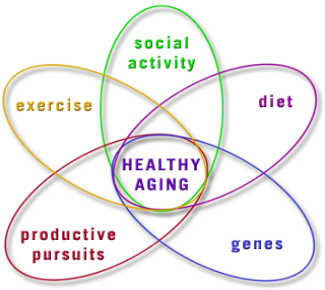

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Job insecurity, Employability and Psychological distress in Europe

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Abstract

This paper investigates the effect of perceived job insecurity and employability on a number of psychological distress indicators, using cross-country data from the 2010 European Working Conditions Survey on a sample of 15 countries. Job insecurity and employability refer respectively to fear of job loss and perceived difficulty in finding an equivalent job in the event of dismissal, while mental distress is measured in terms of self-reported depression, insomnia and a validated index of psychological wellbeing (WHO-5). Results suggest that both job insecurity and bad prospects of re-employability are associated with a notable increase in the probability of experiencing psychological distress, and that the stress response associated with job insecurity can be exacerbated by the added effect of low perceived employment security. Conversely, a partial moderating role between the fear of job loss and psychological distress is found for good prospects of employability. Results are not altered when taking account of selection issues and are robust to a number of sensitivity checks. Finally, the paper discusses whether differences in contextual factors at the macro level translate into cross-country differences in the relationship between precariousness and mental distress.

JEL classification: J21, J24, J63, I10

Keywords: Job insecurity, Employability, Psychological Distress

1 Introduction

The unprecedented surge in the proportion of workers under precarious employment of the last two decades as well as the rise in the average unemployment rate that followed the great recession, have drawn the attention of both researchers and policy makers on the problem of job insecurity. Increasing competition, technological and organizational changes and the deregulation of labor markets have indeed called many companies worldwide to increase the use of flexible employment as a buffer of adjustment, thus imposing non-negligible costs on employees in terms of reduced protection in case of termination of the employment relationship. At the same time, the rise of unemployment led also those who are employed with regular contracts to experience job insecurity.

From a contractual perspective, a large body of literature on the economic and social outcomes of precarious employment finds that temporary contracts are often associated with poor job quality, both in terms of lower earnings and high job strain (Bohle et al., 2004; Booth et al., 2002; Kompier et al., 2009; OECD, 2014), as well as with a lower level of job satisfaction (Bardasi and Francesconi, 2004; Bruno et al., 2014). Moreover, it has been shown that an unfavorable psychosocial work environment, bad working conditions and high job strain are associated with adverse health conditions (Cottini and Lucifora, 2013; D'Souza et al., 2003). As these stressors are exacerbated in temporary employment arrangements, insecure workers might be exposed to a higher risk of psychological distress.

However, empirical evidence has failed to establish a conclusive link between contract type and psychological outcomes, and suggests that, once accounted for working conditions, being employed under fixed-term contractual arrangements *per se* does not necessarily lead to worse health outcomes or lower wellbeing (Guest and Clinton, 2006; Robone et al., 2011; Rodriguez, 2002).

On the contrary, a key factor in explaining the adverse health conditions associated with precariousness is the individual perception of job insecurity (Caroli and Godard, 2016; Ferrie, 2001; Ferrie et al., 1998). Such internal feeling, although notably different from actual job loss or unemployment in terms of economic outcomes, might lead to significant welfare losses among affected workers, as well as to the onset of unpleasant stress responses.

A number of psychological and epidemiological studies show that widespread precariousness, measured as the fear of losing one's job, is often associated with mental distress (Bohle et al., 2001; Nieuwenhuijsen et al., 2010) and lower job satisfaction, with the latter effect being more pronounced for permanent workers than for temporaries (De Cuyper and

De Witte, 2006). In explaining such detrimental effect of insecurity for permanent workers, traditional psychological theories have focused on the subjective nature of perceived insecurity, suggesting that it represents a violation of employees' expectations concerning their obligations and entitlements (*psychological contract* theory).

At the same time, perceived precariousness is likely to reflect also general economic conditions, both at the country level as well as at the firm or sector level, and institutional-structural features of national labor markets.

On the one hand, workers employed in ailing firms or sectors might be more likely to experience job insecurity, as well as countries with higher unemployment rates are shown to be associated with a higher incidence of job instability (Böckerman, 2004; Erlinghagen, 2008).

On the other hand, empirical economic literature has established a significant correlation between job security and job protection, measured as stringency of Employment Protection Legislation (EPL) and generosity of Unemployment Benefits (UB) (Böckerman, 2004; Clark and Postel-Vinay, 2009; OECD, 1997). Moreover, extending the definition of job insecurity to include also uncertainty regarding future employment, recent studies on Australia, Germany and Denmark find that the onset of psychological distress associated with insecurity could be exacerbated or mitigated by low or high re-employability, suggesting that labor market as well as organizational policies aimed at improving workers' employment opportunities could have a beneficial effect on health and wellbeing outcomes (Cottini and Ghinetti, 2016; Green, 2011; Otterbach and Sousa-Poza, 2016).

Using cross-sectional survey data from the European Working Conditions Survey (2010) for 15 European countries, the aim of the present study is to provide new evidence on the psychological consequences of perceived job and employment insecurity, as well as to investigate the possible moderating role of employability between job insecurity and mental distress.

The contribution of this paper to the literature is twofold. First, it contributes to the relatively scarce literature available on the joint effect of job *and* employment insecurity on psychological outcomes. As a matter of fact, despite the relationship between job insecurity and health outcomes has been largely investigated, only a few studies enlarge the definition of insecurity to include uncertainty with respect to employment prospects (Cottini and Ghinetti, 2016; Green, 2011; Otterbach and Sousa-Poza, 2016).

Second, unlike existing contributions that focus on a single country, the present study provides cross-country evidence on the topic, and it discusses the role of contextual factors at the macro level in shaping the relationship between precariousness and psychological distress. In other words, given the established correlation between job security at the micro level and country-specific institutional and structural characteristics, I ask whether different welfare regimes also present differential stress responses to precariousness. To this end, I identify four country clusters, grouped according to commonly shared labor market and structural characteristics, and investigate cross-country variation in psychological distress outcomes.

The paper is structured as follows. Section 2 provides a review of the main contributions on the broad topic of health effects of employment insecurity. In Sections 3 and 4 I present the empirical strategy and describe the data and the variables used in the analysis. Sections 5 and 6 report the core results as well as a number of robustness tests. In Section 7 I discuss the role of country-specific structural or institutional factors in the relationship between precariousness and mental distress. Overall conclusions are then presented in Section 8.

2 The health consequences of precariousness

As increasing precariousness unarguably represents one of the most important trends of the last decades, a large body of literature in economics, epidemiology and occupational psychology has been devoted to the investigation of its effects on a number of economic, social and health outcomes.

A relevant portion of existing literature has focused on the unintended health consequences of atypical forms of employment. While non-standard employment certainly provides firms with the needed flexibility to cope with uncertain and fixed-term activity, it also deprives workers of the economic stability that is essential for the long-run decision-making process. In a meta-analytic review by Virtanen et al. (2005) an overall positive correlation is found between instability associated with temporary employment and psychological morbidity. Other studies by Martens et al. (1999), Benavides et al. (2000) and Benach et al. (2000) find that temporary workers report higher somatic complaints, less wellbeing and increased stress. Moreover, Bender and Theodossiou (2015), using survival analysis on a longitudinal sample of the BHPS, show that the longer is the amount of time

spent in precarious employment, the higher the likelihood of reporting ill health.

However, in spite of these conclusions, there are also many studies reporting null or opposite findings. Longitudinal and cross-sectional studies on Britain do not find any statistically significant correlation between fixed-term appointments and general physical health or psychological wellbeing (Bardasi and Francesconi, 2004; Robone et al., 2011; Rodriguez, 2002), while an interesting paper by Guest and Clinton (2006) finds that temporary workers, as compared to permanent workers, present better outcomes in terms of wellbeing, attitudes and behaviors. Finally, Silla et al. (2005) suggest that a partial explanation for such contradictory results may be found in the heterogeneity of fixed-term employment under several aspects. Looking at the health effects of precarious employment on four different groups of atypical workers, that differ according to preferences for temporary contracts and employability, they show that flexible workers with low preference for temporary contracts and low skills present significantly lower life satisfaction and wellbeing as compared to any other type of worker, while the rest of the temporaries report higher wellbeing with respect to permanent workers.

Although the available empirical evidence on the relationship between precarious work arrangements and mental health is far from being conclusive, the detrimental effects of precariousness are indeed well established once we move to consider perceptions of job insecurity (see Bohle et al. (2001), Sverke et al. (2002) and Ferrie (2001) for a review).

An interesting paper by Origo and Pagani (2009) shows that perceived insecurity is at least as relevant as the type of employment contract in driving employees' satisfaction, as temporary workers do not differ from permanent ones if employed in a secure job. Conversely, regardless of the type of contract, insecure workers are significantly less satisfied. The above findings lead the authors to conclude that flexicurity at the micro-level is a significant determinant of job satisfaction.

From a different perspective, De Cuyper and De Witte (2006) empirically validate the theoretical assumption made in psychological contract theory that the effect of job insecurity on job satisfaction is more problematic for permanent workers than it is for temporaries, as it represents a violation of the set of reciprocal expectations held by employees. Other studies on Finland and Denmark provide evidence of a strong negative impact of perceived job insecurity on job satisfaction (Böckerman et al., 2011), but also on self-rated health (Rugulies et al., 2008), particularly pronounced for middle-aged women

with poor labor market chances.

Empirical evidence of an increased risk of poor health for insecure workers is also found by Erlinghagen (2008), László et al. (2010) and Caroli and Godard (2016) for a number of European countries. In particular, Caroli and Godard (2016) provide causal evidence of a detrimental effect of insecurity on headaches, eyestrains, and skin problems for a sample of permanent workers from 22 European countries, while no evidence of a causal relationship between job insecurity and self-rated health. Erlinghagen (2008) and László et al. (2010), using respectively multi-level and meta-analysis, find an overall damaging effect of insecurity on health, while revealing significant cross-country differences driven by social-structural or institutional factors, but also by nation-specific unobserved characteristics.

While a large consensus on the detrimental effects of perceived job insecurity has been reached by economic and psychological literature, much less is known about the health consequences of employability or its role of moderator that possibly alleviate or aggravate the psychological distress associated with job insecurity.

As a matter of fact, only a limited number of contributions have addressed this issue. De Cuyper et al. (2008), using cross-sectional data from Belgium, find that employability can partly serve as a buffer for the potential negative consequences of job insecurity, but it is mainly found to be a means to secure individuals' job. On the other hand, recent studies by Green (2011) and Otterbach and Sousa-Poza (2016), carried out on longitudinal data from Australia and Germany respectively, suggest that the cost of job insecurity in terms of stress disorders is reduced by more than half for men with good prospects of re-employability, while it is especially exacerbated for women who are hardly re-employable. Moreover, an interesting work by Cottini and Ghinetti (2016) on Danish register data exploits within country variability in employment protection rules, uncovering heterogeneous effects of job and employment insecurity by tenure and occupation. The above findings thus suggest that stress responses to job insecurity may also depend on both organizational and institutional factors.

3 Empirical specification

As a first step in the empirical analysis, I estimate the effect of job insecurity and employment insecurity on psychological distress using an Ordinary Least Squares model of the

form:

$$PD_{ij} = \alpha + \beta_1 JobIns_{ij} + \beta_2 EmpIns_{ij} + X'_{ij}\gamma_1 + WC'_{ij}\gamma_2 + DCS'_{ij}\gamma_3 + c_j + \varepsilon_{ij} \quad (1)$$

where PD_{ij} are psychological distress outcomes (depression/anxiety, insomnia, and the WHO-5 validated scale of wellbeing) for individual i in country j. $JobIns_{ij}$ and $EmpIns_{ij}$ are two binary variables that represent, respectively, perceived job and employment insecurity. X_{ij} is a vector of demographics, job and firm characteristics.

As unfavorable psychosocial work environment, bad working conditions and high job strain are found to be associated with an increased risk of experiencing psychological disorders (Johnson and Hall, 1988; Kivimäki et al., 1997), and given the richness of EWCS dataset in terms of job characteristics, in my preferred specification I also include a set of variables that describe employees' working conditions (WC_{ij}) and a vector of controls measuring job strain (DCS_{ij}), adapted from the Demand-Control-Support model (De Jonge et al., 2000; Karasek, 1979). Finally, c_j are country fixed effects.

Beside studying the independent effects of job insecurity and employability on employees' wellbeing, the aim of the present work is to investigate whether these two dimensions of precariousness interact in some way. In other words, I ask whether the stress response associated with job insecurity can be exacerbated by the added effect of low perceived employment security, and, on the other hand, whether good prospects of employability can mitigate the detrimental effect of the fear of job loss on psychological outcomes. To do so, I classify employees according to their level of job and employment insecurity, defining four different types of workers - i.e. secure (insecure) workers with good (bad) prospects of re-employability -, and estimate the psychological stress response for each category as compared to secure workers with good prospects of re-employability. In practice, I estimate equation (1) substituting $JobIns_{ij}$ and $EmpIns_{ij}$ with the three dummy variables capturing the different combinations of insecurity and employability (secure/employable workers are the reference category)[1].

A number of additional estimates are then performed as a robustness test, using alter-

[1] As it is standard in the literature, to investigate the differential stress response between secure and insecure workers with different levels of employability I also estimate equation (1) as an interaction model for insecurity and bad prospects. The coefficients on the interaction terms always show the expected sign, but are never statistically significant, suggesting that there are no differences in psychological distress between secure and insecure workers with high employability and secure and insecure workers with bad prospects. However, I am interested in analyzing the moderating role of employability for insecure workers, that is supported by a positive and statistically significant difference in the estimated stress responses of insecure/unemployable workers and insecure/employable ones, but that is more easily observable using the model specification with worker types.

native measures of mental health, different definitions of worker types, different specifications as well as alternative estimation methods[2].

However, one threat to the identification of the effect of precariousness on psychological distress comes from potential endogeneity. As a matter of fact, endogeneity in this setting may arise either from omitted variable bias (some unobserved individual characteristics may simultaneously affect both mental distress and perceived precariousness) or from reverse causality (individuals experiencing mental distress are more prone to be offered and to accept more precarious jobs). In order to take potential endogeneity into account, I first include in the baseline specification a rich set of information on employees' working condition, work environment and job strain, so as to reduce the potential omitted variable bias associated with the fact that more precarious jobs are also likely to be characterized by bad working conditions and high job strain.

Second, I use a two-stage procedure to account for potential self-selection into type of jobs (Bourguignon et al., 2007; Dubin and McFadden, 1984). This procedure first estimates the probability of being a specific type of worker as a function of the original control variables and an additional identifying variable, that is assumed to affect the probability of being employed in a job characterized by a specific security/employability mix, without directly influencing mental distress. Given the multinomial nature of the endogenous variable, I estimate the first stage selection equation as a multinomial logit of the form

$$T_i = X'_{T_i}\alpha_T + \varepsilon_{T_i}$$

where T_i is a categorical variable capturing the four different worker types and X_{T_i} is the full set of covariates used in equation (1), plus the exclusion restriction.

Then, similarly to control function approaches, the predicted probabilities of the multinomial logit are used to construct a set of correction terms[3], that account for possible correlation between the unobservables of both the selection and outcome equations, and that are used as additional regressors in the second stage equation for mental distress.

The statistical significance of these correction terms in the second stage would suggest

[2]Given the binary nature of a number of psychological distress indicators, equation (1) on worker types is also estimated by means of probit models. Average marginal effects are reported in Table A6 in the Appendix.

[3]The set of correction terms are obtained as

$$corr_{T=i} = \sum_{j \neq i}^{m} \left(\frac{P_j ln P_j}{1 - P_j} + ln P_i \right)$$

that the error terms in the selection and outcome equations are correlated, so that endogeneity is actually a concern, but the two-stage procedure provides consistent estimates of the parameters of interest. Note that both the selection equation and the second stage equation include the full set of controls.

As already mentioned, the effect of precariousness on mental distress in this setting is identified with the use of an exclusion restriction added in the selection equation, beside relying on functional forms. Such identifying variable needs to be significantly correlated with precariousness, without directly influencing mental distress. To this end, I instrument the probability to be a specific type of worker using the LFS statistics on the incidence of temporary employment by country, gender, age classes and education[4], interacted with the 2008's Employment Protection Legislation Index in each country[5]. As a matter of fact, different regulations of employment protection, that are defined at the country level and have no direct influence over psychological outcomes of employees, are likely to induce an exogenous variation in the way the incidence of temporary employment affects perceived precariousness.

As a final step in the empirical investigation, I explore the role of institutional features of the labor market in shaping the subjective stress responses to perceived job and employment insecurity.

To this end, I exploit the cross-country nature of the EWCS database. In particular, I group EU15 into four clusters, classified according to commonly shared labor market characteristics, and estimate the stress responses to precariousness separately for each cluster[6]. A discussion of the results is presented in section 7.

4 Data and descriptive statistics

4.1 Data and sample selection

In this study I use data from the fifth wave of the European Working Conditions Survey (EWCS), conducted in 2010 on a random sample of workers from 34 European countries.

[4]Data on the incidence of temporary employment can be found on the Eurostat website and refer to 2010's LFS statistics for each country. The share of temporary employees is expressed as a percentage of the total number of employees.

[5]I use 2008's EPL indexes because a number of reforms of EPL have been implemented in several countries in 2008-2009, and it is likely that employees need some time to be fully aware of the functioning of the new rules of employment protection. See Appendix for further details on the definition of EPL.

[6]To test the difference in the coefficients across country clusters I also estimate equation (1) on the pooled sample for each mental health outcome, adding interaction terms for each type of worker and country cluster (excl. category is secure-employable workers). Results - not shown - are consistent with the estimates from single-cluster samples.

EWCS is a unique source of data combining a large coverage of countries (34 countries including EU-28 plus Turkey, Norway, Macedonia, Albania, Kosovo and Montenegro), with detailed information on employees demographics, job attributes, working conditions as well as several aspects of health and wellbeing. As the present study is aimed at assessing psychological consequences of perceived job and employment insecurity, that might also reflect country-specific features of the labor market, I restrict the sample to the analysis of a relatively homogeneous set of countries, i.e. EU15 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom).

The original sample of workers interviewed in the fifth wave of EWCS is made up by almost 44,000 individuals, aged 15 or above, who did any paid work during the reference week. Beside restricting the sample to the analysis of individuals living in EU15 countries, I only focus on employees with a regular contract and aged 15 to 64, thus excluding all workers employed with fixed-term or atypical contracts, self-employed and all subjects who are either temporarily or permanently out of the labor force[7]. Moreover, employees working in non-business sectors[8] are excluded.

After dropping all observations with missing values in the variables of interest, the final sample consists of 10,998 employees.

4.2 Definition of the variables used

Health measures

As already mentioned, the EWCS data include a very rich information set on both health and wellbeing of workers. Since the purpose of the present study is to assess the relationship between precariousness and the onset of mental distress among workers, I'm going to focus my attention on three main "health" outcomes: depression or anxiety, insomnia and an index of psychological wellbeing.

Anxiety and insomnia are self-reported and measured through binary indicators taking value 1 if the respondent suffered from that condition over the preceding 12 months, 0 otherwise[9].

[7] Unemployed, retired, disabled or individuals with long-term illnesses, homemakers, workers in child-care leave or other leave and individuals in full-time education are thus excluded.

[8] Only workers belonging to NACE rev.2 sectors 10 to 96 are kept in the sample.

[9] These variables are drawn from a question asking respondents "Over the last 12 months, did you suffer from any of the following health problems?". The original framing of the two symptoms is "depression or anxiety" and "Insomnia or general sleep difficulties".

Psychological wellbeing is assessed through the WHO-5 index, conventionally used in epidemiological and medical literature (Ardito et al., 2013; Blom et al., 2012). This validated index has been specifically designed for the monitoring of depressive symptoms, and has been shown to have the highest content validity, compared to other scales with a much larger number of items - such as the 22-item Psychological General wellbeing Index, the SF-36 or the 100- item World Health Organization Quality of Life Scale (Hall et al., 2011).

The WHO-5 is drawn from a question asking respondents how often, in the preceding two weeks, they experienced the following feelings: "I have felt cheerful and in good spirits", "I have felt calm and relaxed", "I have felt active and vigorous", "I woke up feeling fresh and rested" and "My daily life has been filled with things that interest me". Each item is measured on a six-point Likert scale ranging from "at no time" to "all of the time". The WHO-5 index is obtained by summing up all items (Cronbach's alpha = 0.86) and is then normalized to assume values from 0 to 100.

Finally, in the sensitivity analysis I also rely on two alternative measures of mental health: a binary variable taking value 1 for individuals with a WHO-5 below 50[10], and an overall index of psychological distress taking value one if the respondent suffered from at least one of the conditions listed above (depression/anxiety, insomnia and WHO-5 below 50).

Job insecurity and employability

The measures of perceived job insecurity and employability used in the empirical analysis are drawn from the same set of questions, available in the 2010 questionnaire, that ask individuals to rate their level of agreement with a number of statements. Each item is measured through a 5-point scale, ranging from "strongly disagree" to "strongly agree". In particular, the measure of job insecurity is related to the perceived likelihood of losing the current job, while employment prospects are proxied with the relative difficulty in finding an equivalent position in the event of dismissal or job termination[11]. In the empirical estimation of equation (1), I will use a binary recode of the original categorical variables, where job insecure (employment insecure) workers are those who strongly agree or agree (strongly disagree or disagree) with the relative statement. Then, in order to estimate

[10] A score lower than 48-50 is conventionally indicating possible depression.

[11] The exact wording of the question is: "How much do you agree or disagree with the following statements describing some aspects of your job?"; the statements about job insecurity and employability are, respectively, "I might lose my job in the next 6 months" and "If I were to lose or quit my current job, it would be easy for me to find a job of similar salary".

the differential stress responses to alternative combinations of security and employability, I define four different types of workers, according to their level of job and employment insecurity: *Secure - good prospects*, *Secure - bad prospects*, *Insecure - good prospects* and *Insecure - bad prospects*[12].

Control Variables

In the empirical analysis I include a large set of controls, capturing individual, job and firm characteristics, as well as working conditions, work environment and job strain[13].

Demographic characteristics include age (4 classes), gender, education (primary/lower-secondary, secondary/upper-secondary and tertiary), a binary indicator for having a partner and one for having at least one child. Job characteristics are captured by industry (from 2-digit NACE) and occupational dummies (4 categories recoding 2-digit ISCO-88 into high/low-skilled white collars and high/low-skilled blue collars[14]), a binary indicator for working long hours (more than 40 hours a week or more than 10 hours a day at least once a month) and for having experienced unemployment immediately before the current job[15]. The EWCS also contains information on net monthly earnings from the main paid job of the respondents. However, given the relatively low response rate on this specific item (around 73%) and its scarce reliability, I use a measure of deprivation drawn from a question that asks respondents to state their household's ability to make ends meet. I construct a binary indicator that takes value 1 if the household is able to make ends meet with difficulty or great difficulty, and 0 otherwise.

As for workplace characteristics, I include among the regressors dummies for working in the public sector, for the presence of an employee representative at the workplace and for firm size (4 categories).

Finally, I exploit the richness of EWCS in terms of information on job and workplace attributes to build a number of indexes capturing several dimensions of working conditions, work environment and job strain. First, I use an indicator for bad working conditions taking value 0 to 10, built as the normalized sum of 12 items regarding physical hazards [16]. As for work environment, I include three binary indicators: the first takes value

[12]Estimates with different definitions of worker types produce fairly similar results (see Table A4 in the Appendix).

[13]See Table A1 in the Appendix for a detailed description of the variables used.

[14]`www.eurofound.europa.eu/surveys/ewcs/2005/classification.htm`

[15]The original framing of the question is "Immediately before this job, in your main activity were you?".

[16]Items include exposure to chemicals, vibrations, noise, high or low temperatures, smoke and vapors inhalation, as well as a set of ergonomic risk factors such as experiencing repetitive movements, tiring or painful positions, carrying heavy weights or standing.

one if the respondent has been subject to unwanted sexual attention, physical violence, bullying or verbal abuse over the preceding 12 months; the second is related to episodes of discrimination (on the basis of gender, age, race or nationality, disability, religion or sexual orientation), while the third captures work-life balance. Since job strain is likely to play a relevant role in shaping the relationship between precariousness and mental distress, I also construct three $[0, 10]$ indexes adapted from the Job Demand-Control-Support model (Johnson and Hall, 1988; Karasek, 1979). Such indexes are then dichotomized at the median, resulting in three negatively expressed binary variables. The "demand" side is measured through the normalized sum of 4 items mainly capturing pace of work[17]. The indicator for job control is obtained combining 10 items regarding skill discretion and decision autonomy[18], while support is identified through 4 items (each measured through a 5-point scale) about receiving support from colleagues and from the manager, feeling at home in the organization as well as having good friends at work.

4.3 Descriptive statistics

Table A1 in the Appendix and Figure 1 and 2 provide some descriptive statistics on the sample and the variables used in the empirical analysis. Around 10 per cent of respondents suffered from depression or anxiety, and over 22 per cent experienced sleep disorders in the preceding 12 months. The average score of the WHO-5 index for the sample as a whole is 67.5, while the share of depressed individuals - i.e. with a WHO-5 index below 50 - is around 17 per cent.

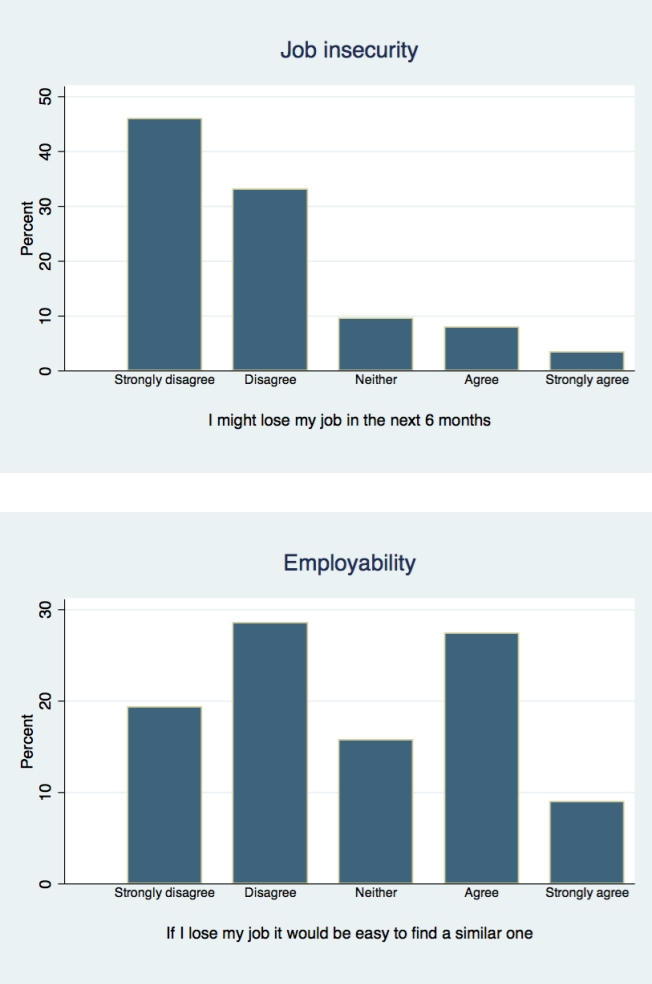
As it is show in Figure 1, the incidence of job insecurity is much lower as compared to employment insecurity. Insecure workers account for 11.5 per cent of the sample (8% of respondents agrees with the statement about losing the current job in 6 months, 3% strongly agrees), while almost 50 per cent of employees reports bad prospects of re-employability. Looking at the distribution across possible answers, job insecurity shows a peak of 45 per cent of respondents who strongly disagree with the statement, a decreasing pattern, and very few indecisive answers (less than 10%). Conversely, employees give less clear-cut

[17] The first two items relate to questions asking individuals to assess the frequency with which their job involves working at very high speed and to tight deadlines, answers are on a 7-point scale from "never" to "all of the time"; one item regards having enough time to get the job done, and it is coded on a 5-point scale, ranging from "never" to "always"; the last is drawn from the question "Over the last 12 months how often has it happened to you that you have worked in your free time in order to meet work demands?", where answers can go from "never" to "nearly every day", on a 5-point scale.

[18] Each item is a dummy taking value 1 if the job involves: self-assessing the quality of work, solving unforeseen problems, learning new things, choosing methods of work, the order of tasks and pace of work, improving the work organization, being able to apply one's own ideas or influence decisions that are important for one's own work and being consulted before targets are set.

answers regarding the likelihood of finding an equivalent job in the event of dismissal or job termination. The share of respondents who agree or disagree is almost identical (respectively 27% and 28.5%); a significantly lower share strongly disagrees (19%) or strongly agrees (9%), while over 15 per cent of employees neither agrees nor disagrees. Nevertheless, the higher incidence of employment insecure workers with respect to job insecure is consistent with a sample of middle-age employees (almost 60% of the sample is 36 to 55 years old), with a permanent contract, employed in high-skilled white-collar occupations (42%) and with secondary or upper secondary education (39%).

Figure 1 Distribution of job insecurity and employability

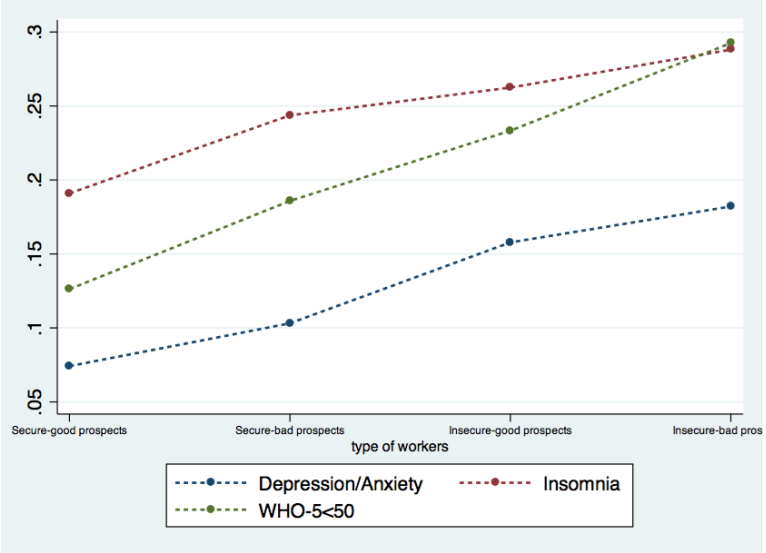


As for worker types (lines 8 to 11 of Table A1), the majority of employees report to be in a secure job with good prospects of re-employability (46%), but a relevant portion of secure worker is concerned about employment prospects (43.5%). Conversely, the share of insecure workers that can rely on good re-employability is significantly lower (around

4.5%), and respondents who are both job and employment insecure account for 6% of the total sample.

Finally, Figure 2 presents the distribution of psychological distress across worker types. Mental distress appears to be increasing with precariousness, with an incidence between 6 and 20 per cent among secure and highly employable workers, while 18 to 29 per cent for insecure workers with poor labor market chances. Also, the largest gap between secure and insecure workers is found for self-assessed depression.

Figure 2 Distribution of psychological distress outcomes across type of workers



5 Results

Table 1 reports the coefficients of job insecurity and employment insecurity on each mental health outcome, estimated with different specifications of equation (1). Columns 1 refers to the baseline specification that only includes controls for demographics, job and firm characteristics, as well as country fixed effect. In column 2 I add controls for working conditions and work environment. Finally, columns 3 reports the coefficients of job and employment insecurity estimated using the full set of controls presented in equation (1).

Both job and employment insecurity are associated with a significant increase in the probability of experiencing anxiety and sleep disorders, and are negatively correlated with the WHO-5 validated scale of psychological well-being. Whatever the measure of mental distress, results are robust to the inclusions of controls for working conditions, work environment and job strain.

Estimates on the full specification (column 3) indicate that precariousness, measured either by job or employment insecurity, raises the probability of suffering from sleep disorders by roughly 5 percentage points, while its effect on self-assessed depression or anxiety is smaller in magnitude (3-4%). As for psychological well-being, employees with feelings of job or employment insecurity have a WHO-5 score that is 4 points lower with respect to secure workers.

Table 1 Coefficient of job and employment insecurity across psychological distress outcomes - different model specification

	Baseline	***Baseline + WC***	***Baseline + WC + DCS***
	Depression/anxiety		
Job Insecure	0.0744***	0.0443***	0.0396***
	(0.0164)	(0.0152)	(0.0151)
Employment Insecure	0.0374***	0.0348***	0.0329***
	(0.0082)	(0.0079)	(0.0078)
	Insomnia		
Job Insecure	0.0915***	0.0573***	0.0515***
	(0.0203)	(0.0195)	(0.0191)
Employment Insecure	0.0592***	0.0560***	0.0539***
	(0.0113)	(0.0110)	(0.0110)
	WHO-5		
Job Insecure	-6.762***	-5.146***	-4.391***
	(0.974)	(0.954)	(0.946)
Employment Insecure	-4.329***	-4.137***	-3.719***
	(0.560)	(0.547)	(0.536)
Demographics	✓	✓	✓
Country dummies	✓	✓	✓
Job and Firm characteristics	✓	✓	✓
Working Conditions		✓	✓
Psychosocial Factors			✓
N	10,998	10,998	10,998

Robust standard errors in parentheses. Significance: * p<.1, ** p<.05, *** p<.01.

The inclusion of the set of controls capturing bad working conditions and job strain only slightly reduces the estimated effect of job and employment insecurity, even though they have a significant impact on mental distress[19]. As a matter of fact, a one-unit difference

[19]Results for the full specification are reported in Table A2 in the Appendix.

in the 10-point scale capturing bad working conditions is associated with a 2 per cent higher probability of experiencing depression or insomnia, and it reduces psychological wellbeing, while being employed in a job that guarantees a good balance between work and life is beneficial for mental health. At the same time, being subject to physical or verbal harassment, or to any kind of discrimination, raises the incidence of mental health problems by 12-13 percentage points and it is associated with a drop in the WHO-5 scale by more than 4 points.

The estimated coefficients on the covariates capturing job strain are consistent with existing empirical evidence from psychological and epidemiological studies (D'Souza et al., 2003; Johnson and Hall, 1988; Karasek, 1979), which suggests that a stressful psychosocial work environment is significantly associated with the onset of stress disorders. High demands and a scarce social support are correlated with increased anxiety (3% to 5%) and sleep disorders (4% to 6%), as well as with a general worsening of psychological wellbeing. Conversely, for this sample of employees, having low control over tasks and decision-making processes only affects psychological wellbeing, with no statistically significant effect over anxiety or insomnia.

Looking at demographic characteristics, women are more likely to suffer from mental distress, as well as middle-age workers and employees with tertiary education. As one might expect, respondents whose household makes ends meet with difficulty are more incline to report episodes of anxiety, insomnia and are generally associated with a significantly lower score in the WHO-5 index of wellbeing. No significant differences are instead reported with respect to establishments size, or in public vs private sector.

In order to analyze how different combinations of job insecurity and employability affect workers' mental distress, as a second step in the empirical investigation, I estimate equation (1), for each mental health outcome, replacing $JobIns_{ij}$ and $EmpIns_{ij}$ with worker types. Results are reported in Table 2.

Estimates of the effect of precariousness on self-assessed depression (column 1) suggest that good prospects of re-employability can mitigate the onset of subjective stress responses to perceived job insecurity. As a matter of fact, insecure workers with high employability are not statistically different in terms of psychological outcomes from secure/employable workers, while employees who perceive to be at risk of dismissal and also hardly re-employable show a 8 per cent higher probability of reporting depression or

anxiety. On the other hand, even when they are confident about the stability of their job, workers who find it difficult to be employed in a new and equally paid position are more likely to suffer from anxiety or depression (3%).

Table 2 Psychological distress outcomes across type of workers by job insecurity and employability

	Depression/ Anxiety	***Insomnia***	***WHO-5***
Secure - bad prospects	0.0301***	0.0554***	-3.718***
	(0.00805)	(0.0115)	(0.560)
Insecure - good prospects	0.0250	0.0591**	-4.384***
	(0.0184)	(0.0255)	(1.348)
Insecure - bad prospects	0.0811***	0.101***	-8.115***
	(0.0223)	(0.0272)	(1.274)
Demographics	✓	✓	✓
Country dummies	✓	✓	✓
Job and Firm characteristics	✓	✓	✓
Working Conditions	✓	✓	✓
Psychosocial Factors	✓	✓	✓
R^2	0.125	0.117	0.164
N	10,998	10,998	10,998

Robust standard errors in parentheses. Significance: * p<.1, ** p<.05, *** p<.01. All results are obtained using the full set of controls as in columns 3 in Table 1.

Looking at columns 2 and 3, the estimated stress response for each type of worker is significantly larger as compared to the excluded category, and insecure/unemployable workers are associated with the worst outcome (10% more likely to suffer from insomnia and -8 points in the WHO-5 validated scale). Interestingly, the onset of psychological distress is not statistically different among secure workers with bad employability prospects and insecure workers with good prospects[20], suggesting that employment insecurity might be as harmful as job insecurity. Moreover, the difference between the estimated coefficient of insecure/unemployable workers is statistically different from that of insecure/employable ones, supporting the hypothesis of a moderating role of employability.

Overall, the above findings are consistent with existing empirical evidence on the detrimental effects of perceived precariousness on mental health (Caroli and Godard, 2016; Green, 2011; Otterbach and Sousa-Poza, 2016; Rugulies et al., 2008), and suggest that

[20]The F-test is not able to reject the null hypothesis of the equality of coefficients in both the equation for sleep disorders and the one on psychological wellbeing.

the onset of psychological distress is a consequence of both job insecurity and uncertainty with respect to re-employment opportunities. Moreover, the stress response associated with job insecurity can be exacerbated by the added effect of low perceived employment security, while a partial moderating role between the fear of job loss and mental distress is found for good prospects of employability.

6 Robustness checks

In order to test the robustness of the above findings, I perform a number of sensitivity checks. In particular, I experiment several changes with respect to the dependent variable, the definition of precariousness and worker types, as well as alternative specifications, and subsection 6.1 addresses selectivity issues[21].

As a first check, I estimate equation (1) for worker types on a more specific definition of psychological distress, using a binary variable that takes value 1 if the respondent's WHO-5 score is strictly below 50, as this threshold conventionally indicates possible depression[22].

Second, I rely on a general index of psychological distress (*PD index*), built as a dummy for having experienced at least one of the stress responses considered in the analysis - i.e. self-assessed depression/anxiety, sleep disorders and *validated* depression, measured by a WHO-5 scale below 50. Results, presented in Table A3 of the Appendix, show that the sign and statistical significance of the coefficients of each worker type are not altered when alternative measures of psychological distress are used. In particular, insecure workers with poor labor market chances are always associated with the worst outcome (14% more likely to be depressed and 18% to develop some kind of stress response), while high employability is able to reduce the negative effect of job insecurity. Given the robustness of the main findings to the use of a general index of psychological distress, in what follows I will rely on the latter as the main dependent variable.

Another concern has to do with the definition of job and employment insecurity, as well as of worker types. As already discussed, the original categorical variables capturing job and employment insecurity are defined on a 5-point scale, ranging from "strongly disagree" to "strongly agree", with a central value associated with an indecisive statement (neither agree nor disagree). In the empirical analysis presented so far I have defined job insecure

[21] All robustness checks are performed on my preferred specification that includes the full set of controls (as in column 3 of Table 1).

[22] Estimates with a threshold of 48 produce virtually unchanged results.

(employment insecure) workers as those who strongly agree or agree (strongly disagree or disagree) with the relative statement, thus including indecisive respondents among secure workers. In columns 1 and 2 of Table A4 in the Appendix I report estimates of equation (1) on the overall index of psychological distress, using two alternative definitions of worker types: the first one considers as job (employment) insecure workers also respondents who gave indecisive answers; the second definition is narrower and it is obtained excluding all indecisive answers from the sample. Overall, the sign and significance of the coefficients are consistent with what previously found (column 2 of Table A3), suggesting that changing the definition of worker types does not alter the estimated stress response to different combinations of job and employment insecurity. Moreover, in column 3, I rely on the original categorical variables to build a general indicator of precariousness, measured as the ratio between job insecurity and employability, where a higher ratio denotes higher overall precariousness (either high insecurity and/or low employability). Estimates from this exercise show a 6 per cent higher probability of experiencing mental distress associated with increasing precariousness.

Finally, the available measures of job and employment insecurity are likely to reflect country, firm or sector-specific cyclical effects. In order to disentangle the effect of precariousness from cyclical effects, I add 2010's regional unemployment rate[23] as a covariate in my preferred specification. Results are unaffected by the inclusion of the additional control for unemployment rate, that have a coefficient of 0.003, which is not statistically different from zero.

6.1 Selection

As already discussed, one threat to the identification of the effect of precariousness on psychological distress may come from potential endogeneity. As a matter of fact, if some unobservable individual characteristics are correlated both with mental distress and perceived insecurity, or if stressed individuals self-select into precarious jobs, then Ordinary Least Squares are likely to provide biased estimates of the stress response to precariousness.

In order to solve this problem I implement a two-stage procedure, where the first stage estimates the probability of being a specific type of worker by means of a multinomial logit; then, in the second stage, predicted probabilities obtained from the multinomial

[23]Data on unemployment rate at the NUTS 2 regional level can be found on Eurostat website and refer to LFS statistics for each country.

logit are used to retrieve a set of correction terms that are added to the outcome equation. This procedure, beside relying on the functional form to achieve identification, makes use of exclusion restrictions, added to the first stage multinomial logit. In particular, I instrument the probability of being a specific worker type with the incidence of temporary employment by country, gender, age classes and education, interacted with Employment Protection Legislation in the country of residence.

Table 3 below and Table A5 of the Appendix report results for the second stage and for the selection equation, respectively.

Overall, results from the two-stage selection bias correction method are in line with OLS estimates of the effect of different combination of job and employment insecurity on psychological distress. Moreover, as it is shown in Table 3, the estimated correction terms in the outcome equation are never statistically significant, suggesting that the error terms in the selection and outcome equations are not correlated and that selectivity should not be a concern in this setting.

Table 3 Two-stage selection bias correction method [a]

	PD index
Secure - bad prospects	0.0682***
	(0.00930)
Insecure - good prospects	0.0628***
	(0.0195)
Insecure - bad prospects	0.128***
	(0.0193)
*corr*_(T=secure-bad pros.)	-0.193
	(0.182)
*corr*_(T=insecure-good pros.)	0.103
	(0.143)
*corr*_(T=insecure-bad pros.)	0.0679
	(0.0600)
Wald χ^2	2235.81
R^2	0.130
N	10,998

Bootstrapped standard errors (1000 replications).Significance: * p<.1, ** p<.05, *** p<.01. All results are obtained using the full set of controls.

[a] See Bourguignon et al. (2007); Dubin and McFadden (1984)

Finally, estimates for the selection equation (Table A5) show a negative correlation between the excluded instrument and precariousness. A larger value on the interaction between the share of temporary employment and EPL is associated with a lower probability of being either secure/unemployable or insecure/unemployable, as compared to secure and highly employable workers (the excluded category), suggesting that stronger employment protection might reduce precariousness where temporary employment is more diffused.

7 Discussion

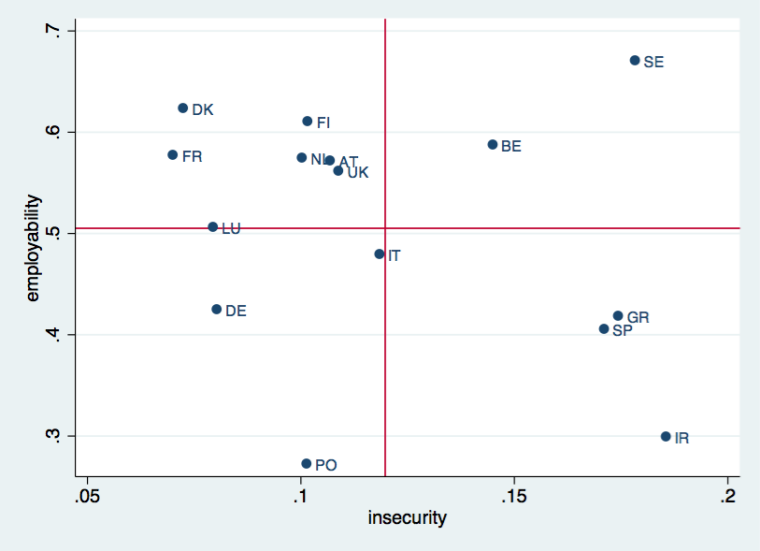
So far the present study has provided microeconomic evidence of a negative impact of perceived job and employment insecurity on psychological distress and overall wellbeing of workers, for a sample of 15 European countries. However, EU15 are likely to hide substantial heterogeneity with respect to job insecurity and employability, that in turn are likely to reflect country-specific differences regarding employment flexibility and social security, as well as structural characteristics.

As a matter of fact, recent empirical evidence has uncovered a significant correlation between perceived precariousness and contextual factors at the macro level. Countries with higher unemployment rates are shown to be associated with a higher incidence of job insecurity (Böckerman, 2004), as well as countries with lower unemployment benefit replacement rates (Clark and Postel-Vinay, 2009; OECD, 1997). Conversely, extending the definition of work security to include also employability, the relationship between the latter and job protection - measured as strictness of Employment Protection Legislation - is less straightforward: while strictness of EPL increases job security by reducing the probability of job loss, it also imposes higher costs in terms of re-entry rates, so that the overall effect is not clear *a priori* and empirical evidence is mixed (Clark and Postel-Vinay, 2009; OECD, 1997).

Figure 3 below presents a scatterplot of the share of job insecurity and employability across the 15 European countries under consideration, with red lines representing averages for the pooled sample. Overall, Figure 3 suggests that countries that share the same structural and institutional features also present common patterns in the distribution of perceived job insecurity and employability. A high incidence of both job and employment insecurity (lower-right quadrant) is found in countries that are typically characterized by low work security and high unemployment rates - i.e. Southern countries and Ireland. Conversely, Nordic and Continental countries tend to be concentrated in the upper-right

quadrant, with the majority of countries' scatterpoints above (below) the average in terms of employability (insecurity). Moreover, the distribution of countries with respect to job insecurity seems to reflect, at least in part, the rate of unemployment, as countries with a share of insecure workers above the average also recorded high unemployment rates in 2010 (ranging from 8.6% for Sweden to almost 20% for Spain).

Figure 3 Perceived job insecurity and employability across countries



From a theoretical perspective, social-structural characteristics and different combinations of the common policies used to protect workers against labor market fluctuations - strictness of EPL, generosity of UB and Active Labor Market Policies (ALMP) - , have been used to define general classifications of stylized welfare regimes (Esping-Andersen, 1990; Goodin, 1999; Muffels and Luijkx, 2008), that differ in their employment and social security priorities.

In what follows, to explore whether differences in contextual factors at the macro level translate into cross-country differences in the relationship between precariousness and mental distress, I adopt the following classification of welfare regimes: Nordic (DK, SE, FI, NL), Continental (AT, BE, DE, LU, FR), Southern (GR, IT, SP, PO) and Anglo-Saxon (IRL, UK). Nordic welfare regimes are typically associated with the *flexicurity* model, characterized by high levels of both flexibility (low employment protection) and work security (active labor market policies, generous unemployment benefits and low exit-rates). Significant work security is also provided in Continental countries, that, on the other hand, are characterized by relatively strong employment protection and low flexibil-

ity. Ireland and the United Kingdom are clustered together as Anglo-Saxon countries, and are usually associated with liberal welfare regimes, characterized by strong flexibility and low work security. Nevertheless, Ireland is hardly classifiable under one specific cluster as it shares a number of features with different welfare regimes. Finally, Southern countries share a strong employment protection and relatively low work security, with segmented labor markets and high unemployment rates.

In order to investigate country clusters' heterogeneity in the stress responses to precariousness, I estimate equation (1) separately on each cluster. The estimated coefficients of each worker type on the overall index of psychological distress are reported in Table 4.

Despite country differences in the distribution of job and employment insecurity and in labor market characteristics, precariousness always presents a positive and statistically significant correlation with increased psychological distress. As a matter of fact, insecure workers with poor labor market chances present a 8 to 25 per cent higher probability of reporting at least one stress disorder as compared to secure/employable ones. Moreover, regardless of the perceived stability of their job, employees who perceive themselves as hardly re-employable present a higher incidence of psychological distress, confirming that employment insecurity is at least as harmful as job insecurity.

Table 4 Psychological distress and type of workers - country clusters

	PD index			
	Nordic	***Continental***	***Southern***	***Anglo-Saxon***
Secure - bad prospects	0.0933***	0.0987***	0.0374	0.0740**
	(0.0259)	(0.0196)	(0.0298)	(0.0366)
Insecure - good prospects	-0.0173	0.0820*	-0.0755	0.261***
	(0.0433)	(0.0459)	(0.0511)	(0.0817)
Insecure - bad prospects	0.0830*	0.184***	0.133**	0.247***
	(0.0459)	(0.0473)	(0.0568)	(0.0684)
R^2	0.137	0.150	0.187	0.224
N	2,445	5,707	1,716	1,130

Robust standard errors in parentheses. Significance: * p<.1, ** p<.05, *** p<.01. All results are obtained using the full set of controls.

At the same time, results by country clusters provide support to the interpretation of employability as a moderating factor between job insecurity and the onset of stress disorders. The estimated stress response for insecure workers with good prospects of re-employability

is not statistically different from that of secure/employable workers in Nordic and Southern countries, while the coefficient on Continental countries is positive but weakly significant.

In this respect, the overall stress response for this type of workers estimated on the pooled sample (Table A3 in the Appendix) seems to be mainly driven by Anglo-Saxon workers, who are 26 per cent more likely than secure/employable ones to suffer from mental distress. Although the magnitude of this coefficient is likely to be the result of small sample biases, as it is only attributable to UK, a possible explanation may come from institutional aspects. As a matter of fact, UK is characterized by high job mobility (Muffels and Luijkx, 2008) and poor UB (lowest replacement rate and duration of unemployment benefits among the 27 EU member States[24]). Such institutional settings might exacerbate the stress response associated with job insecurity, even for workers that are highly re-employable.

Finally, it is interesting to note that in Nordic welfare regimes bad prospects of re-employability seems to be the main driver of psychological distress. This result could be partly explained by stringent conditions on active job search required to the unemployed to receive unemployment benefits, that might impose additional stress on hardly re-employable workers.

Overall, results by country clusters show that perceived precariousness is always associated with an increased risk of mental disorders, suggesting that even well-developed welfare states, with a good balance between labor flexibility and work security, are not necessarily able to eliminate the detrimental effect of work-related insecurity. However, this exploratory analysis uncovers some degree of heterogeneity across welfare regimes in the relationship between psychological distress outcomes and different combinations of job and employment insecurity, that, at a certain extent, could be accounted for by institutional features.

8 Conclusions

The analysis of job insecurity and its consequences on health and psychological wellbeing of employees has received much attention in the last few decades, particularly in the light of the increasing deregulation of labor markets and the recent economic crisis. A large number of studies have provided empirical evidence of a significant detrimental effect of job

[24]See Esser et al. (2013)

insecurity on employees' satisfaction as well as on their physical and mental health. At the same time, empirical economic literature has established a notable correlation between job security and institutional-structural features of national labor markets. Moreover, recent studies on Australia and Germany suggest that the consequences of job insecurity also depend on factors, both at the organizational and institutional level, that moderate or exacerbate such detrimental effect. In particular, stress responses to insecurity have been shown to vary with perceived labor market chances of affected workers.

Motivated by these findings, the present study uses cross-sectional data from the 2010 European Working Conditions Surveys for 15 European countries to provide new evidence on the psychological consequences of perceived job *and* employment insecurity, as well as to explore the possible interactions between these two measures of precariousness. Three main findings emerge from the empirical analysis.

First, both job insecurity and bad prospects of re-employability are associated with a notable increase in the probability of experiencing psychological distress, measured by three different indicators.

Second, results on the psychological outcomes of different type of workers, defined according to their security/employability mix, show that the stress response associated with job insecurity can be exacerbated by the added effect of low perceived employment security.

Third, evidence in support of a partial moderating role between the fear of job loss and psychological distress is found for good prospects of employability, especially with respect to self-assessed depression or anxiety.

The above findings are robust to several changes with respect to the dependent variable, the definition of precariousness and worker types, as well as to the use of alternative specifications and estimation methods. Moreover, after modeling for selection issues, I find some support for a causal interpretation of the results.

Finally, given the cross-country dimension of the EWCS dataset, the paper also investigates whether differences in contextual factors at the macro level translate into cross-country differences in the relationship between precariousness and mental distress. In order to explore this hypothesis, the 15 European countries under consideration are classified into four clusters, on the ground of their social-structural and institutional characteristics.

Results by country clusters uncover some degree of heterogeneity across welfare regimes in the relationship between psychological distress outcomes and different combinations of

job and employment insecurity, that, at a certain extent, could be accounted for by institutional features. However, perceived precariousness is associated with an increased risk of mental disorders even in welfare regimes that perform best in terms of labor market flexibility and that also provide high work security - i.e. Nordic and Continental -, suggesting that even well-developed welfare regimes are not entirely able to eliminate the detrimental effect of work-related insecurity.

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9 Appendix

Employment Protection Legislation

EPL indexes refer to OECD summary indicators of Employment Protection Legislation in 2008, measuring the procedures and costs involved in dismissing individuals (www.oecd.org/employment/EPI In particular, the chosen indicator measures the strictness of employment protection against individual and collective dismissals for workers with a regular contract, and it is the weighted sum of 13 detailed data items concerning the regulations for individual dismissals (weight of 5/7) and additional provisions for collective dismissals (2/7).

Table A1 - Description and means of the variables used

Variable	*Description*	*Mean*	*Std. Dev.*
Depression/Anxiety	dummy= 1 if suffered from depression or anxiety (last 12months)	0.097	(0.296)
Insomnia	dummy= 1 if suffered from insomnia (last 12months)	0.223	(0.416)
WHO-5 index	[0-100]	67.538	(19.227)
WHO-5 below 50		0.167	(0.372)
PD index	dummy= 1 if suffered from at least one condition	0.339	(0.473)
Job insecure	dummy= 1 if respondent strongly agrees or agrees with statement	0.114	(0.318)
Employment insecure	dummy= 1 if respondent strongly disagrees or disagrees with statement	0.479	(0.50)
Secure - good prospects		0.456	0.498
Secure - bad prospects		0.435	0.496
Insecure - good prospects		0.045	0.207
Insecure - bad prospects		0.060	0.237
Demographics			
female	dummy= 1 if female	0.504	(0.5)
Age Groups:	dummies= 1 if in age group		
< 25		0.049	(0.216)
$25 - 35$		0.247	(0.431)
$36 - 55$		0.576	(0.494)
56+		0.128	(0.334)
partner	dummy= 1 if respondent has a partner/spouse	0.695	(0.461)
child	dummy= 1 if at least one child	0.517	(0.5)
Education			
primary/lower-secondary		0.255	(0.436)
secondary/upper-secondary		0.386	(0.487)
tertiary		0.359	(0.48)
Job and workplace characteristics			
Occupation ISCO-88			
High skilled white collars (ISCO 1, 2 and 3)		0.421	(0.494)
Low skilled white collars (ISCO 4 and 5)		0.318	(0.466)
High skilled blue collars (ISCO 6 and 7)		0.11	(0.313)
Low skilled blue collars (ISCO 8 and 9)		0.152	(0.359)
Industry 1-digit NACE rev.1.1			
Manufacturing		0.14	(0.347)
Electricity, gas, and water supply		0.02	(0.138)
Construction		0.062	(0.241)
Wholesale and trade		0.154	(0.361)

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... table A1 continued

Variable	*Description*	*Mean*	*Std. Dev.*
Transport and communication		0.058	(0.233)
Hotels and restaurants		0.04	(0.195)
Information and communication		0.027	(0.161)
Financial intermediation		0.046	(0.209)
RE activities		0.009	(0.097)
PA		0.078	(0.268)
Professional, scientific and admin. services		0.077	(0.266)
Other services		0.29	(0.454)
Firm size	dummies = 1 if		
$1-9$employees	0.274	(0.446)	
$10-49$employees	0.323	(0.467)	
$50-99$employees	0.122	(0.327)	
≥ 100employees	0.282	(0.45)	
public	dummy= 1 if respondent works in the public sector	0.287	(0.453)
p_unemployed	dummy= 1 if respondent was unemployed immediately before current job	0.083	(0.276)
emplorepre	dummy= 1 if presence of an employee representative at the workplace	0.554	(0.497)
long hours	dummy= 1 if respondent works ->40 hours a week or ->10 hours a day at least once a month	0.358	(0.48)
poverty	dummy= 1 if household is able to make ends meet with difficulty or great difficulty	0.083	(0.275)
Working conditions and Work environment			
WCscale	$[0, 10]$ where 10→"bad working conditions"	3.214	(1.461)
mobbing	dummy= 1 if respondent subject to either:unwanted sexual attention, physical violence, bullying or verbal abuse over the preceding 12 months	0.166	(0.372)
discrim	dummy= 1 if respondent subject to discrimination linked to either: sex, age, race, nationality, disability, religion or sexual orientation	0.068	(0.251)
WLB	dummy= 1 if "well" or "very well" to Do your working hours fit in with your family or social commitments?	0.837	(0.37)
Demand-Control-Support			
high_demand	dummy= 1 if demand scale above median (4.09)	0.456	(0.498)
low_control	dummy= 1 if control scale below median (8)	0.445	(0.497)
low_support	dummy= 1 if support scale below median (7.5)	0.36	(0.48)

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... table A1 continued

Variable	*Description*	*Mean*	*Std. Dev.*
Countries			
Belgium		0.183	(0.387)
Denmark		0.064	(0.245)
Germany		0.107	(0.31)
Greece		0.025	(0.157)
Spain		0.035	(0.183)
France		0.141	(0.348)
Ireland		0.032	(0.177)
Italy		0.056	(0.231)
Luxembourg		0.044	(0.205)
Netherlands		0.049	(0.215)
Austria		0.043	(0.204)
Portugal		0.04	(0.195)
Finland		0.056	(0.231)
Sweden		0.053	(0.224)
United Kingdom		0.07	(0.256)

Table A2 - Full specification for Table 1

	Depression/ Anxiety	***Insomnia***	***WHO-5***
Job insecure	0.0396***	0.0515***	-4.391***
	(0.0151)	(0.0191)	(0.946)
Employment insecure	0.0329***	0.0539***	-3.719***
	(0.00781)	(0.0110)	(0.536)
female	0.0301***	0.0599***	-3.503***
	(0.00928)	(0.0126)	(0.613)
age_1	-0.0321**	-0.0980***	1.763
	(0.0162)	(0.0200)	(1.343)
age_2	-0.0206**	-0.0518***	1.401**
	(0.00917)	(0.0126)	(0.600)
age_4	0.0119	0.0444**	0.445
	(0.0140)	(0.0191)	(0.849)
midedu	0.000184	0.00808	-0.611
	(0.0107)	(0.0150)	(0.784)
highedu	0.0289**	0.0508***	-1.262
	(0.0127)	(0.0186)	(0.858)
child	-0.00257	0.00491	-2.030***
	(0.00886)	(0.0122)	(0.571)
partner	-0.0130	-0.0214*	0.608
	(0.00960)	(0.0130)	(0.629)

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... table A2 continued

	Depression/ Anxiety	***Insomnia***	***WHO-5***
poverty	0.0968***	0.0692***	-7.029***
	(0.0192)	(0.0214)	(1.130)
firmsize_2	0.0234**	0.000859	-1.412**
	(0.00968)	(0.0136)	(0.684)
firmsize_3	0.00500	0.00346	-1.778*
	(0.0133)	(0.0196)	(0.960)
firmsize_4	0.00548	0.00944	-1.055
	(0.0116)	(0.0168)	(0.848)
public	0.00524	-0.00703	0.635
	(0.0119)	(0.0160)	(0.749)
p_unemployed	-0.0151	-0.0389**	0.510
	(0.0150)	(0.0174)	(0.958)
emplorepre	-0.000353	-0.00529	0.602
	(0.00920)	(0.0127)	(0.613)
occ_1	0.0266*	0.0171	-0.784
	(0.0145)	(0.0200)	(1.013)
occ_2	0.0249*	0.0159	0.241
	(0.0135)	(0.0187)	(0.970)
occ_3	-0.00484	-0.0281	0.711
	(0.0141)	(0.0205)	(1.107)
ind_2	0.0255	-0.0599	0.282
	(0.0309)	(0.0365)	(1.843)
ind_3	-0.000206	-0.0185	2.468**
	(0.0166)	(0.0246)	(1.215)
ind_4	0.0111	-0.0413**	1.817*
	(0.0144)	(0.0190)	(1.005)
ind_5	0.00343	0.0235	1.577
	(0.0188)	(0.0283)	(1.434)
ind_6	-0.0295	-0.0607**	3.635**
	(0.0242)	(0.0301)	(1.575)
ind_7	0.0219	0.000347	-0.872
	(0.0223)	(0.0407)	(1.765)
ind_8	0.0138	-0.0312	0.317
	(0.0217)	(0.0288)	(1.479)
ind_9	0.0475	0.0389	-4.193
	(0.0373)	(0.0655)	(2.921)
ind_10	0.0232	-0.00263	-0.914
	(0.0208)	(0.0279)	(1.398)
ind_11	0.0391**	0.00510	-1.883
	(0.0192)	(0.0249)	(1.216)
ind_12	-0.00112	-0.000514	1.902*
	(0.0139)	(0.0207)	(1.050)
longhours	0.00110	0.0651***	-1.308**

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… table A2 continued

	Depression/ Anxiety	***Insomnia***	***WHO-5***
	(0.00891)	(0.0127)	(0.598)
WCscale	0.0170***	0.0213***	-1.032***
	(0.00337)	(0.00478)	(0.229)
mobbing	0.124***	0.135***	-4.774***
	(0.0156)	(0.0191)	(0.782)
discrim	0.121***	0.121***	-4.613***
	(0.0262)	(0.0294)	(1.156)
WLB	-0.0382***	-0.0612***	4.579***
	(0.0124)	(0.0163)	(0.788)
high_demand	0.0278***	0.0412***	-1.974***
	(0.00779)	(0.0113)	(0.543)
low_control	-0.00777	-0.0159	-1.695***
	(0.00877)	(0.0122)	(0.584)
low_support	0.0470***	0.0600***	-6.632***
	(0.00853)	(0.0117)	(0.566)
country1	-0.0141	-0.0547***	-1.138
	(0.0128)	(0.0206)	(0.766)
country3	-0.0486***	-0.0712***	-1.033
	(0.0142)	(0.0243)	(0.933)
country4	-0.0614***	-0.120***	-1.870
	(0.0181)	(0.0304)	(1.536)
country5	0.0257	-0.118***	3.764***
	(0.0191)	(0.0249)	(1.145)
country6	0.0346**	0.0428*	-2.115**
	(0.0145)	(0.0227)	(0.831)
country7	-0.0352**	-0.113***	3.558***
	(0.0173)	(0.0274)	(1.242)
country8	0.0242	-0.0708***	-6.050***
	(0.0171)	(0.0252)	(1.121)
country9	0.0166	-0.0263	-0.278
	(0.0182)	(0.0278)	(1.164)
country10	-0.0381***	-0.0911***	-0.696
	(0.0134)	(0.0236)	(0.929)
country11	-0.0410***	-0.117***	-3.312***
	(0.0139)	(0.0238)	(1.108)
country12	0.0518**	0.0112	-3.440**
	(0.0214)	(0.0300)	(1.344)
country13	0.0401**	0.0635**	-3.016***
	(0.0186)	(0.0275)	(0.891)
country14	0.0867***	-0.0377	-0.778
	(0.0216)	(0.0283)	(1.038)
country15	0.0396**	-0.0603**	-6.516***

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... table A2 continued

	Depression/ Anxiety	***Insomnia***	***WHO-5***
	(0.0173)	(0.0237)	(1.000)
constant	-0.0617**	0.0958**	79.62***
	(0.0302)	(0.0436)	(1.953)
R^2	0.125	0.117	0.164
N	10,998	10,998	10,998

Robust standard errors in parentheses. Significance: * p<.1, ** p<.05, *** p<.01.

Table A3 Alternative measures of psychological distress

	WHO-5 < 50	***PD index***
Secure - bad prospects	0.0493***	0.0780***
	(0.0116)	(0.0137)
Insecure - good prospects	0.0446*	0.0514*
	(0.0263)	(0.0292)
Insecure - bad prospects	0.138***	0.182***
	(0.0292)	(0.0294)
R^2	0.114	0.146
N	10,998	10,998

Robust standard errors in parentheses. Significance: * p<.1, ** p<.05, *** p<.01. All results are obtained using the full set of controls.

Table A4 Alternative definitions of precariousness

	PD index		
	(1)	*(2)*	*(3)*
Secure - bad prospects	0.0386***	0.0663***	
	(0.0149)	(0.0167)	
Insecure - good prospects	0.0538*	0.0663*	
	(0.0277)	(0.0369)	
Insecure - bad prospects	0.120***	0.175***	
	(0.0214)	(0.0309)	
Insecurity/Employability ratio			0.0607***
			(0.00839)
R^2	0.141	0.137	0.146
N	10,998	8,217	10,998

Robust standard errors in parentheses. Significance: * p<.1, ** p<.05, *** p<.01. All results are obtained usingthe full set of controls.

Table A5 First stage multinomial logit

	Coeff. of EPL*share_ temporary
Secure - bad prospects	-0.227*
	(0.1355)
Insecure - good prospects	0.0264
	(0.2245)
Insecure - bad prospects	-0.843***
	(0.2299)
Wald χ^2	128315.93
Pseudo-R^2	0.092
N	10,998

Cluster-robust standard errors. Significance: * p<.1, ** p<.05, *** p<.01. All results are obtained using the full set of controls.

Table A6 Probit estimates (average marginal effects)

	Depression/Anxiety	***Insomnia***	***WHO-5<50***	***PD index***
Secure - bad prospects	0.0303***	0.0526***	0.0493***	0.0764***
	(0.00795)	(0.0115)	(0.0114)	(0.0136)
Insecure - good prospects	0.0195	0.0536**	0.0415*	0.0497*
	(0.0136)	(0.0243)	(0.0234)	(0.0286)
Insecure - bad prospects	0.0714***	0.0965***	0.131***	0.181***
	(0.0194)	(0.0263)	(0.0279)	(0.0297)
Pseudo-R^2	0.1841	0.1146	0.1207	0.1199
N	10,998	10,998	10,998	10,998

Robust standard errors in parentheses. Significance: * p<.1, ** p<.05, *** p<.01. All results are obtained using the full set of controls.