Healthy, wealthy or busy?

Self-employment and healthcare services utilization in Europe

Giulio Bosio, Tommaso Minola and Federica Origo

(University of Bergamo)

Abstract

In this paper we investigate the relationship between different types of self-employment and healthcare utilization across Europe. The empirical analysis is based on 2004 and 2014 individual data for 21 European countries from the European Social Survey (ESS), which, in these two waves, contains detailed information on individual employment status and use of healthcare services. After controlling for selection into employment status, our estimates point out that, compared to the employees, the self-employed without employees are significantly less likely to use healthcare services, while no statistically significant differences emerge for the other type of self-employed (i.e., those with employees). Further exploratory analyses seem to indicate that these differences are driven by a number of factors, such as differences in perceived health, wealth and opportunity costs. An important role is played by cross-country differences in healthcare systems: in particular, we find that self-employed without employees are much less likely to use healthcare services where the latter are provided by private actors.

Key-words: Self-employment; Healthcare utilization; health systems, European Social Survey.

JEL-CODES: I12, I14, J24. L26

1. Introduction

Access to comprehensive, quality health care services for all citizens is crucial to reduce health inequality and improve the quality of life. Promoting health and ensuring equal access to healthcare services are also among the key priorities of the latest European Union's long-term strategy for a sustainable and inclusive economic growth (Europe 2020). Making people healthier has a positive impact on labor market participation, productivity and overall welfare. Additionally, the healthcare sector, which accounts for 8% of the total European workforce and for 10% of GDP in the European Union, can play a crucial role in promoting technological innovation and creating high skilled jobs (European Commission, 2013).[1]

Total expenditure on health as a share of GDP is higher in the USA than in Europe (in 2014, 16.6% in the USA, compared to 11% in France and Germany, 10% in the UK, 9% in Italy and Spain). However, the share of government funding is much larger in the majority of the EU Member States, where more than 70% of health expenditure is funded by the public sector (and reaching almost 85% in Germany, Denmark and Sweden, compared to around 50% in the USA). The major role plaid by the public sector in financing healthcare justifies further the objective of universal access to health services (Seychell and Hackbart, 2013).

Nonetheless, large differences persist in health outcomes between and within EU Member States, also due to barriers in access healthcare for disadvantaged groups. In this respect, a number of studies report socio-economic differences in the use of healthcare services, particularly in terms of education and income. Even after adjusting for health status and needs for healthcare, low educated/low income individuals make a larger use of general practitioners, while high educated/high income report more often a visit to a specialist or for cancer screening (Van der Heyden et al., 2003; Van Doorslaer and Masseria, 2004; Devaux and de Looper, 2012).

Employment status might have a prominent role in determining barriers and challenges to healthcare services through many different socio-economic as well as cognitive mechanisms. However, few studies have investigated the relationship between access to healthcare services and employment status. Ahs and Westerling (2006) show that in Sweden, compared to the employed, the unemployed are more likely to abstain from consulting a physician, particularly in presence of

[1] Granting higher access to healthcare services is thought to prompt this sector, thus contributing to economic growth and wellbeing.

psychological problems. Virtanen et al. (2006) distinguish the employed into permanent, temporary and part-time workers and find that in Finland the use of healthcare services is lower among temporary or part-time employees and the unemployed compared to permanent workers. These differences may be partly explained by the features of the Finnish health system, which provides a comprehensive healthcare service spectrum (including the physician at the workplace and various specialists) only to permanent full-time employees. Most of these studies are based on cross-section data. Schaller and Stevens (2015) use longitudinal data for a large sample of individual job losses and longitudinal data on a wide variety of health-related outcomes in the USA and show that job loss results in worse self-reported health, activity limitations and a reduction in insurance coverage. However, job loss is not associated with reductions in healthcare utilization, except for the subsample of workers for whom the lost job was their primary source of insurance.

Pfeiffer (2013) is one of the very few studies that considers self-employment as a specific employment status in studying the differences in healthcare utilization (and absenteeism) between private sector, public sector and self-employed workers. Using a large sample of German workers over the 1995-2007 period, he finds that self-employed workers have fewer doctor visits (and absent working days) than dependent employed workers.

A few other contributions on the relationship between health insurance and health care utilization in the USA have looked at differences in the behavior of the self-employed compared to dependent workers. Perry and Rosen (2001) show that, compared to employees, self-employed in the USA have relatively low rates of health insurance coverage, but this does not seem to affect their healthcare utilization. Meer and Rosen (2004) find that self-employed do not significantly differ from employees in terms of health status and no underlying individual differences lead to self-employment *per se* affecting health services utilization. On the other side, Boaz and Mueller (1989) highlight that, only in the case of the self-employed, retirement significantly increases the probability of using any physician services and the number of physician visits.

Given the growing prominence of self-employment throughout the world (Minola et al., 2016), addressing the lack of research on the relationship between self-employment and the use of healthcare services seems particularly urgent. Additionally, to the best of our knowledge, there is a dearth of studies that consider the entrepreneurs (meaning self-employed with employees) as a peculiar group among the self-employment (Parker, 2006). Finally, institutional differences in health systems call for more research on European countries. Indeed, national health systems

significantly differ in the degree and the instruments adopted for regulating the access to healthcare services that, in turn, reflect the key determinants of utilization in health services (Wendt, 2009)

The aim of this paper is to fill the gap in the literature by investigating the relationship between different types of self-employment and the utilization of healthcare services in 21 European countries. This is a relevant topic also in light of the objectives of the EU health (and economic growth) strategy outlined above, since underutilization of health services while employed may lead to subsequent higher mortality rates or higher healthcare costs, with negative effects in terms of long-term economic growth and sustainability of the health systems.

The empirical analysis is based on micro data of two waves of the European Social Survey referred to years 2004 and 2014, which contain detailed information on individual health and use of healthcare services. The available data allow identifying entrepreneurs as self-employed with employees. In studying the relationship between self-employment and healthcare utilization, we take into account of potential endogeneity using a two-stage selection correction model. We find that self-employed workers without employees are less likely to use healthcare services, while, on the contrary, entrepreneurs are not statistically different from the employees. The analysis by health systems reveals great heterogeneity across countries, with larger differentials in those systems where health services are provided by private actors. Further exploratory analyses show that these differences may be driven also by other factors, such as differences in perceived health, wealth and opportunity costs.

The remainder of the paper is organized as follows. In section 2 we provide a brief discussion on the main factors that may justify the existence of differences in the use of healthcare services by employment status. We then present the empirical strategy (Section 3), the data and basic descriptive statistics (Section 4). The main results are discussed in Section 5, together with some robustness checks. In Section 6 we provide further estimates on heterogeneous effects by healthcare system. In Section 7 we discuss other possible mechanisms that may explain our main results. The last Section concludes.

2. Why different healthcare utilization by employment status?

A number of reasons can be put forward to explain heterogeneity in the use of healthcare services by employment status, particularly when we compare the self-employed with dependent workers. There are several studies showing that personality traits, such as openness to experience, independence and risk aversion, influence the occupational choice (Katrin and Thomsen 2014),

particularly entry decision into and the exit decision from self-employment (Caliendo et al. 2014) and are likely to influence also healthcare utilization, through their effects on lifestyle and ultimately on health (see Almlund et al. 2011 for an extensive review).

Other than personality traits, existing literature highlights four main factors: health, opportunity costs, wealth and the features of the healthcare system of the country in which workers live.

The relationship between employment status and individuals' health has been largely investigated both in epidemiological and socio-economic literature, finding mixed results. A number of studies report that self-employed workers are healthier than dependent workers (Ekelund et al., 2005; Prottas and Thompson, 2006; Rietveld et al., 2015). This may be due either to self-selection of healthier individuals into self-employment (the so called "selection effect") or because some working conditions that are peculiar of self-employment positively affect health (the so called "contextual effect").[2] In this perspective, according to the job-demand-control model (JDCM, Karasek, 1979; Karasek and Theorell, 1990), self-employed experience high control (authority in the decision-making and over their own jobs, freedom to strategize on task deployment and to develop skills) and high demand (work intensity, time pressure and conflicting demands). Job situations characterized by a combination of high control and high demand job refer to 'active jobs'; individuals under the active job hypothesis are reported to experience better health. On the other hand, empirical research in epidemiology, sociology and occupation psychology have long suggested that one of the main factor of a poor health status is stress on the job and financial strain related to unemployment spells (Ross and Mirowsky, 1995). Indeed, some studies show that self-employed report lower level of health and a comparatively higher level of stress compared to dependent workers (Parasumaran and Simmers, 2001; Pernilla, 2008). Rietvield et al (2015) conclude that, after controlling for self-selection of healthier individuals into self-employment, the latter is bad for one's health.

Another factor that may explain differences in healthcare utilization between self-employed and dependent workers are opportunity costs. Although the self-employed have potentially more control over their working time than employees, they may be more affected than employees by the loss of output and earnings associated with absence from the workplace. Furthermore, managerial and organizational duties may prevent them from taking time off work to visit a doctor. Boaz and Muller (1989) use the opportunity costs/time constraints argument to explain why, although all

[2] Rietveld et al. (2015) provide an extensive discussion on "contextual effect" and "selection effect" hypothesis on the state of art in this stream of literature.

retirees have more leisure time than workers, only those who were into self-employment before retirement significantly increase the use of healthcare services.

Self-employed may differ from dependent workers also in terms of wealth. Empirical evidence on the USA shows that mean earnings are lower for the self-employed than for dependent workers, but the distribution of self-employment earnings exhibits greater dispersion and is more skewed than that of wages (Hamilton, 2000). This evidence implies that, compared to dependent workers, some self-employed (probably low ability ones, who choose to become self-employed because they cannot find dependent jobs) are poorer than the employees, while others (notably high ability ones, especially entrepreneurs in large firms) are much richer. Wealth should determine access to healthcare, since rich individuals, as mentioned in the Introduction, can pay for private services, consult more specialists and afford out-of-pocket payments.

Finally, the features of the national healthcare system may influence healthcare access by employment status. Some studies show that the distribution of health costs between public and private funds is an important dimension that affects health care access. The higher the share of public health expenditure, the lower the inequity in doctor visits (Or et al., 2008). On the contrary, greater inequity in specialist visits accompanies a higher degree of private provision (Huber et al., 2008). Furthermore, a greater share of out-of-pocket payments is associated with inequity in access specialists and dental care (Devaux and de Looper, 2012). These aspects, we argue, should interact with the individual-level reasons to determine an additional degree of heterogeneity of healthcare access.

The above factors may explain differences in healthcare utilization not only between self-employed and dependent workers, but also between self-employed without employees (solo self-employed) from those with employees (entrepreneurs). Previous research has overlooked this difference, but we believe taking this perspective might be important in describing the relationship between self-employment and healthcare utilization. In fact, solo self-employed are more likely to report lack of insurance and of time for own care, as well as to be less wealthy; this indicates a lower level of healthcare services utilization. Entrepreneurs, instead, have an organization to lie upon, which makes their time constraint less binding. Time constraints and, more in general, opportunity costs may be particularly relevant both for self-employed without employees and for entrepreneurs in small or medium firms, who do not have managers to delegate their tasks in case they need to take some time off work to visit a doctor (Van Stel et al., 2014). In sum, we expect self-employed individuals to report lower access to healthcare services, particularly in the case of solo self-

employed. Furthermore, the size of this effect should be larger in countries with health systems characterized by a larger share of private funding/providers.

3. Empirical Strategy

The aim of the empirical analysis is to estimate the impact of the employment status on the individual decision about healthcare utilization. Concretely, we are interested in the effect of self-employment (and entrepreneurship) on the probability to go to the doctor in a certain time span (usually twelve months). As a first step, we estimate a model for each individual *i* in industry *j* and country *c*, at time *t* as follows:

$$y_{ijct} = \alpha + \beta X_{ijct} + \gamma totalselfempl_{ijct} + \mu_j + \mu_c + \mu_t + \varepsilon_{ijct} \quad (1)$$

where y_{ijct} is the binary dependent variable equal to one if individual i has gone to the doctor at least once during the last year and zero otherwise, X_{ijct} is a vector of individual and firm characteristics, μ_j, μ_c and μ_t reflect, respectively, industry, country and time fixed-effects. The coefficient of interest γ captures the relative effect of self-employment (with respect to dependent workers) on the degree of individuals' healthcare utilization. We estimate this model by a weighted linear probability model.[3] In addition, we use heteroskedasticity robust standard errors clustered at the country level to avoid underestimation and overconfident inferences (Huber and Stanig, 2011).

In order to disentangle whether and to what extent there is heterogeneity in the probability of healthcare utilization across different types of self-employment, we separate entrepreneurs from the solo self-employed workers. In practice, we identify as entrepreneurs those individuals who declare to be self-employed with a positive number of employees, while solo self-employed are those without dependent workers. Consequently, our preferred specification for the empirical analysis is defined as:

$$y_{ijct} = \alpha + \beta X_{ijct} + \gamma solo\_selfempl_{ijct} + \theta entrepreneur_{ijct} + \mu_j + \mu_c + \mu_t + \varepsilon_{ijct} \quad (2)$$

where we have two main coefficients of interest, γ and θ, respectively for solo self-employed and entrepreneurs.

One potential problem of our empirical model is that underlying variables that may drive individual decision of healthcare utilization in a country (such a personality traits or cultural norms that

[3] In order to exclude that our results are related to the imposed functional form, we also provide probit estimates for comparison purpose. See Angrist and Pischke (2009) for a discussion on using a linear probability model rather than a nonlinear one when the outcome variable is binary.

encourage healthy behavior) may simultaneously influence the choice between self-employment and dependent work in that country. This means that estimated parameters may capture also the effects of other unobservable confounding factors on healthcare utilization.

In order to properly mitigate this potential distortion due to unobserved heterogeneity, we control also for a set of workers' personality traits, human values and psychological attitudes. These controls reflect a good proxy for individual and lifestyle attitudes, which potentially influence personal wellbeing and therefore healthcare utilization.

Nonetheless, there may be still some unobserved factors affecting selection into a certain employment status and healthcare utilization (Rietveld et al., 2015).

We further tackle potential selection bias by adopting a two-stage procedure based on the Durbin and McFadden (1984) approach.[4] In the first stage, we define a model of occupational choice, estimating the probability of being respectively an employee, a self-employed or an entrepreneur. The second stage replicates our linear probability base model on healthcare utilization, but integrating it with the estimates from the first stage in order to correct for endogenous selection (see the Appendix for technical details).

To avoid identification relying only on functional forms, we impose exclusion restrictions that should be correlated with the self-employment (entrepreneurship) status, but uncorrelated with the error term in the healthcare utilization model.

As plausible exclusion restrictions, we use two types of information: the level of (entry) regulation in each country collected by OECD and parents' self-employment status. On the one hand, a large stream of literature (Prantl and Spritz-Oener, 2009; Ardagna and Lusardi, 2010; Klapper et al., 2006) has investigated whether and to what extent regulatory and legal environment can influence individuals' decision to start new businesses. Main results from these works seem to indicate that higher levels of entry regulation are a detriment to entrepreneurial activity; furthermore, they reduce entry into self-employment and occupational mobility. Indirectly, stricter regulation strengthens the impact of risk-aversion, dampening the potential of entrepreneurial skills and reducing the probability to become an entrepreneur for those who are not actually working. The reasoning behind entry regulation representing an appropriate exclusion restriction is that individuals may decide to enter into self-employment or to pursue a business activity on the basis of perceived strictness about different aspects of market regulation, but this should not exert a direct impact on

[4] For an extensive review about this class of selection bias corrections models, see Bourguignon et al. (2007).

the individuals' demand for healthcare that does not operate through our endogenous variable, i.e. self-employment status.

On the other hand, the literature has also emphasized the fact that having parents who are self-employed increases the probability to choose self-employment, even when the individuals decide to change the occupation (Colombier and Masclet, 2006; Blanchflower and Oswald, 1998). Consistent with these results, two main explanations are proposed. The first is based on the access to financial capital and on the role of family to act as a substitute banker (Lafarrere and McEntee, 1995), relaxing capital market constraints and easing the decision of sons to attempt self-employment and business opportunity. The second relies on the idea that self-employment has an intergenerational dimension, with parents that are able to transfer to their children those informal managerial skills relevant to pursue an economic activity (Dunn and Holtz-Eakin, 2000). Regardless of the underlying mechanism, parents' self-employment status may positively influence the decision of children to become self-employed. However, parents' self-employment status when the individual was a teenager is unlikely to have a direct effect on current healthcare utilization.[5]

4. Data source and descriptive statistics

In this section, we summarize the data construction to investigate the relationship between work status and healthcare utilization across European countries. Our main data source is based on the second (2004) and seventh (2014) rounds of the European Social Survey (ESS). The ESS is a cross-country cross-sectional survey conducted across Europe since 2002 every two years and designed to measure the attitudes, beliefs and behavior patterns of European citizens. The target population are those aged 15 and over who are residents within private households, regardless of nationality or citizenship, language or legal status, for a total of 90,949 observations. We select only adult working population aged between 18 and 65 with information on healthcare utilization for 21 European countries: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovenia, Slovakia, Spain, Sweden and the United Kingdom.[6] Importantly, we also exclude from the sample those who declare to work for own family business in order to ensure clarity to our

[5] It may be argued that parents' employment status can influence current individual income and the latter is a crucial determinant of healthcare utilization. We shall take this issue into account in our following estimates.
[6] Not all countries participate to both waves. Specifically, Greece, Italy, Luxembourg and Slovakia are not included in the 7th wave of ESS.

results.[7] The resulting pooled sample comprises almost 33 thousands individuals located in 21 different European countries.

We limit the analysis to the second and the seventh rounds of the ESS because they include a special module that focuses on individual health conditions. We define healthcare utilization, our dependent variable, as a binary variable indicating whether an individual has consulted a doctor during the twelve months before the survey.[8]

Our main explanatory variable is a binary indicator for total *self-employment,* which is equal to one if respondents were identified as self-employed and zero if dependent workers. In order to disentangle the heterogeneity in terms of health behavior within the self-employed workers, we further split this category into two groups. We then create two dummy indicators: *entrepreneur* is equal to one if respondents declare to be self-employed with a positive number of employees, while *solo_selfempl* is equal to one if respondents declare to be self-employed without dependent workers.

In addition, we control for a battery of demographic and job-related variables that reflect factors influencing both healthcare utilization and self-employment status. Among others, covariates include gender, age, age squared, education level, marital status, having or not children, household size, area of residence, self-rated health, previous unemployment experience, citizenship, partner's work status, firm size, industry, country and time fixed effects. In some specifications, we also control for some personality traits and human values that are measured through a series of indicators adapted from the ESS and designed to classify respondents according to their basic value orientation. Among others, these indicators include a measure of the importance to be creative, to be rich, to experience new things in life, to make own decisions and a proxy for risk-aversion.[9] These indexes should capture personality traits that are likely to be correlated with both the choice to become self-employed and healthcare utilization, thus reflecting a relevant source of unobserved heterogeneity at the individual level.

[7] Indeed, the mixed nature of this group is specifically related to the nature of job relation within a family business. The problem is that they do not work for a "normal" firm and hence it is difficult to identify them as the owners or as dependent workers. Therefore, we prefer to exclude this category from the analysis. However, they reflect a small portion of the initial pool of employed individuals, with 416 observations.

[8] The 2004 "health module" asks respondents to report how many times in the past twelve months have consulted a doctor for themselves, without distinguishing what type of doctor (generalist, specialist or others). In a similar vein, the 2014 version asks with which of the possible health practitioners the respondents have discussed their own health in the previous twelve months.

[9] These individual psychological factors are measured on a 6-point scale where responses range from "very much like me" to "not like me at all" and then codified as dummy variables equal to one for the first two values ("very much like me" and "like me") and zero otherwise.

Regarding exclusion restrictions for identification in the two-stage selection correction model, we measure parents' background using information on mother and father employment status (i.e., whether he or she was an employee, self-employed or not working) when the respondent was fourteen.

Data on product market regulation (PMR) are provided by the OECD. The PMR indexes are a comprehensive and internationally comparable set of indicators that measure the degree to which policies promote or inhibit competition in areas of the product market where competition is viable.[10] This aggregate index has been constructed as the combination of three different components: state control, barrier to entrepreneurship and barrier to trade and investment. We concentrate our attention on the barrier to entrepreneurship that in turn is based on three sub-components: complexity of regulatory procedures, administrative burdens on start-up and regulatory protection of incumbents. We alternatively use the first two indexes as a measure of product market regulation that should more directly influence the choice to enter into self-employment and start a new business. Furthermore, OECD product market regulation indexes usually measure the strictness of legal environment at country-time level, but we are aware that there exists a relevant degree of heterogeneity across industries. In order to capture this source of variation, we define our instrument interacting the regulation index with industry fixed effects.[11]

Table 1 about here

Table 1 reports weighted descriptive statistics for our binary outcome variable, distinguishing by employment status. As expected, column (1) indicates that employees register a greater level of healthcare access with respect to the self-employed. Interestingly, the gap between solo self-employed and dependent workers is reducing over time, if we compare the results for 2004 (68% vs 78%) and for 2014 (73% vs. 81%). Entrepreneurs lie in the middle between self-employed and employees. This indicates that, among the self-employed, the level of heterogeneity in terms of health behavior is quite relevant.

[10] They calculate the economy-wide regulatory and market environments in 34 OECD countries for defined years (1998, 2003, 2008 and 2013) and in another 22 non-OECD countries. These indexes are consistent across time and countries.

[11] Operationally, the assumption underlying our instrument is that individuals working in different industries experience different constraints in term of legal and regulatory environment and this source of variation is account for including a regulation index that is industry-specific in our regression setting.

Table A1 in Appendix illustrates the weighted distribution of some control variables by employment status and provides some evidence about the heterogeneity in individual and job-related controls across employees, self-employed and entrepreneurs.

5. Main results

Table 2 reports the main estimates of the relationship between self-employment and health care utilization in the 12 months before the survey. Columns differ for the model specification used: in column (1) we include only the dummy capturing whether the worker is self-employed (0 if employee), in column (2) we add country and time fixed effects, in column 3 we control also for personal characteristics (gender, age, age squared, education level, marital status, having or not children, household size, characteristics of the area of residence, previous unemployment experience, partner's work status, citizen), including an indicator of perceived health in column (4). In column (5) we add the usual firm-level controls (industry and firm size). Finally, in order to take into account of unobserved characteristics that may drive both the choice to be self-employed and health care utilization (such as risk aversion, independence, openness to new experiences, financial realization), in the last column, we add a series of controls related to psychological traits and perceived human values. Estimates in the first row of the table are marginal effects from weighted linear probability models. We report robust standard errors clustered at the country level. For a comparison purpose in the last column, we also provide marginal effects from a weighted probit model.

Table 2 about here

Overall, our estimates show that self-employed are significantly less likely to go to the doctor. Compared to the employees, such probability is around 6.3 percentage points lower when we do not include any control (column (1)), it slightly decreases to 5.7% when we add country and time fixed effects (column (2)), while it drops by around a half once we control for personal characteristics (column (3)). The inclusion of perceived health in column (4) changes only marginally the previous estimates. Once we add also firm-level controls, we obtain that the probability to go to the doctor is 1.4 percentage points lower for the self-employed compared to the employee (column (5)). Such estimate is fairly robust to the inclusion of controls that should determine both the (self-) employment status and healthcare utilization.

In order to take into account the peculiarities of different types of self-employment, in Table 3 we split the total self-employment dummy into two different groups: the solo self-employed without

employees and the self-employed with employees (entrepreneurs in the Table). As for the previous table, columns differ for the number and type of controls used. Estimates in the saturated model reported in the last column of the Table show that the negative effect estimated above is driven by the behavior of the self-employed without employees. Once all controls are included, the latter are 3.5 per cent less likely than the employees to go to the doctor, while no statistically significant differences emerge for the other category of employer self-employed.

Table 3 about here

One possible limitation in our analysis concerns the presence of unobservable factors influencing individual decisions both in terms of employment status and health behavior. In order to tackle this issue, we use a correction selection models based on the 2SLS strategy discussed in the empirical strategy Section, where the exclusion restrictions are the employment status of parents when each individual was fourteen and the OECD entry regulation index interacted with industry fixed effects. First-stage estimation results from the multinomial logit are summarized in Table A2, which reports relative risks ratios and robust standard errors clustered at the country level. In the first stage, we included all controls used in the richest specification of Table 3. If we concentrate on the exclusion restrictions, we find that parents' self-employment positively affect the probability of both being a self-employed worker or an entrepreneur. The estimated parameters for our measures of product market regulation, capturing the impact of national legal environment at industry level, indicate that the competition level do not influence the choice to become solo self-employed, while the effect is negative and jointly statistically significant when we consider the status of entrepreneur.[12]

Table 4 illustrates the estimation results of primary interest, reporting also the estimated parameters relative to the correction terms. Overall, the 2SLS estimates confirm our main findings: column (6) reveals that self-employed are 3.3 percent less likely to go to the doctor with respect to employees, the base category. The estimated correction terms turn out to be statistically significant, suggesting that their inclusion is important to control for endogenous selection.

Overall, also controlling for possible correlation in the unobservables between employment status and health behavior, self-employed workers evidence a lower probability to go the doctor with respect to employees, while no significant effect is found for entrepreneurs. Our results clearly show that different types of self-employment exhibit quite different behaviors in terms of healthcare utilization. Hence, treating them as an aggregate category may hide significant heterogeneity across

[12] It should also be noticed that a formal test on the validity of the exclusion restrictions in this estimation procedure is still lacking and the peculiar nature of the correction terms should be taken into account when interpreting the results.

groups, which may have a number of implications such as, for example, the need for different policy interventions.

Table 4 about here

We also provide some robustness checks to gauge the plausibility of our findings. All results are available upon request. Firstly, we further split entrepreneurs according to their number of employees. More specifically, we distinguish between entrepreneurs of micro enterprises (with less than 10 employees) and the others. We may expect that the first have less managerial and organizational duties than the second and, hence, they have less time constraints that may influence their behavior in the use of health care services.[13] Estimates actually indicates that entrepreneurs in small companies are more likely to go to the doctor than entrepreneurs of larger ones, but compared to the employees both differences are not statistically significant, once we consider the richest specification, with all controls. Secondly, we replicate the analysis only for those countries that participate to both waves of the ESS in order to verify whether the non-random selection of countries may modify the relation of interest. Hence, we exclude Greece, Italy, Luxembourg and Slovakia form our sample. Quantitatively, the main results are substantially unchanged. Finally, our exclusion restriction on parents' self-employment status when respondent was fourteen may also influence current household total income that, in turn, is a relevant factor in the decision on healthcare utilization (Ettner, 1996). Therefore, we replicate our analysis including a measure of the household income in our richest specification to control for this possible effect. However, information on total household net income in the ESS is not complete and easily comparable over time.[14] Hence, we define an indicator of low-income that is equal to one for those individuals whose household income lies below the median interval in each of the two waves and zero otherwise. The estimates emphasize that solo self-employed workers are still 3.8 percent point less likely to use healthcare services compared to dependent workers and the effect is statistically significant and slightly larger than in our base model.

[13] In the ESS data, the distribution of the entrepreneurs by number of employees is heavily skewed to the left. Only 1.2% of the entrepreneurs are in firms with more than 50 employees, while less than 0.5% of the entrepreneurs are in firms with more than 100 employees. This prevented us from disaggregating further the group of entrepreneurs with more than 10 employees.

[14] In practice, until the 3rd wave, the variable on total household net income in ESS has been coded with general intervals that are not referable to deciles of the total income distribution, while from the 2008 onwards the survey has directly provided country-specific deciles relative to total household net income. Furthermore, such information contains a lot of missing values for some countries, such as Austria, Czech Republic, Estonia, Hungary, Italy and Portugal. (more than 30 per cent of total observations).

6. The role of healthcare systems

The institutional features of the national healthcare system (such as the provision of services, the financing criteria of healthcare services or the role of the general doctor) are among the main factors that can justify a different use of healthcare services by employment status. Consequently, in this Section we investigate whether the relationship between employment status and healthcare utilization is influenced by the health system prevailing in the country where workers live. We refer to the classification proposed by Bohm et al. (2013), who classify 30 OECD countries, using OECD Health data and World Health Organization (WHO) country reports, on the basis of three core dimensions of the healthcare system (regulation, financing and service provision) and the main actors involved (other than the State, societal actors, such as non-profit organizations and private actors). This procedure allows clustering the European countries considered on the basis of four main healthcare systems:

1) National Health Service (NHS), which includes the Nordic countries (Denmark, Finland, Norway, Sweden), the UK and some Southern ones (Portugal and Spain). In this healthcare system a central role is played by the State in terms of regulation, financing and service provision.
2) National Health Insurance (NHI), which includes Ireland and Italy. This healthcare system combines State-level regulation and tax financing with the possibility for patients to choose physicians or hospitals.
3) Social Health Insurance (SHI), which includes some Continental (German-speaking) countries, such as Austria, Germany and Luxembourg. In this healthcare system the State or societal (non-profit or corporatist) actors are in charge of regulation and financing, while private actors provide most of the services.
4) Etatist Social Health Insurance (ESHI), which includes some Continental countries (Belgium, France and the Netherlands) and most Eastern countries (Czech Republic, Estonia, Hungary, Poland and Slovakia). In this model, the State defines the regulation, societal actors take care of financing and provision is delegated to private actors. This is the only genuine mixed healthcare system, in which there is a clear hierarchy of the actors, who play different roles.

Table 5 presents the main OLS and 2SLS estimates based on this classification. Estimates reported in the Table refer to the richest specification, with all the controls available. For the 2SLS we report also the correction terms. The results show great heterogeneity in the use of healthcare services by

work status across different systems, particularly in the case of the self-employed without employees. For this category, compared to the employees the probability to go to the doctor is lower in all the groups of countries considered, except for Ireland and Italy (the NHI type). However, it ranges from around 2 percent less in the NHS system to 7.3 percent less in the SHI system. No statistically significant differences are generally found for the entrepreneurs in either of the systems considered, except for the SHI system, where the 2SLS estimated parameter indicates a lower probability to go to the doctor around 1 percent.

Table 5 about here

Since the SHI and the ESHI models share the prevalence of private actors in the provision of healthcare services, our results suggest that self-employed are particularly penalized in healthcare access where services are provided privately, regardless of how the system is regulated or financing. These results nicely complement those found the literature on health insurance of the self-employed in the USA.

7. Other possible mechanisms: a discussion

In order to disentangle the role of other factors driving the decision of healthcare utilization, we exploit information on the reasons for which individuals decide not to go to the doctor during the last year.

Such information is available only in the 2014 ESS and hence we limit our analysis to this wave. More specifically, the respondents were asked to report whether in the twelve months before the survey they were unable to get medical consultation or the treatment they needed. Among possible reasons, the respondents could mention that they could not pay for it, that they could not take time off work, that they had other commitments. Furthermore, those who answered that they did not face problems in access healthcare services, were required to report whether that was because they were actually able to get any medical consultation or treatment they needed or because they did not need a medical consultation or treatment in the previous twelve months.

We exploit this information to define some indicators that should proxy the factors that may explain differences in healthcare utilization by employment status discussed in Section 2. More specifically, we measure differences in perceived health through the dummy *Healthy,* which is equal to 1 for those who report that they did not need any medical consultation and, for this reason, they did not use any healthcare services. In order to proxy time constraints, we define two binary indicators: *Time-off work* is equal to one for those who were unable to go to the doctor because they could not

take time off work, while *Other commitments* is equal to 1 for those who could not get any medical consultation or treatment because they had other commitments. Finally, we proxy the role of wealth with the dummy variable *Not pay*, which is equal to 1 for those who could not access healthcare because they could not pay for it.

Table 6 reports our main OLS estimates using these indicators as dependent variables. Column (1) uses the subsample of workers who did not find problems in access healthcare and actually did not use healthcare services in the twelve months before the survey because they did not medical consultation or treatment, while the other Columns are based on the subsample of workers who were unable to get medical consultation or treatment.[15]

Table 6 about here

Our estimates highlight that all the factors considered contribute to explain the heterogeneity in the use of healthcare services by employment status. In particular, both solo self-employed and entrepreneurs are 5 percent more likely than dependent workers to report that they did not use healthcare services because they did not need it (albeit the estimate is statistically significant only for solo self-employed; see Column 1). Wealth is a constraint only for solo self-employed, who are 7.5 percent more likely than dependent workers to report that they did not get any medical consultation because they could not pay for it. On the contrary, wealth constraint is not an issue for entrepreneurs (Column 2). Finally, the effect of time constraints varies with the definition considered: while, as expected, employees report less freedom in taking time off work (the probability to mention this reason is 7 percent points lower for solo self-employed, 6 percent points lower for the entrepreneurs), other commitments prevent from going to the doctor all the self-employed (but estimates are statistically significant only for solo self-employed).

Further estimates by number of working hours[16] show that our main results in Section 5 are driven by individuals working more than 40 hours: among them, compared to the dependent workers the probability to go to the doctor is 4.8 percent points lower and statistically significant for solo-employed, while there is no difference for the entrepreneurs. On the contrary, there are no statistically significant differences in the use of healthcare services by employment status among individuals working less than 40 hours.

[15] The limited sample size does not allow to properly control for selection bias as in the previous Sections. Hence, these results should be considered as a preliminary evidence on the relationship between the variables of interest.

[16] We replicate the richest specification used in column (6) of Table 4, splitting the sample among those who declare to work less or more than 40 hours. Estimates are available upon request.

On the whole, our results suggest that differences in national healthcare systems and in perceived health by employment status may partly explain the heterogeneity in the use of healthcare services, but other relevant factors seem at work. In particular, (the lack of) wealth and long working hours may be binding constraints for solo self-employed, while a rigid regulation of working time and days of leave is likely to represent an obstacle to access healthcare services for dependent workers.

8. Conclusions

This paper contributes to the research on the relationship between employment status and healthcare utilization by adding novel aspects to the existing literature. We analyze whether and to what extent the pattern of health behavior in terms of consulting a physician during the last 12 months varies among different forms of self-employment in 21 European countries. Contrary to previous research that have mostly neglected this aspect, we investigate differences in healthcare utilization not only between self-employed and dependent workers, but also between solo self-employed (i.e., self-employed on their own) and entrepreneurs (i.e., self-employed with a firm employing dependent workers).

In order to provide a causal effect, we tackle the endogeneity issue related to selection in self-employment by estimating a 2SLS selection correction model (Durbin and McFadden, 1984). Our exclusion restrictions are based on the parents' employment status when respondent was fourteen and the competition regulation at the country-time level interacted with industry fixed-effects. Using cross-country data from two waves of the European Social Survey, we find that self-employed are 3.3-3.8 percent point less likely to use healthcare services with respect to dependent workers. Compared to the recent empirical literature in Europe, our estimates are in line with those of Pfeiffer (2013) for Germany, emphasizing that self-employed workers report fewer doctor visits with respect to employees. On the contrary, the main results for entrepreneurs illustrate how they are not systematically different from employees when we consider the decision about healthcare utilization. Hence, investigating individual decision about health behavior separately for solo self-employed workers and entrepreneurs (respect to dependent workers) is extremely valuable and improve our understanding of the mechanisms through which employment status affects doctor visits' decision and, more generally, healthcare utilization.

In addition, we try to uncover what factors may explain heterogeneity in healthcare access by employment status. The analysis by health systems reveals great heterogeneity across countries,

with larger differentials between solo self-employed and dependent workers in those systems where health services are provided by private actors. Hence, institutional features of the national health systems may contribute to explain the relation of interest.

Our exploratory analysis on the other factors contributing to the heterogeneity in the decision about healthcare utilization by employment status provides some relevant insights. More specifically, we find that both wealth and opportunity costs matter for solo self-employed; in particular, wealth constraints and the number of hours worked negatively affect their healthcare utilization. Even if they traditionally experience more control over their work time than employees, the opportunity costs associated to the loss of earnings when they are absent from workplace may prompt solo self-employed to reduce doctor visits. Alternatively, entrepreneurs have a productive and organizational structure to lie upon and probably suffer less from time constraints, as well as from wealth limitations. Hence, their access to healthcare is more similar to that of employees. Taken together, these results contribute to the understanding of self-employment and its distinctiveness from entrepreneurship (meaning self-employment with employees).

One possible limitation is that our analysis refers only to differences in the access to healthcare services, not in the quantity (and quality) of use. In practice, we are assuming that "a visit is a visit" (Van Doorslaer et al., 2004), since we are not able to disentangle in both EES waves how many times the respondent has consulted a doctor during the last year or the type of doctor consulted (general practitioner, specialist, etc.). However, the ESS data offer fascinating and new opportunities for cross-country comparison on health and healthcare utilization in Europe by including a rich set of information. Moreover, despite a comprehensive debate on universal coverage (Cylus and Papanicolas, 2015), our results emphasize that healthcare utilization patterns still largely depend upon the employment status. From a policy perspective, stimulating self-employment requires a better understanding of the healthcare utilization implications of this occupational choice, but treating it as a homogeneous category may lead to misleading policy implications for some of the sub-groups involved.

References

Ahs, A. and Westerling, R. (2006). Health Care Utilization Among Persons who are Unemployed or Outside the Labour Force. Health Policy, 78, 178-193.

Almlund M, Duckworth A, Heckman JJ, Kautz T. (2011). Personality psychology and economics. In Handbook of the Economics of Education. Vol. 4, Hanushek EA, Machin S, Wobmann L (eds). Elsevier: Amsterdam; 1–181.

Angrist J. D. and J.S. Pischke (2009). Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press.

Ardagna S. and A. Lusardi (2010). Heterogeneity in the effect of regulation on entrepreneurship and entry size. Journal of the European Economic Association, 8 (2-3), pp. 594-605.

Bertrand M. and Kramarz, F. (2002). Does entry regulation hinder job creation? Evidence from the French retail industry. Quarterly Journal of Economics, 117, pp. 1369–1413.

Blanchflower D. and A. Oswald (1998). What makes and entrepreneur. Journal of Labor Economics, vol. 16 (1), pp. 26-30.

Boaz, R. and Muller, C. (1989). Does Having More Time after Retirement Change the Demand for Physician Services?. Medical Care, 27(1):1-15.

Bohm K, Schmid A., Gotze R., Landwehr C. and H. Rothgang (2013). Five types of OECD healthcare systems: Empirical results of a deductive classification. Health Policy, 113, pp. 258-269.

Bourguignong F., M. Fournier and M. Gurgand (2007). Selection bias corrections based on the multinomial logit model: Montecarlo comparison. Journal of Economic Survey, 21(1): 174-205.

Caliendo, M., Fossen, F. and Kritikos, A. (2014). Personality characteristics and the decisions to become and stay self-employed. Small Business Economics, 42:787–814.

Colombier N. and D. Masclet (2006). Self-employment and the intergenerational transmission of human capital. Cirano Scientific Series, no. 19.

Cylus J. and I. Papanicolas (2015). An analysis of perceived access to health care in Europe: How universal is universal coverage?. Health Policy, 119, pp. 1133-1144.

Devaux, M. and de Looper, M. (2012). Income-Related Inequalities in Health Service Utilisation in 19 OECD Countries, 2008-2009. OECD Health Working Papers, 58, OECD, Paris.

Dolinsky A. L. and R. K. Caputo (2003). Health and female self-employment. Journal of Small Business Management, 41(3), pp. 233-241.

Dunn T. and D. Holtz-Eakin (2000). Financial capital, human capital, and the transition to self-employment: Evidence from the intergenerational links. Journal of Labor Economics, vol. 18 (2), pp. 282-305.

Durbin J. A. and D. L. McFadden (1984). An econometric analysis of residential electric appliance holdings and consumption. Econometrica, 52: 345-362.

Ekelund J., Johansson E., Jarvelin M.R. and D. Lichtermann (2005). Self-employment and risk-aversion – evidence from psychological test data. Labour Economics, 12: 649-659.

Ettner S. L. (1996). New evidence on the relationship between income and health. Journal of Health Economics, vol. 15 (1): 67-85.

European Commission (2013). Investing in Health. Commission Staff Working Document - Social Investment Package, Brussels.

Hamilton B. H. (2000). Does entrepreneurship pay? An empirical analysis of the return to self-employment. Journal of Political Economy, 108 (3), pp. 53-75.

Huber J. D. and P. Stanig (2011). Church-state separation and redistribution. Journal of Public Economics, 95: 828-836.

Huber, M., Stanicole, A., Bremner, J. and Wahlbeck, K. (2008). *Quality in and Equality of Access to Healthcare Services*. European Commission Directorate-General for Employment, Social Affairs and Equal Opportunities, Luxembourg.

Karasek R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. Administrative Science Quarterly, 24, pp. 285-308.

Karasek R. A. and T. Theorell (1990), Healthy work: Stress, productivity, and the reconstruction of working life. New York, Basi Book.

Katrin, J. and Thomsen, S. (2014). Heterogeneous returns to personality: the role of occupational choice. Empirical Economics 47(2): 553-592.

Klapper L., Laeven L. and R. Raja (2006). Entry regulation as a barrier to entrepreneurship. Journal of Financial Economics, 82, pp.591-629.

Jamal M. (1997). Job stress, satisfaction, and mental health: An empirical examination of self-employed and non-self-employed Canadians. Journal of Small Business Management, 35, pp. 48-57.

Lafarrere A. and P. McEntee (1995). Self-employment and intergenerational transfers of physical and human capital: An empirical analysis of French data. The Economic and Social Review, vol. 27 (1), pp. 43-54.

Lechmann D. S. J. and C. Schnabel (2013). Absence from work of the self-employed: A comparison with paid employees. IZA discussion paper, no. 7756, November.

Lewin-Epstein N. and E. Yuchtman-Yaar (1991). Health risks of self-employment. Work and Occupations, 18, pp. 291-312.

Meer, J. and Rosen, H. (2004). Insurance and the utilization of medical services. Social Science and Medicine, 58 1623–1632.

Minola, T., Criaco, G., and Obschonka, M. (2016). Age, culture, and self-employment motivation. Small Business Economics, 46(2), 187-213.

Or, Z., Jusot, F. and Yilmaz, E. (2008). Impact of Health Care System on Socioeconomic Inequalities in Doctor Use. *IRDES Working Papers,* 17, IRDES, Paris.

Parker, S. C. (2006). Entrepreneurship, self-employment and the labour market. Oxford handbook of entrepreneurship, 435-460.

Parasuraman S. and C. A. Simmers (2001). Type of employment, work-family conflict and well-being: a comparative study. Journal of Organizational Behavior, 22(5), 551-568.

Pernilla A. (2008). Happiness and Health: Weel-Being among the Self-Employed. Journal of Socio-Economics, 37 (1), 213-236.

Perry, C. and Rosen, H. (2001). Insurance and the utilization of medical services among the self-employed. NBER Working Paper, 8490.

Pfeiffer, C. (2013). Cyclical Absenteeism among Private Sector, Public Sector and Self-Employed Workers. Health Economics, 22: 366–370.

Prantl S. and A. Spitz-Oener (2009). How does entry regulation influence entry into self-employment and occupational mobility?. IZA discussion paper, no. 4221, june.

Prottas D. J. and C.A. Thompson (2006). Stress, satisfaction, and the work-family interface: A comparison of self-employed business owners, independents, and organizational employees. Journal of Occupational Health Psychology, 11, pp. 366-378.

Puri M., D. T. Robinson, (2006). Who Are Entrepreneurs and Why Do They Behave That Way. Working Paper Duke University.

Rietveld C. A., Van Kippersluis H. and A. Roy Thurik (2015). Self-employment and health: Barriers or benefits?. Health Economics, 24, pp. 1302-1313.

Ross C.E. and J. Mirowsky (1995). Does employment affect health?. Journal of Health and Social Behavior, 36(3), 230-243.

Schaller, J. and Stevens, A. (2015). Short-run effects of job loss on health conditions, health insurance, and health care utilization. Journal of Health Economics, 43: 190-203.

Seychell, M. and Hackbart, B. (2013). The EU Health Strategy – Investing in Health. Public Health Reviews, 35(1): 1-25.

Toth F. (2016). Classification of healthcare systems: Can we go further?. Health Policy, 120, pp. 535-543.

Van der Heyden, J., Demarest S., Tafforeau, J. and Van Oyen, H. (2003), Socio-economic Differences in the Utilisation of Health Services in Belgium, Health Policy, 65, 153-165.

Van Doorslaer, E. and C. Masseria (2004), Income-related Inequality in the Use of Medical Care in 21 OECD Countries. *OECD Health Working Papers,* 14, OECD, Paris.

Van Stel A., Wennekers S. and G. Scholman (2014). Solo self-employed versus employer entrepreneurs: determinants and macro-economic effects in OECD countries. Eurasian Business Review, 4 (1), pp. 107-136.

Virtanen, P., Kivimäki, M., Vahtera, J. And Koskenvuo, M. (2006). Employment status and differences in the one-year coverage of physician visits: different needs or unequal access to services?. *BMC Health Services Research* 2006, 6:123.

Volland B. (2011). Health assessment and health among the self-employed. DIME-DRUID Academy Winter Conference, mimeo.

Yoon J. and S. L. Berell (2013). The effect of self-employment on health, access to care, and health behavior. Health, vol. 5, No. 12, pp. 2116-2127.

Wendt C. (2009). Mapping European healthcare systems: a comparative analysis of financing, service provision and access to healthcare. Journal of European Social Policy, 19 (5), pp.432-445.

TABLE

Table 1. Health care utilization by employment status
(Weighted means)

	(1)	(2)	(3)
	2004-2014	2004	2014
Employee	80.03%	78.23%	81.45%
Self-employed	71.08%	68.67%	73.38%
Entrepreneurs	77.65%	76.22%	78.93%

Table 2. OLS regression results on healthcare utilization

Total self-employed vs employees

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS	OLS	OLS	OLS	OLS	Probit
total self-employed	-0.063***	-0.061***	-0.045***	-0.043***	-0.018***	-0.014*	-0.015**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
country FE	No	Yes	Yes	Yes	Yes	Yes	Yes
time FE	No	Yes	Yes	Yes	Yes	Yes	Yes
personal control	No	No	Yes	Yes	Yes	Yes	Yes
sub. health status	No	No	No	Yes	Yes	Yes	Yes
firm control	No	No	No	No	Yes	Yes	Yes
personality traits	No	No	No	No	No	Yes	Yes
N	32896	32896	31765	31765	28423	26833	26833

Note: Robust standard errors are in parenthesis and clustered at the country level. *** significant at 1%, ** significant at 5%, * significant at 10%. Marginal effects from a linear probability model in columns (1)-(6) and from a probit model in column (7).

Table 3. OLS regression results on healthcare utilization

Solo self-employed, entrepreneurs and employees

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS	OLS	OLS	OLS	OLS	Probit
solo_selfemp	-0.090***	-0.084***	-0.068***	-0.066***	-0.041***	-0.034***	-0.034***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
entrepreneur	-0.024***	-0.024***	-0.006	-0.004	0.017	0.016	0.013
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
country FE	No	Yes	Yes	Yes	Yes	Yes	Yes
time FE	No	Yes	Yes	Yes	Yes	Yes	Yes
personal control	No	No	Yes	Yes	Yes	Yes	Yes
sub. health status	No	No	No	Yes	Yes	Yes	Yes
firm control	No	No	No	No	Yes	Yes	Yes
personality traits	No	No	No	No	No	Yes	Yes
N	32896	32896	31765	31765	28423	26833	26833

Note: Robust standard errors are reported in parenthesis and clustered at the country level. *** significant at 1%, ** significant at 5%, * significant at 10%. Marginal effects from a linear probability model in columns (1)-(6) and from a probit model in column (7).

Table 4. 2SLS regression results on healthcare utilization by employment status

Marginal effects from the second stage

	(1)	(2)	(3)	(4)	(5)	(6)
solo_selfempl	-0.059***	-0.043***	-0.036**	-0.035**	-0.035**	-0.034**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
entrepreneurs	0.016	0.019	0.016	0.017	0.012	0.013
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
$corr\_term_{self-empl}$	0.005***	0.006***	0.009**	0.003	-0.025***	-0.024**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
$corr\_term_{entrepreneur}$	-0.008***	-0.011***	-0.012***	-0.007***	0.021***	0.023***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
country FE	No	Yes	Yes	Yes	Yes	Yes
time FE	No	Yes	Yes	Yes	Yes	Yes
personal control	No	No	Yes	Yes	Yes	Yes
sub. Health status	No	No	No	Yes	Yes	Yes
firm control	No	No	No	No	Yes	Yes
personality traits	No	No	No	No	No	Yes
N	24917	24917	24917	24917	24917	24917

Note: Robust standard errors are reported in parenthesis and clustered at the country level. *** significant at 1%, ** significant at 5% and * significant at 10%. Marginal effects are from a 2SLS selection correction model based on Durbin and McFadden (1984) approach. The correction terms for each employment status are calculated from a first-stage multinomial logit.

Table 5. Healthcare utilization by health system

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	NHS		NHI		SHI		ESHI	
solo_selfempl	-0.020*	-0.019*	0.026	0.023**	-0.061***	-0.073**	-0.041***	-0.034**
	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
entrepreneur	0.013	0.017	0.078	0.075	0.006	-0.009***	0.01	0.016
	(0.03)	(0.03)	(0.06)	(0.06)	(0.01)	(0.00)	(0.02)	(0.03)
$corr\_term_{self-empl}$		-0.012		0.002		-0.019**		-0.022**
		(0.01)		(0.03)		(0.00)		(0.01)
$corr\_term_{entrepreneur}$		0.009*		-0.010		0.016		0.032***
		(0.00)		(0.02)		(0.01)		(0.01)
country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
personal control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
sub. Health status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
firm control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
personality traits	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	8857	8682	1495	1449	4850	4691	10067	8931

Note: NHS=National Health Service (DK, FIN, NOR, SWE, UK, PT, SP); NHI=National Health Insurance (IRE, IT), SHI=Social Health Insurance (AT, GER, LUX), ESHI=Etatist Social Health Insurance (BE, FR, NL, CZ, EE, HU, PL, SK). Robust standard errors are reported in parenthesis and clustered at country level. *** significant at 1%, ** significant at 5% and * significant at 10%. OLS and 2nd stage 2SLS marginal effects for each health system are reported, by estimating the rich specification of the base model, i.e. column (6) in Tables 4 and 5.

Table 6. OLS regression results on different reasons for no medical consultation

	Healthy	Not pay	Time-off work	Other committment
solo_selfempl	0.052*	0.075**	-0.073***	0.066*
	(0.03)	(0.03)	(0.02)	(0.04)
entrepreneur	0.053	-0.026	-0.062**	0.121
	(0.04)	(0.05)	(0.03)	(0.07)
country FE	Yes	Yes	Yes	Yes
time FE	Yes	Yes	Yes	Yes
personal control	Yes	Yes	Yes	Yes
sub. Health status	Yes	Yes	Yes	Yes
firm control	Yes	Yes	Yes	Yes
personality traits	Yes	Yes	Yes	Yes
N	2792	1552	1552	1552

Note: Robust standard errors are reported in parenthesis and clustered at the country level. *** significant at 1%, ** significant at 5% and * significant at 1%. Marginal effects in columns (1) - (4) are from a probit model specification. *Healthy* is a dummy equal to one for those respondents who declare not to find difficulties in access healthcare, but they actually did not get a medical consultation because they did not need any treatment. *Not pay* is a dummy equal to one if the respondent declares that she/he has not been able to get a medical consultation because she/he can not pay and zero otherwise. *Time-off work* is a dummy equal to one if the respondent declares that she/he has not been able to get a medical consultation because she/he could not take time off work. *Other commitments* is a dummy equal to one if the respondent declares that she/he has not been able to get medical consultation because she/he has other commitments (a residual question).

APPENDIX

Table A1. Descriptive statistics by employment status

	employee	self-employed	entrepreneurs
female	0.48 (0.50)	0.36 (0.48)	0.25 (0.44)
married	0.59 (0.49)	0.64 (0.48)	0.76 (0.42)
partner work	0.53 (0.50)	0.54 (0.50)	0.63 (0.48)
pre-unemp. exp.	0.33 (0.47)	0.31 (0.46)	0.20 (0.40)
Place of residence:	100	100	100
big city	0.18 (0.38)	0.14 (0.35)	0.17 (0.37)
Suburbs	0.12 (0.33)	0.10 (0.30)	0.11 (0.32)
Small city	0.37 (0.48)	0.32 (0.46)	0.36 (0.48)
village	0.30 (0.46)	0.35 (0.49)	0.31 (0.46)
farm	0.03 (0.17)	0.09 (0.28)	0.05 (0.22)
Education:	100.00	100.00	100.00
college graduate	0.28 (0.45)	0.24 (0.42)	0.30 (0.46)
high school graduate	0.51 (0.50)	0.44 (0.50)	0.48 (0.50)
lower secondary and primary	0.21 (0.35)	0.32 (0.40)	0.22 (0.33)
Subjective health:			
good health	0.75 (0.49)	0.75 (0.48)	0.76 (0.47)
fair health	0.22 (0.41)	0.22 (0.41)	0.21 (0.41)
bad health	0.03 (0.14)	0.03 (0.12)	0.03 (0.12)
family size	3.07 (1.34)	3.29 (1.55)	3.31 (1.30)
age	41.57 (11.30)	44.27 (10.70)	45.64 (10.15)
Risky sectors (industry dummies):			
agriculture	0.02 (0.15)	0.21 (0.40)	0.08 (0.27)
mining	0.01 (0.7)	0.01 (0.05)	0.00 (0.05)
construction	0.06 (0.24)	0.11 (0.31)	0.16 (0.36)
Personality traits:			
be rich	0.13 (0.34)	0.16 (0.37)	0.19 (0.39)
be free	0.68 (0.46)	0.75 (0.43)	0.81 (0.40)
search new experience	0.43 (0.49)	0.47 (0.50)	0.48 (0.50)
risk aversion	0.17 (0.38)	0.21 (0.41)	0.22 (0.41)
be creative	0.55 (0.50)	0.65 (0.47)	0.69 (0.46)
N. obs.	28866	2665	1879

Note: Mean values are reported and standard deviations are given in parentheses. For the categorical conditions (place of residence, education, risky sectors and subjective health), percentages are given per category.

A2 – Technical details on the 2SLS Correction Selection model (Durbin and McFadden, 1984)

In the first stage we estimate a multinomial logit as follows:

$$Emplstatus_i = \delta_e X_{e_i} + \varepsilon_{e_i} \quad \text{(I)}$$

where $Emplstatus_i$ denotes an indicator variable describing the three possible occupational careers that each individual can choice (wage workers, self-employed or entrepreneur), X_{e_i} is a vector of individual and firm characteristics and ε_{e_i} reflects the error term. From this estimated equation, we recover a set of correction terms, similar to inverse Mills ratios, which are included as additional controls in the second stage (see the Appendix for technical details).

The correction terms are calculated according to the procedure described in Durbin and McFadden (1984) as follows:

$$E\left(\frac{\varepsilon_{e_i}}{Emplstatus_i}\right) = \sum_{j \neq i}^{m} \left(\frac{P_j \ln P_j}{1 - P_J} + \ln P_i\right) \quad \text{(II)}$$

where P_j denote the estimated probabilities for each alternative employment status in eq. (I). These terms account for the possible correlation in the unobservables related to health behavior and occupational choice.

The second stage equation on health care utilization becomes:

$$y_{ijct} = \alpha + \beta X_{ijct} + \gamma selfemp_{ijct} + \theta entrepr_{ijct} + \rho E\left(\frac{\varepsilon_{e_i}}{Emplstatus_i}\right) + \mu_j + \mu_c + \mu_t + \varepsilon_{ijct}$$

(III)

Equation (III) allows to formally test for the relevance of a selection bias. If the estimated parameters ρ are not jointly statistically different form zero, the potential correlation of the unobservables may be ignored. Otherwise, the 2-stage selection correction model provides an alternative way to gauge the unbiased estimates of the parameters of interest.

Table A2. First stage multinomial logit estimates on employment status

	Outcome: Self-employed worker		Outcome: Entrepreneur	
	Relative Risk Ratios	***Robust S.E.***	***Relative Risk Ratios***	***Robust S.E.***
female	0.727***	0.04	0.513***	0.04
age	1.130***	0.02	1.185***	0.02
age squared	0.999***	0.00	0.998***	0.00
lower secondary	0.828	0.14	0.94	0.18
high school	0.793	0.16	1.067	0.19
college	0.876	0.18	1.246	0.21
married	0.903	0.08	1.291**	0.14
household size	1.060**	0.03	1.116***	0.04
suburban	1.064	0.16	1.334***	0.13
smallcity	0.896	0.11	0.977	0.12
village	0.998	0.15	0.965	0.10
farm	1.364**	0.16	0.954	0.15
partner-work	1.037	0.07	1.236**	0.13
pre unemp. exp.	0.905	0.07	0.502***	0.04
citizen	0.988	0.15	1.068	0.22
fair sub. health	0.998	0.07	0.839**	0.07
bad sub. health	0.856	0.17	0.806	0.15
be creative	1.476***	0.10	1.525***	0.12
be rich	1.210*	0.12	1400***	0.14
search new experience	1.008	0.05	1.048	0.07
be free	1.541***	0.11	1638***	0.18
risky	1.134**	0.07	1194**	0.09
father selfempl status	1.478***	0.10	1975***	0.14
mother selfempl status	1523***	0.13	1201**	0.11
competition index*agriculture	1.742	1.40	0.399	0.22
competition index*mining	0.423	0.44	0.351	0.26
competition index*manufacture	0.667	0.53	0.364*	0.22
competition index*electricity	0.523	0.48	0.187***	0.11
competition index*construction	0.828	0.69	0.491	0.28
competition index*wholesale	1.061	0.86	0.432	0.24
competition index*accomodation	0.871	0.70	0.611	0.35
competition index*transportation	1.103	0.87	0.427	0.24
competition index*financial	1.313	1.11	0.286**	0.16
competition index*realestate	1.404	1.14	0.497	0.28
competition index*public	0.302	0.27	0.064***	0.05
competition index*education	0.318	0.25	0.066***	0.05
competition index*health	0.61	0.46	0.242**	0.14
competition index*private service	1.744	1.42	0.497	0.28
cons	0.001***	0.00	0.001***	0.00
Time FE	Yes		Yes	
Country FE	Yes		Yes	
Occupation FE	Yes		Yes	
Firm size dummies	Yes		Yes	
N	25287		25287	

Note: Robust standard errors clustered at the country level are reported in columns (2) and (4). *** significant at 1%, ** significant at 5% and * significant at 10%. Relative risk ratios reported in columns (1) and (3) are relative to the probability of being respectively a self-employed workers or an entrepreneur. Base category: employee.