European countries, this paper evaluates whether temporary employment is interrelated with self-assessed health. We find pronounced differences in self-assessed health by employment status across European countries. Furthermore, in the EU full-time permanent employed workers report the best health, followed by temporary and part-time employed workers. These differences largely vanish, when taking into account the potential endogeneity between employment status and self-assessed health. However, repeated temporary contracts have a significant negative impact on health.

JEL Classification: J62

Keywords: : Temporary employment, fixed-term contracts, self-assessed health

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1 Introduction

Over the last two decades, temporary employment has gained importance in all EU-member countries. From the beginning of the 1990s to 2010, the share of temporary employment in the EU12 has risen from 12 to 16 per cent (Eurostat 2011). Temporary jobs can be seen as a possible instrument for labour market flexibilization. Flexibilization has been one of the targets in most European countries to reduce rigidities on the labour markets and therefore to reduce unemployment and especially youth unemployment. However, there are often costs and negative effects of these kinds of jobs for the employed. Less job stability can lead to less job satisfaction and reduced mental health. Furthermore, there can be a stigmatization of workers in these jobs. The implications of the increase in temporary employment for the health of the workforce are not yet established.

The existing empirical literature on temporary employment mostly analyzes the question whether there is a stepping stone function of temporary employment into permanent employment (e.g. Booth, Francesconi and Frank 2002a, Bredtmann and Schaffner 2011, de Graaf-Zijl, van den Berg and Heyma 2011). However, it is not only of interest if workers find a permanent job, but also what are the effects of temporary employment on the workers. Mental stress due to the lack of security and inferior working conditions can have effects on well-being and health of those workers who stay in temporary employment for a longer time period. If there are long-term negative effects, they may offset positive employment effects. Existing results on the relationship between temporary employment and health or well-being are mixed (e.g. Bardasi and Francesconi 2004 and Virtanen et al. 2005). Most of the studies cover only one country and are not able to control for selectivity and/or endogeneity.

This paper contributes to the literature by analyzing the relationship between employment status and health for all European countries. To account for individual heterogeneity we employ a fixed-effects ordered logit model. We observe worse health for workers in temporary employment. However, these results cannot be interpreted as causal since there may exist reverse causality due to the self-selection of workers with a lower health status into temporary employment.

We follow two roads to tackle the reverse causality problem regarding temporary employment. First, we restrict our analysis to young labour market entrants that enter the labour market after education, assuming that there is no endogeneity regarding their transition into the labour market. For this group we cannot find any differences in health between temporary and permanent employed workers. Second, we investigate temporary employed workers that change their employment status due to the end of their contract. The end of a fixed-term contract is not correlated with possible health shocks. Our empirical results suggest that transitions into an additional temporary contract at the end of a temporary contract contribute to lower health compared to

workers that find a permanent job. Therefore, there seems to be a negative impact of temporary employment on health that only occurs after a certain time period or number of temporary contracts.

The paper is organised as follows. Section 2 gives a brief overview on the existing literature. The data used and methodology applied are presented in section 3. Section 4 presents the results and section 5 concludes.

2 Literature

A substantial part of the literature on temporary employment examines whether there is a stepping-stone function of temporary employment into permanent employment (e.g. Booth et al, 2002a, Bredtmann and Schaffner, 2011 and de Graaf-Zijl et al. 2011). However, effects of temporary employment on workers during an ongoing employment spell are also possible. Temporary employment is characterised by lower job security compared to permanent employment. Workers in temporary jobs are not covered by employment protection at the end of the contract, increasing the likelihood of unemployment. Lower job security can lead to mental stress and therefore worse mental health. In a large meta-study, Virtanen et al. (2005), De Cuyper, Notelaers and De Witte (2009) and Quesnel-Vallée, DeHaney and A. Ciampi (2010) suggest that (mental) health of individuals in temporary jobs is lower if compared to individuals with permanent jobs. They conclude that job-instability may cause these results.

Furthermore, as temporary employed workers have a higher turnover, accumulation of firm-specific human capital is lower than in permanent jobs. This can have effects on the realised wages (e.g. Booth et al. 2002b, Hagen 2002 and Comi and Grasseni 2009) and therefore job satisfaction and mental health. Hadarson (2007) shows that roughly one third of the temporary employed work involuntarily in a temporary employment.

Besides effects of temporary employment on (mental) health, it is possible that there is self-selection of less healthy workers into temporary employment since they have a lower probability to find a permanent job. However, The study by De Cuyper et al. 2009 for Belgium shows that selection into temporary employment does not seem to be an important issue regarding the relationship between type of contract and health.

By contrast, Bardasi and Francesconi (2004) do not observe any health differences between permanent and temporary employed workers. However, there seems to be considerable variation across European countries, which points at different labour market settings and different characteristics of temporary jobs in Europe. In some countries, the opportunities of temporary employment may outbalance the risks attached to temporary employment.

Most of the studies do not account for the problem of endogeneity, which may pose a problem in the analysis of employment status and health. Bad health can be correlated with the probability to find a permanent full-time job.

3 Data and Empirical Strategy

The following empirical analysis is based on the European Union Statistics on Income and Living Conditions (EU-SILC) provided by Eurostat[1] for the years 2004 to 2008. The EU-SILC data cover all countries of the European Union except of Malta. Additionally, Norway and Iceland are also included in the data. Since we are interested in labour market transitions, we use the longitudinal version of the EU-SILC data. The EU-SILC longitudinal version is a 4-year rotational household panel[2], in which households and individuals can only be observed for a time period of up to four years. Due to data quality we exclude Iceland from the analysis, leaving 27 countries for the empirical analysis.

We restrict our sample to individuals aged between 16 and 65. Individuals in the armed forces are excluded. Apart from the rotational panel structure, the data has some other limitations. First, Denmark has to be excluded as the Danish data do not allow a differentiation between permanent and temporary contracts. Second, fixed-term contracts and temporary agency work are both categorized temporary employment and hence cannot be distinguished. Third, the reason for a job change that we employ in our effort to isolate causal effects is only surveyed for a selective sample among (in most countries) employed individuals.

In our analysis we want to investigate whether there is an effect of type of contract (permanent/temporary) on the health of the respective workers. In each of the five panel waves individuals report their self-assessed health, which is measured on a five point scale asking the question "How is your health in general; would you say it is..." very good, good, fair, bad, very bad. This health variable is the dependent variable in our analysis. Since it is a categorical variable all analyses are estimated by ordered logit models. Unobserved heterogeneity is accounted for by employing fixed-effects ordered logit models as suggested by Baetschmann, Staub and Winkelmann (2011).

The fixed-effects ordered logit model (base-specification) can be written as

$$h_{it} = \alpha + \beta'X_{it} + \gamma'S_{it} + \varepsilon_{it}, \tag{1}$$

where h_{it} is the health status and S_{it} is the labour market status of individual i in year t. S_{it} is a vector of dummy variables covering the different labour market and employment states (full- and part-time permanent and temporary employment, self-employment, education and inactivity). X_{it} is a vector of individual and household characteristics such as age group, marital status, labour market status of the spouse living in the household and a dummy for the respective year.

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[1] The results and conclusions are ours and not those of Eurostat, the European Commission or any of the national authorities whose data have been used.
[2] To increase the number of observations, the different longitudinal files (L2005, L2006, L2007) provided by Eurostat are merged together.

The empirical analysis is carried out in three steps. First, we estimate a baseline-specification based on the whole data-set, employing an ordered logit and second a fixed effect ordered logit as in formula (1). This allows us to understand the interrelation between health and labour market status taking into account unobserved individual heterogeneity.

Second, the baseline specification is re-estimated for clusters of countries sharing similar labour market characteristics. In doing so, we assume that the individual behaviour within each country group is the same, but allow for differences between the different country groups. To form homogenous groups, a cluster analysis on labour market characteristics is performed. More precise, the share of the employed in temporary and part-time employment is calculated for each country. On the basis of these shares, a hierarchical cluster analysis (Ward's linkage method) is performed and two stopping rules by Duda and Hart (1973) are employed to determine the appropriate number of clusters. To identify whether certain countries are driving the results, the baseline specification is also re-estimated with interactions on the country level, allowing deeper insights into differences in the employment status health relationships between Member States.

Third, the analysis addresses the causality question in two additional specifications of formula (1). Causality has to be addressed as the results may be driven by selection on health (the health status influences the "choice" of the observed labour market state) and not by characteristics of the labour market states (labour market status influences health). In the first specification, we perform an analysis restricted to young labour market entrants (below the age of 30) that enter the labour market after education. We argue that this transition is unlikely to be induced by a health shock. Furthermore, differences in the health level are controlled for by applying fixed effects, and endogeneity regarding their transition into temporary or permanent employment is very unlikely. The end of education is normally predetermined by the education system and the choice of the respective education. Since education takes longer time periods they can be influenced by health differences that we can control for by applying fixed-effects but not by health shocks that occur at the end of the education period. However, it is possible that there occurs a health shock at the end of the education period (after the last interview) that influences the probability to find a permanent position. We think that this number is rather small and therefore negligible. In the second specification, temporary employed workers that change due to the end of their contract are investigated. The end of a temporary job may not be an exogenous event, but compared to the argumentation regarding labour market entrants it is unlikely to observe health shocks parallel to the end of a contract.

4 Results

The distribution of self-assessed health by labour market status suggests that the majority of individuals state to be in good or very good health (Figure 1). On average, the health of employed individuals is better than that of unemployed individuals but poorer than the health of individuals in education. Inactive persons state to have the poorest health on average which is probably due to the fact that this category also comprises disabled and persons in early retirement. Similar descriptive evidence is also found by Molarius et al. (2006) on the basis of Swedish data. Their results suggest that the poor health of inactive individuals is mainly driven by persons in early retirement. Within the employment states, the differences in health are much less pronounced. Full-time temporary employed workers enjoy the best self-reported health on average, closely followed by full-time permanent employed workers. However, differences are very small but significant at the one per cent level (except for health differences among part-time employed, which are not significant).

Figure 1
Distribution of answers on self-assessed health by labour market and employment status
in per cent
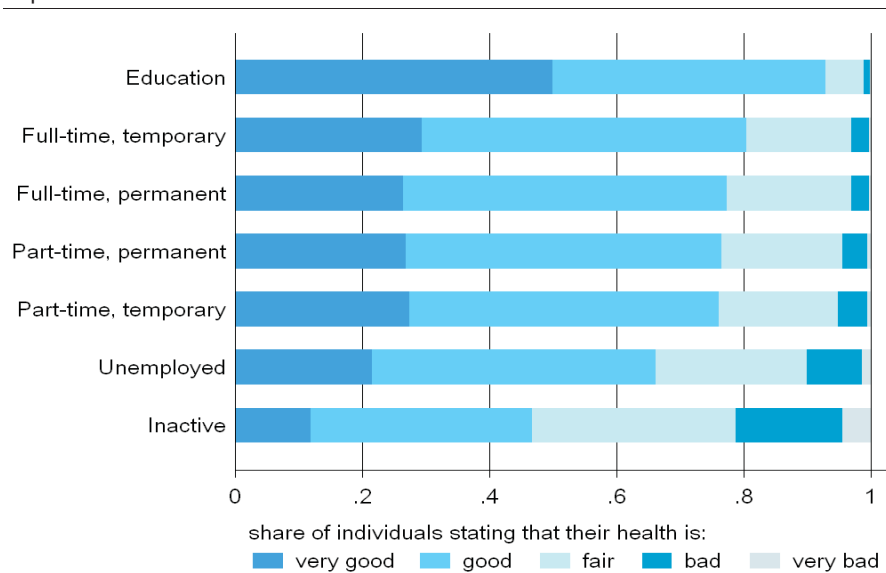
Source: EU-SILC, own calculations.

Breaking down self-assessed health by country (Figure 2) reveals pronounced differences across Europe. The mean self-reported health status is by far highest among individuals living in Greece (around 4.5) and lowest for individuals living in Latvia, where the average health is around 3.4. This difference is considerable when taking into account that the health variable is measured on a scale with only five

scores. Persons living in Ireland and Cyprus also state to be in a very good health. By contrast, the lowest values are found for the Baltic States, Portugal and Hungary. However, these differences cannot directly be interpreted as differences in objective health of the inhabitants of these countries. Rather, it is possible that there exist differences in the mindset of the population of these countries that influence how they define bad and good health.

Figure 2
Distribution of answers on self-assessed health by country
in per cent

share of individuals stating that their health is:
very good   good   fair   bad   very bad
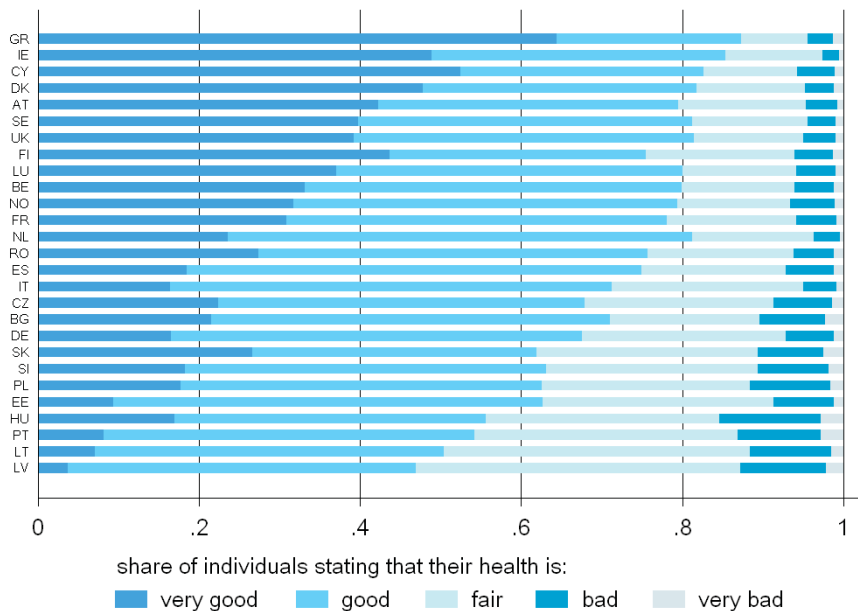
Source: EU-SILC, own calculations.

To control for demographic characteristics that may significantly differ between labour market states and countries, we apply an ordered logit model (Table 1) to describe the differences in self-assessed health. The results suggest that compared to full-time permanent employment, persons in self-employment or education experience worse health. This is in line with findings in the literature on the relationship between health and labour market status. Hamilton, Merrigan and Dufresne (1997) find that employment seems to improve mental health and that mental health at the same time improves employability. However, there is no significant difference between full-time permanent employment and unemployment. The worst health among the labour market states is found for inactivity.

Our findings also suggest that full-time permanent workers experience the best health. It is noticeable that temporary workers exhibit a lower probability to be in a

better health category than permanent workers.[3] Part-time workers also experience worse health than full-time workers.[4]

The results presented so far may be driven by unobserved heterogeneity that influences both, labour market status and self-assessed health. We therefore apply a fixed-effects ordered logit model (Table 1, column 2). The results suggest that unobserved heterogeneity plays a decisive role. But also when controlling for unobserved time-invariant heterogeneity full-time permanent employed report the best health status. Both, temporary employed workers and part-time employed workers are in worse health than full-time permanent employed.[5] However, the estimated coefficients are only identified by those workers that change their labour market status. In our analysis 125,353 workers change their labour market status and 43,468 switch between different employment states in the observed period.

In the analysis presented above we assume the relationship between labour market status and health to be the same all over Europe. However, it can be possible that there are differences between countries with high or low shares of temporary employment. For example, the stigmatisation of workers can be lower in countries with a high amount of workers in temporary employment since it is quite common to be temporary employed. To investigate whether there are differences dependent on the characteristics of the labour market, countries are grouped by the proportion of individuals in temporary and part-time employment by means of a cluster analysis resulting in four different groups.

The different clusters are presented in Figure 3. Group one comprises countries with pronounced part-time permanent employment and an average share of individuals in temporary employment, such as Germany and the Netherlands. Group two comprises countries with a low share of temporary employed and a medium share of part-time employed. This group consists of all EU15 Member States that are not in the first or third group. The third group is formed by countries that have a high share of temporary employment (Greece, Poland, Portugal and Spain). Finally, the fourth group is made up of countries that have a low share of both part-time employment and temporary employment which are most of the New Member States.

The corresponding fixed-effects ordered logit estimates are presented in Table 2. It turns out that in every country group, except of Germany and the Netherlands, part-time employment is associated with poorer health. Furthermore, in countries where full-time permanent employment plays a major role (most of the New Member States), full-time temporary employment is correlated with significantly poorer health, whereas this is not the case in the other country groups. This finding can be a hint that those who

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[3] This difference is significant at the 1 percent level for full-time workers.
[4] The differences are significant at the 1 percent level for comparisons of temporary part-time and full-time workers and of permanent part-time and full time workers, respectively.
[5] As a robustness check, we also investigate labour market transitions and their relationship to health changes. In contrast to the previous specification, the dependent variable is now coded into three health categories: deterioration of health, no change in health, and improvement in health as a change from one year to another. The results confirm our findings and are available on request.

are temporary employed in countries with only a small share of temporary employment are different to the average worker.

Figure 3
Clusters of countries by share in employment states
in per cent
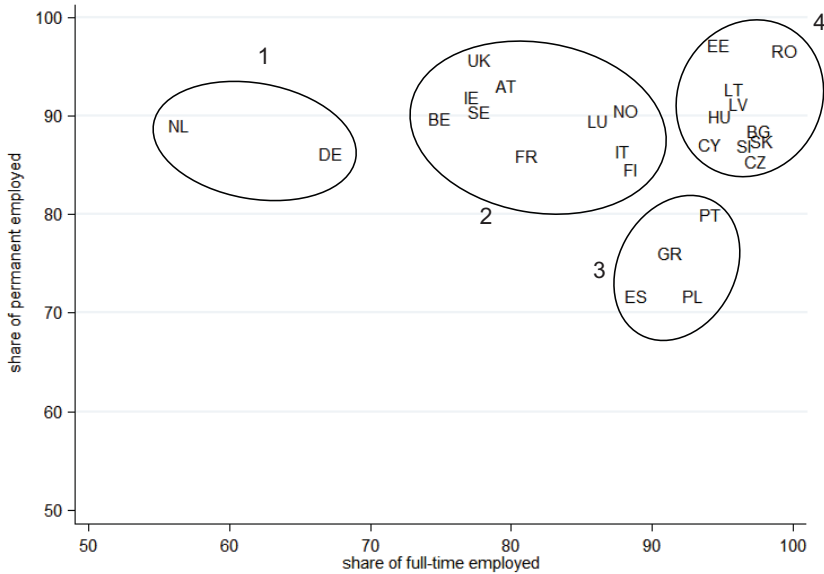
Source: EU-SILC, own calculations.

  As there is evidence that the link between health and employment status may not only vary between the country groups but also between countries (Rodriguez 2002), we repeat the regressions with country specific interactions (Table 3). In most countries, there are no differences in terms of health between permanent and temporary employed. Only in Estonia, Latvia, Poland and the UK, negative correlations are found in terms of full-time temporary employment and health. Irrespective of the question of endogeneity, temporary employed individuals in these countries are worse off, compared to their permanent co-workers.

  As these countries belong to different clusters formed in the analysis above, labour market composition does not seem to be a driving factor for this finding. It is of special interest that in all countries with high shares of temporary employment except of Poland no negative effects can be observed while there is a negative effect of temporary employment on self-assessed health in Poland. This result indicates that stigmatisation and mental stress is different in Poland compared to the other countries. This can be driven by the fact that institutional settings are quite different and that temporary employment has increased in the most recent years while the large increase in temporary employment in the EU15 Member States took place some years ago.

Although we can control for unobserved heterogeneity we do not take endogeneity into account that arises if workers with (negative) health shocks are more likely to enter temporary employment. Therefore, we follow the described strands to avoid endogeneity in order to get causal results. As a first attempt to handle endogeneity, we restrict the sample to those workers that enter the labour market after education and are aged up to 30. All of these individuals change their labour market status due to the end of their education. Therefore, it can be assumed that most of the transitions are not influenced by a health shock. Since we also include the time in education we can control for unobserved heterogeneity (stable differences in health). Table 4 presents the respective results applying a fixed-effects ordered logit model. The results indicate that in the first year after the labour market entrance, no significant health change can be observed regarding the different labour market states. This finding indicates that there are no initial differences in health due to the different labour market states. However, it may be possible that the negative impact of job insecurity during temporary employment arises after a longer time period. For this reason we also investigate the second year after labour market entrance. However, no significant differences can be observed either. Therefore, for young workers there seems to be no relationship between type of contract and health. Based on these findings one can conclude that there is no causal relationship between temporary employment and health. However, this result is only valid for young labour market entrants.

It is possible that negative health effects only occur after some time in temporary employment. Thus, we restrict our analysis to those who are in temporary employment and changed their job due to the end of the temporary contract. We can only observe the reason of job change for those workers who are still employed. We assume that changes due to the end of a temporary contract are not endogenous. Differences in health are controlled for by the fixed-effects model and we think that there is no reason why health shocks should show up parallel to the end of a temporary contract. Our results (Table 5) indicate that those who enter into another full-time temporary job are less healthy than those who become permanent full-time employed. Therefore, succeeding temporary employment seems to harm health. This may be an outcome of the lower level of job security in temporary jobs causing mental stress. In combination with the findings for labour market entrants, our results suggest that there is no initial impact on health regarding temporary employment. However, the state dependence in temporary employment seems to worsen self-assessed health.

Summed up, our findings suggest not only that health differs considerably with the type of contract on an individual level, but also that this interrelation varies across European labour markets. However, most of these differences seem to be due to unobserved heterogeneity and selectivity. Regarding temporary employment, young labour market entrants do not suffer from bad health induced by this employment state. However, temporary employed workers changing into permanent employment are better off than those who enter into another (subsequent) temporary contract.

5 Conclusion

In this paper the relationship between type of employment and self-reported health is investigated. We analyse whether there is an effect of temporary employment on health. Based on the longitudinal version of the EU-SILC data for almost all countries of the European Union, the findings suggest that there are differences in self-reported health by type of employment contract. Regarding temporary employment, one can observe that full-time permanent workers are more likely to be in better health than full-time temporary workers. This finding is in line with the existing literature that temporary employed workers are worse off compared to permanent employed workers. However, selectivity and endogeneity have to be taken into account.

When grouping countries according to their employment structure, some health differences appear to be only significant in certain country groups. In countries where permanent and full-time employment plays a major role, temporary employed workers have significantly poorer health, which is not the case in other country groups. A further refinement into a single country analysis shows that it is in fact four countries (Estonia, Latvia, Poland and the UK) that drive the results.

The analysis using all employed workers suffers from the fact that labour market transitions can be endogenous regarding health. Health shocks can influence the probability to quit a job and also to find a permanent job. However, it seems reasonable to assume that the end of education as well as the end of a temporary contract are not driven by a health shock. We therefore conclude that those two changes are exogenous, and therefore perform separate analyses for these two cases. The findings of these analyses suggest that there are no health differences between labour market entrants in temporary and permanent employment. However, we can observe negative effects for those workers who have an additional temporary contract compared to workers who find a job with a permanent contract. Therefore, temporary employment seems to have only an impact on health after some time in temporary employment, but not at the beginning.

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Table 1
Estimation results: health status

	1		2	
	Ordered Logit		FE Ordered Logit	
	Odds Ratio	z-value	Odds Ratio	z-value
Full-time, permanent		*Reference category*		
Full-time, temporary	0.90***	-6.16	0.96**	-2.49
Part-time, permanent	0.83***	-9.94	0.87***	-5.97
Part-time, temporary	0.77***	-8.78	0.89***	-3.70
Self-employment	0.97**	-2.03	0.94***	-2.60
Unemployment	0.92	-1.11	0.90	-1.35
Education	0.55***	-7.95	0.76***	-3.64
Inactivity	0.36***	-13.55	0.64***	-6.02
Female	1.04***	4.40		
Age	0.86***	-56.00		
Age squared	1.00***	36.74		
Married living with partner	1.17***	12.21	0.96	-1.59
Single		*Reference category*		
Not married living with partner	0.96**	-2.08	0.95**	-2.00
Low skilled (ISCED 0-2)	0.80***	-23.45	0.96**	-2.21
Medium skilled (ISCED 3-4)		*Reference category*		
High skilled (ISCED 5)	1.35***	23.75	1.00	0.14
Number of children (<= 4) in household	1.07***	7.20	1.03*	1.82
Number of children (5-14 years) in household	1.08***	12.53	1.00	-0.14
Number of elderly (>=65) in household	1.06***	6.24	1.05***	2.77
Full-time employed partner in household	1.21***	17.14	1.02	1.07
Part-time employed partner in household	1.14***	7.05	0.94***	-2.66
Inactive/unemployed partner in household		*Reference category*		
Legislators, senior officials and managers	1.14*	1.68	1.00	-0.04
Professionals	1.11	1.40	0.92	-1.01
Technicians and associate professionals	1.01	0.14	0.88*	-1.73
Clerks	0.95	-0.72	0.90	-1.38
Service workers and shop and market sales workers	0.95	-0.72	0.96	-0.58
Skilled agricultural and fishery workers	0.78***	-3.23	0.94	-0.71
Craft and related trades workers	0.89	-1.60	0.98	-0.30
Plant and machine operators and assemblers	0.89	-1.62	1.00	0.01
Elementary occupations	0.77***	-3.53	0.94	-0.86
2004	1.08**	2.23	1.08***	7.31
2005	1.01	1.17	1.04***	4.95
2006		*Reference category*		
2007	1.04***	3.83	0.96***	-5.35
2008	1.10***	9.70	1.01	1.44
Austria		*Reference category*		

	1		2	
	Ordered Logit		FE Ordered Logit	
	Odds Ratio	z-value	Odds Ratio	z-value
Belgium	0.68***	-16.93		
Bulgaria	0.32***	-33.89		
Cyprus	1.34***	10.92		
Czech Republic	0.38***	-44.15		
Germany	0.33***	-37.62		
Denmark	1.02	0.30		
Estonia	0.18***	-81.95		
Spain	0.43***	-42.87		
Finland	0.87***	-4.51		
France	0.62***	-23.11		
Greece	3.31***	45.24		
Hungary	0.21***	-70.76		
Ireland	1.57***	15.08		
Italy	0.42***	-47.08		
Lithuania	0.14***	-86.54		
Luxembourg	0.74***	-11.20		
Latvia	0.12***	-92.95		
Netherlands	0.55***	-23.02		
Norway	0.50***	-24.33		
Poland	0.26***	-69.79		
Portugal	0.18***	-75.32		
Romania	0.60***	-18.25		
Sweden	0.82***	-7.19		
Slovenia	0.28***	-49.61		
Slovakia	0.27***	-58.93		
United Kingdom	0.85***	-6.42		
Adjusted/Pseudo-R²	0.119		0.002	
Observations	655521		633841	

Source: EU-SILC, own calculations. – Notes: stars indicate significance levels: *** 1% level, ** 5% level and * 10% level.

Table 2
Estimation results: health status by country group

	1		2		3		4	
	Cluster 1 Average share of permanent and above average share of part-time employment (DE, NL)		Cluster 2 Average share of permanent and full-time employment (AT, BE, FI, FR, IE, IT, LU, NO, SE, UK)		Cluster 3 Above average share of temporary and full-time employment (ES, GR, PL, PT)		Cluster 4 Above average share of permanent and full-time employment (BG, CY, CZ, EE, HU, LT, LV, RO, SI, SK)	
	Odds Ratio	z-value	Odds Ratio	z-value	Odds Ratio	z-value	Odds Ratio	z-value
Full-time, permanent	*Reference category*		*Reference category*		*Reference category*		*Reference category*	
Full-time, temporary	0.93	-0.59	0.98	-0.60	0.96	-1.10	0.93**	-2.30
Part-time, permanent	0.99	-0.13	0.91 ***	-2.87	0.81***	-3.29	0.81***	-3.89
Part-time, temporary	1.11	0.77	0.90 **	-2.19	0.86***	-2.70	0.93	-0.85
Self-employment	1.35*	1.93	0.93 *	-1.92	0.94	-1.15	0.94	-1.38
Education	1.23	1.00	0.89	-1.13	0.54***	-2.58	0.91	-0.54
Unemployment	1.39	1.59	0.78 **	-2.41	0.43***	-3.58	0.72*	-1.92
Inactivity	1.01	0.07	0.70 ***	-3.36	0.35***	-4.42	0.53***	-3.75
Pseudo-R²	0.004		0.003		0.005		0.006	
Observations	24,637		287,498		141,040		180,666	

*Source: EU-SILC, own calculations. – Notes Fixed-effects ordered logit model; stars indicate significance levels: *** 1% level, ** 5% level and * 10% level.*

Table 3
Estimation results: health status by country

	AT	BE	BG	CY	CZ	DE	EE	ES	FI	FR	GR	HU	IE	IT
Full-time, permanent						*Reference category*								
Full-time, temporary	1.04	1.02	0.89	1.05	0.90	0.86	0.72**	1.01	0.97	1.03	1.15	1.03	0.83	0.94
Part-time, permanent	0.93	0.96	0.90	0.79	0.65***	0.97	0.81*	0.92	1.01	0.96	0.72	0.92	0.85	0.92
Part-time, temporary	0.92	1.15	1.04	1.08	0.78	0.99	0.99	0.87*	0.78	0.91	0.89	0.91	1.00	0.86*
Self-employed	0.87	0.92	0.87	1.13	1.02	1.39	0.73**	1.01	0.95	0.86	1.00	0.99	0.65**	0.93
Education	1.03	0.89	1.02	0.97	0.84	1.01	0.68***	1.00	0.98	0.78*	1.78	0.80	0.93	0.84*
Unemployed	0.56***	0.98	0.70***	0.64***	0.64***	1.00	0.78**	0.78***	0.80	0.88	0.84	0.79**	0.65***	0.74***
Inactive	0.75**	0.69***	0.41***	0.51***	0.54***	0.82	0.50***	0.67***	0.70***	0.87	0.56***	0.73***	0.47***	0.72***

	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK		
Full-time, permanent						*Reference category*								
Full-time, temporary	0.85	1.07	0.72***	1.01	0.98	0.88**	0.95	1.08	1.26*	0.97	0.95	0.69**		
Part-time, permanent	0.84	0.97	0.64**	0.98	0.79*	0.63***	0.61*	0.57	0.83*	0.84	0.91	0.87		
Part-time, temporary	0.68	0.83	0.93	1.15	0.77	0.87	0.82	0.80	1.11	1.52	0.83	0.86		
Self-employed	0.77*	1.05	0.89	1.23	0.85	0.93	0.87	0.60**	1.07	1.05	1.07	0.83		
Education	0.93	1.46**	0.73*	0.84	0.91	0.81*	0.71	0.61	0.90	1.04	1.04	0.90		
Unemployed	0.54***	0.88	0.68***	1.17	0.82	0.64***	0.67***	0.46***	0.73**	0.93	0.76**	0.85	R = 0.003	
Inactive	0.35***	0.86	0.52***	0.71**	0.46***	0.51***	0.52	0.39	0.64	0.78	0.54	0.56	N = 633,841	

*Source: EU-SILC, own calculations. – Notes: Fixed-effects ordered logit model; coefficients are expressed in terms of odds ratios; controls included for sex, partner, marital status, skill level, number of children, number of elderly in the household, employment status of the partner, occupation and year. Stars indicate significance levels: *** 1% level, ** 5% level and * 10% level.*

Table 4
Estimation results: health status after education

	Odds Ratio	z-value
Full-time, permanent	*Reference category*	
Full-time, temporary	0.90	-1.22
Part-time, permanent	0.91	-0.68
Part-time, temporary	0.86	-1.27
Self-employment	1.19	0.95
Inactivity	0.91	-0.65
Unemployment	1.13	0.45
Married living with partner	0.90	-1.22
Single	*Reference category*	
Not married living with partner	0.95	-0.29
Low skilled (ISCED 0-2)	0.88*	-1.72
Medium skilled (ISCED 3-4)	*Reference category*	
High skilled (ISCED 5)	1.17*	1.68
Number of children (<= 4) in household	1.03	0.17
Number of children (5-14 years) in household	0.99	-0.13
Number of elderly (>=65) in household	1.20	0.90
Full-time employed partner in household	0.67**	-1.98
Part-time employed partner in household	0.54	-1.45
Inactive/unemployed partner in household	*Reference category*	
Legislators, senior officials and managers	0.98	-0.05
Professionals	1.16	0.83
Technicians and associate professionals	1.13	0.69
Clerks	1.07	0.41
Service workers and shop and market sales workers	1.17	0.96
Skilled agricultural and fishery workers	0.92	-0.25
Craft and related trades workers	0.99	-0.08
Plant and machine operators and assemblers	1.21	0.91
Elementary occupations	1.06	0.34
2004	1.13	0.44
2005	1.17	1.12
2006	*Reference category*	
2007	0.89	-0.77
2008	0.94	-0.23
Pseudo-R²	0.006	
Observations	9390	

Source: EU-SILC, own calculations. – Notes: Fixed-effects ordered logit model; controls included for sex, partner, marital status, skill level, number of children, number of elderly in the household, employment status of the partner, occupation, country and year. Stars indicate significance levels: *** 1% level, ** 5% level and * 10% level.

Table 5
Estimation results: health status after the end of a temporary job

	FE Ordered Logit	
	Odds Ratio	z-value
Full-time, permanent	*Reference* category	
Full-time, temporary	0.68 **	-2.08
Part-time, permanent	0.38 *	-1.72
Part-time, temporary	0.63	-1.53
Self-employment	0.54	-1.37
Married living with partner	0.62	-0.91
Single	*Reference category*	
Not married living with partner	0.48 *	-1.77
Low skilled (ISCED 0-2)	0.38 **	-2.10
Medium skilled (ISCED 3-4)	*Reference category*	
High skilled (ISCED 5)	1.38	0.60
Number of children (<= 4) in household	0.85	-0.54
Number of children (5-14 years) in household	1.03	0.12
Number of elderly (>=65) in household	0.97	-0.08
Full-time employed partner in household	1.48	1.33
Part-time employed partner in household	1.43	0.99
Inactive/unemployed partner in household	*Reference category*	
Legislators, senior officials and managers	0.36	-1.08
Professionals	0.33	-1.46
Technicians and associate professionals	0.43	-1.18
Clerks	0.41	-1.23
Service workers and shop and market sales workers	0.46	-1.07
Skilled agricultural and fishery workers	0.84	-0.22
Craft and related trades workers	0.46	-1.11
Plant and machine operators and assemblers	0.96	-0.06
Elementary occupations	0.59	-0.75
2004	0.75	-1.08
2005	0.88	-0.80
2006	*Reference category*	
2007	1.36 **	2.06
2008	1.18	0.73
Pseudo-R²	0.049	
Observations	1760	

Source: EU-SILC, own calculations. – Notes: Fixed-effects ordered logit model; controls included for sex, partner, marital status, skill level, number of children, number of elderly in the household, employment status of the partner, occupation, country and year. Stars indicate significance levels: *** 1% level, ** 5% level and * 10% level.