

# The secret to happiness is low expectations: How perceived working conditions differ from actual ones

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Working conditions exert a major influence on accidents and illnesses at work, as well as, more in general, on job satisfaction and health, yet there is still very little research investigating the determinants of working conditions. By exploiting the Italian Labour Force Survey, we provide evidence of the underlying factors affecting working conditions. To present a meaningful reading of the results, we propose a behavioural interpretation, which stems from the discrepancy between *actual* and *expected* working conditions. In light of this interpretation, workers would declare *perceived* working conditions as the difference between actual and expected working conditions. Variables concerning personal characteristics such as gender, education, being employed at the first job, having a fixed-term contract and regional GDP per capita shift expectations on working conditions and accordingly perceived working conditions. On the contrary, variables concerning job and firm characteristics such as working full-time, overtime, with shifts and in a large seat (negatively) affect actual and thus perceived working conditions.

**Keywords:** Working conditions, Expectations, Perceptions

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# 1. Introduction

In the past decades, research in labour economics has demonstrated the relevance of working conditions in influencing a number of issues, such as the probability of experiencing job accidents and illnesses at the workplace, as well as, more in general, workers' job satisfaction, health and quality of life.

For instance, a recent article on work safety by Cioni and Savioli (2015) highlights that poor working conditions are among the major determinants of accidents and illnesses at work, whereas the type of contract has minor or no impact on the rate of accidents and illnesses. From the perspective of health outcomes, Robone et al. (2011) find that having a part-time job positively influences workers' health, and the contrary holds in case of having a temporary job and of being low-educated.

Despite the sizeable empirical literature which provides insights and evidence on working conditions as factors influencing the aforementioned issues, no work so far has investigated the determinants of working conditions, hence treating working conditions as dependent variable. The only exception is the work of Askenazy and Caroli (2010), who study the impact of new work practices and ICT on a number of indicators of working conditions, which are considered as separate dependent variables. Investigating the factors underlying working conditions may lead to important policy implications, insofar important issues such as work accidents/illnesses, health and quality of life are concerned.

This paper seeks to fill this gap in the literature, and to provide a first theoretical modelization and empirical validation of how working conditions are perceived by workers. To do so, we use data from the 2007 Italian Labour Force Survey, which encompasses a special *ad-hoc* section on working conditions. The contribution of the paper is twofold: we explain the role of working conditions by analysing their determinants and we provide a behavioural explanation of how working conditions

can be perceived by workers.

A clear definition of working conditions is still missing in the literature, since very different concepts are used across the various contributions. Robone et al. (2011) consider as working conditions promotion and annual wage increments opportunities, as well as having a managerial/supervision role, working outside regular office hours and being subject to unpaid overtime. Other studies, such as Hersch (1991) and Askenazy and Caroli (2010) take into account also mental strain factors, occupational risks (e.g. risk of serious fall, electricity risk, etc.) and occupational injuries. More in line with these last contributions but improving in generality of the sample and variables, we use a broad concept of working conditions, which encompasses both physical and psychological risk factors.

In several studies, working conditions are measured using self-reported answers. This is a distinctive but not necessarily negative trait, considering that, according to many ergonomics experts, working conditions cannot be defined independently of the worker's characteristics (Burchell et al. 2009). Indeed, working conditions are affected by personal and cultural features as well as by objective working conditions (Eurofound 2012). Actual working conditions and their expectations should therefore be analysed together. This is the focus of this paper.

The main hypothesis of this paper stems from the discrepancy which may take place between actual and expected working conditions. This discrepancy originates perceived working conditions, which are those declared by individuals and captured in the survey. According to this reasoning, the same actual working conditions can be perceived differently by workers. Similarly, a strand of literature explains that some less advantaged workers have higher satisfaction levels than workers with demonstrably better actual working conditions, if the latter workers have higher expectations about

their job (Muñoz de Bustillo et al. 2011; Burchell et al. 2014).

We envisage a few variables affecting workers' expectations of working conditions concerning a worker's personal characteristics, such as gender, education, regional GDP per capita and having fixed-term job. As an illustrative example, a high-educated person, irrespective of her actual working conditions, may hold higher expectations of working conditions with respect to a lower-educated individual that faces the same actual working conditions. Therefore, her perceived working conditions will be lower, because she expects more from work.

Several works in the literature have investigated working conditions, but to the best of our knowledge, with the exception of Askenazy and Caroli (2010), this is the first study to put working conditions at the core of the analysis. A recent report on working conditions (Eurofound 2012) highlights that satisfaction with working conditions varies by employment status, educational attainment, occupation and sector. Working conditions are usually treated as independent variables which affect different dependent variables, ranging from self-assessed health or psychological being (Robone et al. 2011, Loscocco and Spitze 1990), to work safety (Cioni and Savioli 2015) and wage (Hersch 1991, Poggi 2007, Fernandez and Nordman 2009).

Given changes in the labour market occurred especially in the last two decades, a significant portion of contracts has switched from the standard open-ended full-employment contract to fixed-term contracts, part-time contracts and unregulated work (Barbieri and Scherer 2009). A number of papers have examined working conditions in relation with these atypical work arrangements and the vast majority of studies found that fixed-term workers face worse actual working conditions than permanent ones. Garcia-Serrano (2004) performs a multivariate analysis on Spanish workers finding that workers holding temporary contracts suffer worse working conditions than permanent workers.

Likewise, Benavides (2000) shows that temporary workers from 15 European countries are much more exposed to poor actual working conditions, such as noise and tiring positions. The same result is sustained by Bernhard-Oettel et al. (2007), using the third European survey on working conditions: high-strain jobs are more pronounced among temporary workers than permanent workers. Very few exceptions in the literature, represented by the works of Saloniemi (2004) and Bardasi and Francesconi (2004) reveal that permanent workers face more high-strain jobs and that atypical employment does not affect health and life satisfaction. However, the scope of these studies, based on British and Finnish data, respectively, is much more limited than contributions based on a full set of European countries, as in Benavides (2000) and Bernhard-Oettel et al. (2007).

Our results show that variables concerning job and firm characteristics such as working full-time, overtime, with shifts and in a large seat, negatively affect perceived working conditions. The opposite holds for variables concerning personal characteristics such as having fixed-term contracts. Regional GDP per capita, interpreted as a fundamental peer group characteristic, negatively affects working conditions, lending further support to the main hypothesis of this paper according to which expectations affect the perception of actual working conditions. The same expectation interpretation is put forward in the case of gender, education and being employed at the first job.

The paper is organized as follows. Section 2 presents the theoretical specification. Section 3 describes the data used and provides some descriptive statistics. Section 4 reports the results of the empirical analysis and Section 5 concludes with a discussion of the results.

## **2. Theoretical background**

The underlying assumption of this paper is that the declared (perceived) working conditions are not a direct translation of actual working conditions, but are strongly influenced by workers' expectations.

For some of the regressors, on top of actual working conditions we can envisage an expectation dimension which should be accounted for and stems from the reference point theory of Kahneman and Tversky (1979) and the disappointment theory of Bell (1985).

As postulated by Bell (1985), two consequences with the same outcome can accrue different utility levels if we consider the actual outcome compared to one's prior expectations. This is the case for instance of winning a certain monetary prize in a lottery knowing that it is the top prize versus knowing that it is the lowest prize available. In the two cases, the utility perceived will be different, since in the former case we would be delighted whereas in the latter we would be disappointed.

The reference point is explicitly considered as the agent's recent expectations about the relevant outcomes by Kőszegi and Rabin (2006), who model expectations as rational expectations. The agent's utility function is composed by two terms: a consumption utility term, which reflects the classical outcome-based utility, and a gain-loss utility term, which is the difference between the consumption utility and the reference point. Since the reference point is determined by rational expectations, it follows that it is determined endogenously by the economic environment characterizing the agent's recent past.

The same line of reasoning can be applied in the context of working conditions, where expectations about working conditions interplay with actual working conditions. In this respect, the seminal work of Clark (1997) is the first one to propose a distinction between actual and perceived job satisfaction, focusing on the so-called "gender-job satisfaction paradox": women face on average worse working

conditions with respect to men, but report higher job satisfaction levels than their male counterparts.<sup>1</sup> The explanation provided by Clark lies on the well-being of workers related to their job expectations. Under this perspective, since women are often secondary earners and highly involved in home production and since their working conditions are generally worse, they hold lower expectations towards their job compared to men. This explanation is supported by the fact that women supposedly characterized by higher expectations (such as those in managerial positions, with mothers in a professional job or in male-dominated environments) do not report higher job satisfaction with respect to their male colleagues. According to Clark's hypothesis, as soon as women will emancipate, the gender-job satisfaction gap will decrease. This hypothesis is empirically tested by Sousa-Poza and Sousa-Poza (2010), using 10 waves of the British Household Panel Survey (1991-2000). The gender-job satisfaction paradox appears to be transitory, as data suggest that it has been halved over the decade, driven primarily by a decline in women's job satisfaction. Also, Helliwell and Huang (2011) highlight some gender differences in the ways in which male and female workers evaluate their workplaces, for instance in terms of trust in management (higher for females).

We can envisage other variables, apart from gender, that may influence expectations on working conditions. Education is certainly among these: we believe that higher education levels allow the worker to approach her job with higher expectations regarding working conditions, or make workers aware of long-term consequences of bad working conditions. This thesis is supported by Clark (1997), who finds gender differences in job satisfaction for middle and low-educated individuals in favour of

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<sup>1</sup> See also Zaleznik et al. (1958).

women, whereas highly educated women do not report different job satisfaction than men: it seems hence that more educated women have higher expectations, which are more similar to those of men, than less educated ones. Therefore, job satisfaction declines with the level of education (see also Clark and Oswald 1996 and Sloane and Williams 2000).

Another variable that may impact on workers' expectations is GDP per capita at the regional level. In this case, expectations can originate from a local context, characterized by reference groups. The higher the regional GDP, *ceteris paribus*, the higher the standard of living and consequently the higher the expectations on working conditions. In this case, expectations would spread through the social context. Also being at the first job can affect expectations about working conditions, lowering them and hence improving perceived working conditions. Indeed, the agent's recent expectations about the relevant outcomes determine a significant different reference point for workers at the first job (Kőszegi and Rabin, 2006). A long job tenure, on the other hand, provides workers with a capital of experience that allows them to have a more robust perception of working conditions. Moreover, another variable that could impact on workers' expectations is age, that, on one side, may make working loads seem heavier and henceforth worsen perceived working conditions, but, on the other side, it may engender experience which helps to have a more precise perception of working conditions (Burchell et al. 2009).

Provided these contributions, it is useful to fix these ideas with a simple theoretical formulation in which we explain how the perception of working conditions can result. In order to be consistent with our empirical estimations where we use information about workers stating whether they face risk factors, we now turn to think in terms of bad working conditions. Particularly, we can envisage the individual utility function as:



$$u \left[ \underbrace{bwc}_{-}, \underbrace{bwc^*}_{+}(\underbrace{fe}_{+}, \underbrace{ed}_{-}) \right] = u \left[ \underbrace{\widetilde{bwc}}_{-} \right] \quad (1)$$

where  $-$  and  $+$  indicate the sign of partial derivatives, and  $u$  stands for utility,  $bwc$  for actual bad working conditions,  $bwc^*$  for expected bad working conditions,  $\widetilde{bwc}$  for perceived bad working conditions,  $fe$  for being female,  $ed$  for the amount of education. As it is made explicit, the expectation of bad working conditions is affected by variables like being female and the amount of education with different signs. In the right-hand side of Eq. (1), the utility function is expressed in terms of perceived bad working conditions,  $\widetilde{bwc}$ , which are captured by survey responses. In line with Kőszegi and Rabin (2006), who model a gain-loss utility term as difference between the consumption utility and the reference point, we can assume that perceived bad working conditions are given by the difference between actual,  $bwc$ , and expected,  $bwc^*$ , bad working conditions. The latter are assumed to be a function of some variables such as being female and education, which shift expectations on bad working conditions upwards and downwards, respectively.

Utilities are latent and cannot be observed. The same goes for actual bad working conditions. However, following the utility function of Eq. (1), the perceived (and declared) bad working conditions can be expressed as:

$$\widetilde{bwc} \left[ \underbrace{bwc(jc, fc, pc) - bwc^*(\underbrace{fe}_{+}, \underbrace{ed}_{-}, jc, fc, pc)}_{+} \right] = f \left[ \underbrace{fe}_{-}, \underbrace{ed}_{+}, jc, fc, pc \right] \quad (2)$$

Where  $jc, fc, pc$  are job, firm and personal characteristics;  $f[.]$  is a function that can be linearized (and will be estimated in Section 4);  $-$  and  $+$  still indicate the sign of partial derivatives, which are solved in the right-hand side of Eq. (2) and will be tested in the estimations.

The difference in survey responses represents a real difference in utility from perceived bad working conditions,  $\widetilde{bwc}$ . Nevertheless, there is a paradox solved by considering the importance of expectations in bad working conditions,  $bwc^*$ . Those who expect higher levels of bad working conditions, like females, will be more satisfied with any given level of actual bad working conditions,  $bwc$ , see Eq. (1), and will declare lower perceived bad working conditions, see Eq. (2). The opposite applies for more educated workers. Expectations may form an important part of the reference level, since relative rather than absolute arguments determine utility (job satisfaction).

According to Kahneman and Tversky (1979, p. 277), “When we respond to attributes such as brightness, loudness, or temperature, the past and present context of experience defines an adaptation level, or reference point, and stimuli are perceived in relation to this reference point”. Since higher levels of education are associated with less-satisfied workers, workers with high  $ed$  deem a lower level of bad working conditions,  $bwc^*$ , to be fair.  $fe$  workers, on the contrary, have a worse past and present context of work to which they would have adapted and refer to (higher  $bwc^*$ ).

Again, since Eq. (1) is not observable, we can only measure and empirically estimate Eq. (2). More specifically, by using data on  $\widetilde{bwc}$ ,  $fe$ ,  $ed$ ,  $jc$ ,  $fc$  and  $pc$ , we will validate our theorizing outcomes in the following sections.

### 3. Data

The micro-data used in our analysis come from the Labour Force Survey carried out by Istat, the National Institute of Statistics of Italy, and they are entirely comparable with those collected in other EU countries.<sup>2</sup> The data refer to the second quarter of 2007, when an “ad hoc” module devoted to safety and health at work was added to the standard information contained in the Survey. The 2007 survey collects various kinds of information on job, firm and personal characteristics of workers and, especially, on bad working conditions. In particular, the “ad hoc” module devoted to safety and health at work includes information on workers’ exposure to health risk factors. By considering all these factors as proxy for different aspects of bad working conditions, we define the variable “Bad working conditions” simply as the sum of the dichotomous indicators of exposure to health risk factors. In particular, the seven risk factors considered are both physical and psychological. Physical risk factors encompass: exposure to dust, fumes, smoke, chemicals; exposure to excessive noise or vibration; bad posture induced by work requirements, movement of heavy loads; and exposure to a general risk of injury. Risk factors that may affect mainly the psychological balance of workers encompass: excessive workload; phenomena of bullying or discrimination; and exposure to threats or physical violence. Our dataset includes micro-data referring only to employees with open-ended and fixed-term contracts, excluding individuals with other kinds of labour relations and unemployed individuals. In so doing, our observations have a high degree of homogeneity and comparability. To

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<sup>2</sup> Istat collects the information each quarter by interviewing a sample of nearly 77,000 households (approximately 300,000 in one year), representing 175,000 individuals who are Italian residents, even if they are temporarily abroad.

enrich our analysis, we finally added information on the 2007 second quarter regional GDP per capita drawn from “Conti economici regionali” (Regional economic accounts), Istat.

Table A1 in the Appendix contains a brief description of each variable. Among Job characteristics, we consider working time (dummy variables for full-time contract, overtime hours and shift work). Among Firm characteristics, we control for two variables: size of the seat of work (dummy variable indicating more than ten workers at the seat of work)<sup>3</sup> and main activity sector of the firm (grouped into the categories: agriculture, industry, construction, retail and other activities). The last group of variables considered is Personal characteristics such as gender, birthplace (Italy or abroad), age, marital status and type of contract (fixed-term versus open-ended contract). All these variables capture differences in reporting bad working conditions at the workplace, as underlined by Clark (1997). Following previous works (Clark and Oswald 1996, Sloane and Williams 2000), we consider human capital indicators using the following variables: months of current job tenure, first job, years of education and recent educational activity. Moreover, the specific kind of job performed by the employee in her workplace is controlled for by eight categories, ranging from executive or intellectual occupations to unskilled occupations. Finally, the inclusion of regional GDP per capita allows us to capture specific socio-economic geographical information that can affect workers’ report of bad working conditions. The dependent variable bad working conditions is the sum of the indication of the seven bad working conditions (described above), normalized from 0 to 1.

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<sup>3</sup> Since Italy has a vast majority of small-medium enterprises, ten workers in a typical seat is a meaningful threshold that can be considered too small in other industrial economies. See, for example, Bartelsman, Scarpetta and Schivardi (2003).

Our database contains 42,198 workers. The average worker in the sample is 41 years old, with a tenure of about 10 years (138 months) and has completed high school education (12 years of education). Moreover, the vast majority of workers has a full-time contract (85%), works in medium-big seats (72% in seats with more than 10 workers), is not a foreigner (93%) and is married (60%). Only a minority of individuals work overtime hours (8%), does shift work (22%), has a fixed-term contract (14%) and has recently participated in educational activities (5%).

*Table 1 – Descriptive statistics*

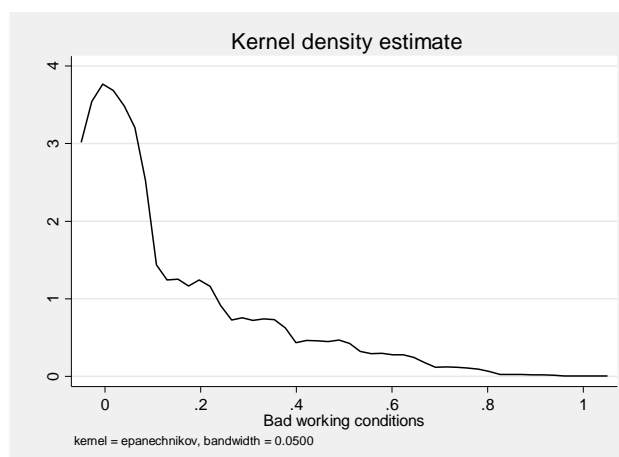
	<i>Dummy</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
<b>Independent variables</b>					
Job characteristics					
<i>Full-time work</i>	D	0.85	0.35	0	1
<i>Overtime hours</i>	D	0.08	0.28	0	1
<i>Shift work</i>	D	0.22	0.41	0	1
Firm characteristics					
<i>Seat +10</i>	D	0.72	0.45	0	1
<i>Agriculture as reference category</i>	D	0.03	0.17	0	1
<i>Industry excluding construction</i>	D	0.24	0.43	0	1
<i>Construction</i>	D	0.07	0.26	0	1
<i>Retail</i>	D	0.12	0.32	0	1
<i>Other activities</i>	D	0.54	0.50	0	1
Personal characteristics					
<i>Current job tenure</i>		137.65	123.23	0	696
<i>First job</i>	D	0.30	0.46	0	1
<i>Fixed-term contract</i>	D	0.14	0.35	0	1
<i>Female</i>	D	0.44	0.50	0	1
<i>Born in Italy</i>	D	0.93	0.26	0	1
<i>Years of education</i>		11.81	3.46	8	18
	<i>Dummy</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
<i>Educational activities in last four weeks</i>	D	0.05	0.22	0	1
<i>Age</i>		41.35	11.07	20	60
<i>Regional GDP per capita</i>		25,507.46	6,100.76	15,987.41	31,848.36
<i>Executive or entrepreneur as reference category</i>	D	0.02	0.14	0	1
<i>Intellectual or scientific occupation</i>	D	0.09	0.29	0	1
<i>Technical position</i>	D	0.24	0.43	0	1
<i>Office clerk</i>	D	0.12	0.33	0	1
<i>Qualified occupation</i>	D	0.15	0.36	0	1

<i>Craftsman, skilled worker or farmer</i>	D	0.16	0.37	0	1
<i>Operator of industrial machinery</i>	D	0.11	0.31	0	1
<i>Unskilled occupation</i>	D	0.10	0.30	0	1
<i>Never married as reference category</i>	D	0.32	0.47	0	1
<i>Married</i>	D	0.60	0.49	0	1
<i>Separated or divorced</i>	D	0.06	0.24	0	1
<i>Widow/widower</i>	D	0.02	0.13	0	1
<b>Dependent variables</b>					
<i>Bad working conditions</i>		0.13	0.19	0	1
<i>Exposure to dust, etc.</i>	D	0.16	0.37	0	1
<i>Noisy workplace</i>	D	0.15	0.36	0	1
<i>Bad posture induced by work</i>	D	0.20	0.40	0	1
<i>Feeling exposed to risk of injury</i>	D	0.22	0.41	0	1
<i>Excessive workload</i>	D	0.14	0.35	0	1
<i>Feeling exposed to bullying or discrimination</i>	D	0.05	0.22	0	1
<i>Feeling exposed to threats or physical violence</i>	D	0.02	0.12	0	1

Sources: 2007 Istat Labour Force Survey; “Conti economici regionali”, Istat. The number of observations is equal to 42,198.

Table 1 presents some short information (mean, standard deviation *SD*, minimum and maximum) of all the variables used. The variables of type “D” are dummy variables, whereas the others are numerical. The Kernel estimation in Figure 1 presents the distribution of bad working conditions, showing that the majority of workers report none or few bad working conditions.

*Figure 1 – Distribution of bad working conditions*



Some interesting information comes from the analysis of the geographical distribution. In particular, as shown by Figure 2 presenting the regional distribution of bad working conditions, workers of the

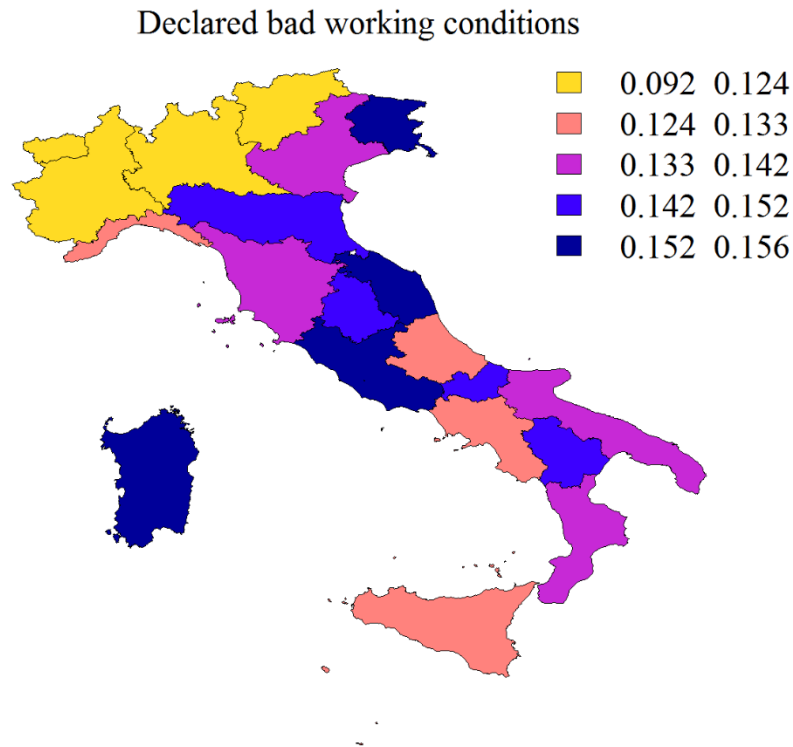
North-Western regions report, on average, less bad working conditions. Then workers of the Southern and, lastly, of the Central regions follow. Workers based in Le Marche, Lazio, Sardinia and Friuli Venezia Giulia report the worst (highest level of) bad working conditions.

Since economic development of Italy increases with latitude<sup>4</sup>, we would expect, *ceteris paribus*, lower actual bad working conditions, accordingly. An explanation of the (perceived) bad working conditions shown in Figure 2 could therefore additionally resort to expectations. With the increasingly lower regional GDP per capita descending towards the South of Italy, we assume expectations of increasingly higher bad working conditions. Finally, the difference between actual and expected bad working conditions would reach its maximum in the centre of Italy, where actual bad working conditions are higher than in the North but their expectations are not as high as in the South.

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<sup>4</sup> See, for example, Felice (2013) and, on education and more in general on the delay of process of modernization in the long run perspective, Felice and Vasta (2015).

Figure 2 – Regional distribution of bad working conditions



The quintiles of regional averages are shown. Worse (higher) bad working conditions are declared, on average, in darker shadowed regions.

#### 4. Results

Perceived bad working conditions are determined by a multiplicity of factors. Actual determinants and expectations intertwine and contribute to the final perception of workers' bad working conditions. To uncover the main factors of working conditions, we first present regression analysis results of the composite index of Bad working conditions which was illustrated in Section 3. Second, we break down the composite index into its single components and report individual probit regression models on them to control for the heterogeneity of the main predictors of such a broad concept as bad working conditions.



Predictors deemed important and considered in the analysis are divided into Job, Firm and Personal characteristics. Quadratic terms for the numerical variables are introduced in the regressions to control for nonlinearities in their effects.

Table 2 reports the estimates of the coefficients for the main model specification, in which the dependent variable is Bad working conditions, and a second model that adds significant interactions. Other interactions were tested, but did not result significant (results available upon request). Since the dependent variable is a unitary index constrained between 0 and 1, we estimate generalised linear models with a logit link and the binomial family (Papke and Wooldridge, 1996). In addition, we compute robust standard errors (Huber/White/sandwich variance-covariance estimator) that are useful in case of misspecification of distribution family and residual heteroskedasticity.

*Table 2 – Bad working conditions – GLM binomial link logit*

<i>Bad working conditions</i>	Coefficient (Robust st. errors)	Coefficient (Robust st. errors)
Job characteristics		
<i>Full-time contract</i>	0.300*** (0.029)	0.296*** (0.029)
<i>Overtime hours</i>	0.456*** (0.025)	0.455*** (0.025)
<i>Shift work</i>	0.640*** (0.019)	0.638*** (0.019)
Firm characteristics		
<i>Seat +10</i>	0.127*** (0.020)	0.128*** (0.020)
<i>Bad working conditions</i>	Coefficient (Robust st. errors)	Coefficient (Robust st. errors)
<i>Agriculture as reference category</i>	$\chi^2(4)=402.96^{***}$	$\chi^2(4)=394.98^{***}$
<i>Industry excluding construction</i>	-0.122*** (0.046)	-0.112** (0.047)
<i>Construction</i>	0.377*** (0.049)	0.380*** (0.049)
<i>Retail</i>	-0.273*** (0.051)	-0.264*** (0.051)
<i>Other activities</i>	-0.175*** (0.045)	-0.167*** (0.046)
Personal characteristics		
<i>Current job tenure</i>	1.49e-03*** (2.36e-04)	1.45e-03*** (2.36e-04)
<i>Square of current job tenure</i>	-2.27e-06***	-2.20e-06***

	(5.65e-07)	(5.65e-07)
<i>First job</i>	-0.168*** (0.021)	-0.168*** (0.021)
<i>Fixed-term contract</i>	-0.096*** (0.027)	0.257*** (0.096)
<i>Fixed-term contract * Female</i>		-0.087* (0.050)
<i>Female</i>	-0.251*** (0.019)	-0.262*** (0.021)
<i>Female * Educational activities in last four weeks</i>		0.312*** (0.063)
<i>Born in Italy</i>	-0.127*** (0.029)	-0.128*** (0.029)
<i>Years of education</i>	-0.107*** (0.019)	-0.104*** (0.019)
<i>Years of education * Fixed-term contract</i>		-0.023*** (0.007)
<i>Square of years of education</i>	0.004*** (0.001)	0.004*** (0.001)
<i>Educational activities in last four weeks</i>	0.570*** (0.033)	0.417*** (0.047)
<i>Age</i>	0.020*** (0.006)	0.022*** (0.006)
<i>Square of age</i>	-2.59e-04*** (6.47e-05)	-2.84e-04*** (6.53e-05)
<i>Regional GDP per capita</i>	8.11e-05*** (3.01e-05)	8.05e-05*** (3.01e-05)
<i>Square of regional GDP per capita</i>	-1.28e-09** (5.24e-10)	-1.26e-09** (5.24e-10)
<i>Bad working conditions</i>	Coefficient (Robust st. errors)	Coefficient (Robust st. errors)
<i>Executive or entrepreneur as reference category</i>	$\chi^2(7)=1,220.11$ ***	$\chi^2(7)=1,217.67$ ***
<i>Intellectual or scientific occupation</i>	0.211*** (0.072)	0.209*** (0.072)
<i>Technical position</i>	0.369*** (0.069)	0.361*** (0.069)
<i>Office clerk</i>	0.229*** (0.073)	0.227*** (0.073)
<i>Qualified occupation</i>	0.567*** (0.073)	0.566*** (0.073)
<i>Craftsman, skilled worker or farmer</i>	1.181*** (0.072)	1.177*** (0.072)
<i>Operator of industrial machinery</i>	1.100*** (0.073)	1.096*** (0.073)
<i>Unskilled occupation</i>	0.876*** (0.074)	0.873*** (0.074)
<i>Never married as reference category</i>	$\chi^2(3)=39.50$ ***	$\chi^2(6)=43.99$ ***
<i>Married</i>	0.095*** (0.022)	0.107*** (0.023)
<i>Married * Fixed-term contract</i>		-0.112* (0.054)
<i>Separated or divorced</i>	0.225*** (0.037)	0.236*** (0.039)
<i>Separated or divorced * Fixed-term contract</i>		-0.117

		(0.113)
<i>Widow/widower</i>	0.120*	0.147**
	(0.067)	(0.070)
<i>Widow/widower * Fixed-term contract</i>		-0.233
		(0.227)
Constant	-4.170***	-4.239***
	(0.510)	(0.510)
Number of observations	42,198	42,198
Akaike information criterion	0.584	0.584
Bayesian information criterion	- 438,067	- 438,015

Methodology: generalised linear models with a logit link and the binomial family;

Significance levels: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ;

When  $\chi^2(-)$  is reported instead of coefficient and standard error, the joint significance of the battery of dummy variables is tested;

Sources: 2007 Istat Labour Force Survey; "Conti economici regionali", Istat.

First, we comment on the first presented model, which is the main model specification. The estimates show that full-time workers report worse (higher) bad working conditions with respect to part-time workers. Also working overtime hours and exerting a work which entails shifts negatively affects perceived bad working conditions. Clearly, expanding working time and working in difficult hours, *ceteris paribus*, increases the seriousness of bad working conditions.

As for firm characteristics, working in a seat with more than ten employees negatively affects reported working conditions. Consistent with the fact that arduous works exhaust before the worker's resilience, workers in industry (except construction) and retail report being better-off with respect to workers in agriculture.

The coefficients of first job and female follow the predictions of the theoretical background section: being at the first job and being a woman may be associated to higher expectations about bad working conditions, and this reflects into lower reported bad working conditions.

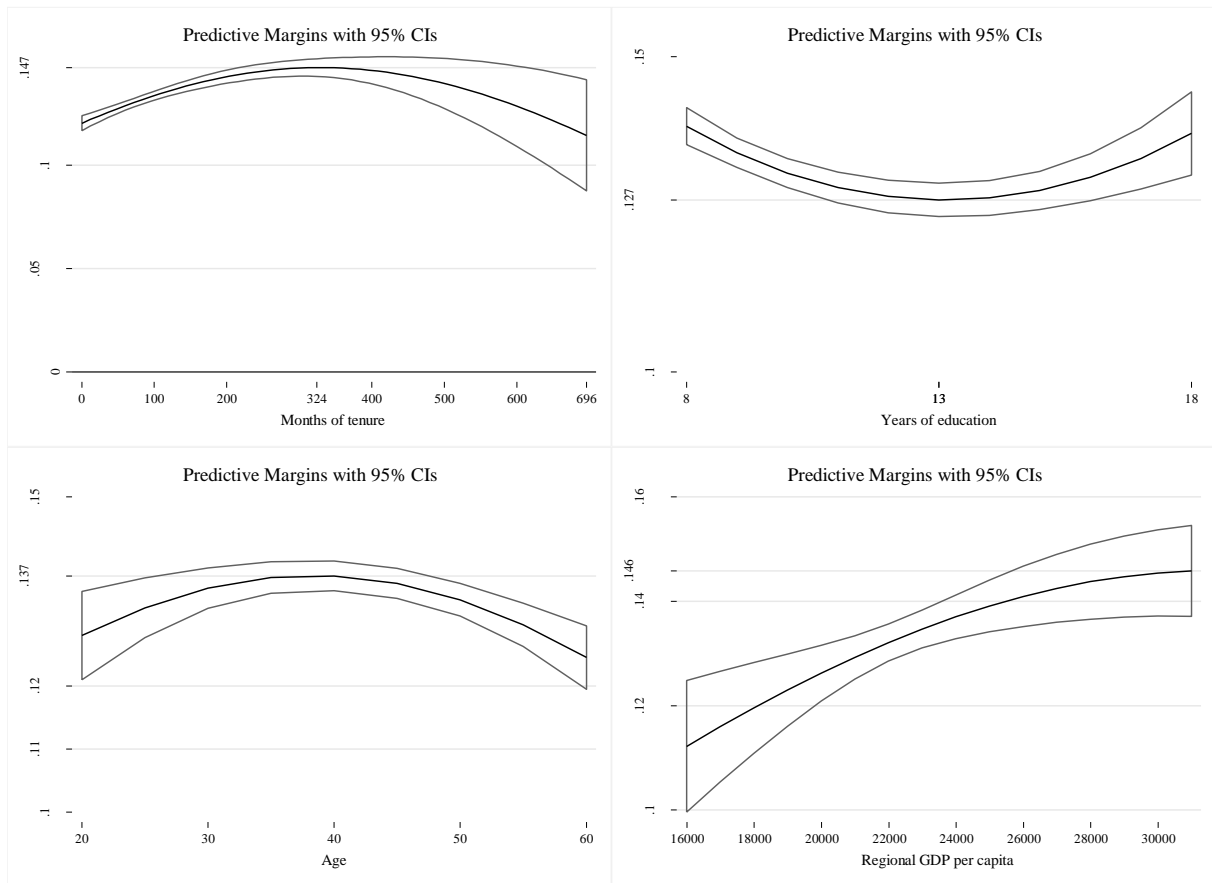
The negative and significant coefficient of having a fixed-term contract deserves much attention: temporary workers report lower bad working conditions with respect to permanent workers. This result is somehow counterintuitive, given that the vast majority of studies in the literature (see, for instance, Benavides 2000, Garcia-Serrano 2004; Bernhard-Oettel et al. 2007; and Tahlin 2007) show

that temporary workers face worse working conditions and higher strain jobs than more stable categories of workers. However, if temporary workers expect worse bad working conditions than their permanent colleagues, the negative and significant coefficient could be the result of a differential in expectations between the two types of workers. Again, the group of less advantaged workers (temporary workers) may have higher satisfaction levels (lower perceived bad working conditions) than permanent workers (with assumed lower actual bad working conditions) if the more advantaged workers also have higher expectations from their jobs (lower expected bad working conditions).

Two variables represent education in the dataset: years of education and educational activities in the last four weeks. While the former reflects a very general, long-term and heterogeneous kind of education, the latter is very specific, short-term, recent and more homogeneous among workers in the same job. When we look at the dummy variable for educational activities in the last four weeks, the positive and significant coefficient is in line with what discussed about education. A very recent educational activity that is limited in time cannot have an impact on actual working conditions. Our interpretation is that expectations shift: those workers who have taken part in (limited) educational activities expect lower bad working conditions than their colleagues who have not attended them.

Finally, executives and entrepreneurs report the lowest bad working conditions with respect to other categories of workers, as well as never-married individuals compared to married/separated and widow/widower workers. By looking at the magnitude of the coefficients, we note that separated or divorced are those with the highest Bad working conditions. The fact that married have a lower coefficient confirms a well-established finding in the literature: when marital histories worsen, ending up with separations as extreme cases, job satisfaction worsens as well (Rogers and May 2003, Georgellis et al. 2012).

*Figure 3 – Quadratic effects on Bad working conditions:  
Current job tenure, Years of education, Age and Regional GDP per capita*



The four panels of Figure 3, relating to the first model of Table 2, are obtained by computing the prediction and the confidence intervals of Bad working conditions for the average individual in the sample for each level of Current job tenure, Years of education, Age and Regional GDP per capita, respectively.

As we can see in the first panel of Figure 3, Bad working conditions are predicted to increase as the current job tenure rises until 324 months (27 years), the point in which they reach the maximum. After that, they are predicted to decrease. We do not replicate, therefore, the results of García-Serrano (2004), who finds that temporary workers with short job tenure are associated to jobs with poorer working conditions.

The non-linear trend of Years of education is shown in the second panel of Figure 3, with the worse bad working conditions being reported by workers at the extremes of the education range. This result mirrors what we expected just for the very educated workers, for which lower expectations about bad working conditions were supposed to translate into higher perceived bad working conditions. On the contrary, workers with the minimum level of education attained report the highest level of bad working conditions supposedly because of actual worse jobs.

The inverse U-shaped relationship between bad working conditions and age (see Figure 3, third panel) mirrors the U-shaped relationship between job satisfaction and age pointed out by Clark et al. (1996): very young and old workers report the lowest bad working conditions in the dataset, and the same consideration holds in terms of job satisfaction in Clark et al. (1996).

Finally, the fourth panel in Figure 3 shows that workers of richer regions report worse bad working conditions. The increasing and concave effect could be driven by higher expectations of working conditions in richer regions that eventually converge to a “saturation” point. We assumed the same effect driven by expectations explaining Figure 2: higher regional GDP per capita in the North of Italy is paired with lower bad working conditions.

We conclude the comment of Table 2 concentrating on the second model, which includes interesting significant interactions. All preceding results are mainly confirmed. Even though the coefficient of Fixed-term contract is significantly positive, interactions with this variable have significant negative coefficients. To better understand the overall effect of Fixed-term contract and other interacted variables, we computed the conditional marginal effects presented in Table 3, which refers to the second model of Table 2. Average marginal effects are conditional to the categories reported in parentheses. Indeed, the marginal effects of Fixed-term contract for different gender confirm the

negative overall sign for this variable. Moreover, the negative effect of Fixed-term contract is almost double for females. Table 3 also confirms the thesis provided by Clark (1997) about the effect of education: the gender differential in job satisfaction in favour of women would vanish for highly educated individuals. Our result shows that females stop reporting lower bad working conditions than males once participating in educational activities in the month preceding the interview. Table 3, in addition, pinpoints the stronger negative effect of education on bad working conditions for workers with fixed-term contract. Highly educated individuals seem less apt to complain about working conditions especially if their job has a lower expected duration. Finally, the marital status dummies allow to ascertain that the temporary workers reporting lower bad working conditions are married. An explanation of this result could be that married individuals, having more responsibilities, fear and expect worse bad working conditions than their permanent married colleagues. The bias in the expectation results in a negative surprise in the perceived and declared conditions.

*Table 3 – Predicted means of Bad working conditions – Average marginal effects (conditional)*

<i>Bad working conditions</i>	dy/dx (Delta-method st. errors)
<i>Fixed-term contract (Male)</i>	-0.009 <sup>**</sup> (0.004)
<i>Fixed-term contract (Female)</i>	-0.015 <sup>***</sup> (0.003)
<i>Female (No Educational activities in last four weeks)</i>	-0.029 <sup>***</sup> (0.002)
<i>Female (Educational activities in last four weeks)</i>	0.006 (0.008)
<i>Years of education (Open-ended contract)</i>	-1.46e-03 <sup>***</sup> (4.06e-04)
<i>Years of education (Fixed-term contract)</i>	-3.65e-03 <sup>***</sup> (7.46e-04)
<i>Fixed-term contract (Never married)</i>	-0.003 (0.004)
<i>Fixed-term contract (Married)</i>	-0.015 <sup>***</sup> (0.004)
<i>Fixed-term contract (Separated or divorced)</i>	-0.017 (0.012)
<i>Fixed-term contract (Widow/widower)</i>	-0.026 (0.019)

Number of observations	42,198
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Changes in prediction refer to the second model of Table 2;  
dy/dx for the dummy variables Fixed-term contract and Female is the discrete change from the base level;  
dy/dx for the numerical variable Years of education is the marginal effect;  
Significance levels: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ;  
Sources: 2007 Istat Labour Force Survey; “Conti economici regionali”, Istat.

The composite index Bad working conditions is obtained by single components that can be individually investigated. Table 4 reports individual probit regression model on each aspect of bad working conditions considered per se. In this way, we can control for the heterogeneity of the main predictors along all components. Since the dependent variables are dummy variables, we estimate probit models by assuming each latent working condition is deemed as bad whenever perceived above a certain threshold. As before, we compute robust standard errors (Huber/White/sandwich variance-covariance estimator) that are useful in case of some types of misspecification so long as the observations are independent (Greene, 2007).



Table 4 – Bad working conditions – individual probit

<i>Bad working conditions</i>	Exposure to dangers	Noisy workplace	Bad posture	Risk of injury	Excessive workload	Bullying or discrimination	Threats or physical violence
	Coefficient (Rob. st. err.)	Coefficient (Rob. st. err.)	Coefficient (Rob. st. err.)	Coefficient (Rob. st. err.)	Coefficient (Rob. st. err.)	Coefficient (Rob. st. err.)	Coefficient (Rob. st. err.)
Job characteristics							
<i>Full-time contract</i>	0.107*** (2.78e-02)	0.197*** (3.15e-02)	0.132*** (2.36e-02)	0.137*** (2.50e-02)	0.337*** (2.77e-02)	2.90e-02 (3.41e-02)	7.15e-02 (5.58e-02)
<i>Overtime hours</i>	0.229*** (2.64e-02)	0.220*** (2.73e-02)	0.206*** (2.55e-02)	0.247*** (2.50e-02)	0.532*** (2.48e-02)	0.243*** (3.40e-02)	0.199*** (5.16e-02)
<i>Shift work</i>	0.439*** (1.92e-02)	0.453*** (2.00e-02)	0.355*** (1.81e-02)	0.487*** (1.80e-02)	0.243*** (1.93e-02)	0.337*** (2.46e-02)	0.413*** (3.59e-02)
Firm characteristics							
<i>Seat +10</i>	6.14e-02*** (1.95e-02)	1.00e-01*** (2.09e-02)	8.05e-02*** (1.78e-02)	9.63e-02*** (1.82e-02)	3.32e-02* (1.98e-02)	1.59e-01*** (2.85e-02)	8.56e-02* (4.59e-02)
<i>Agriculture as reference category</i>	$X^2(4)=208.43^{***}$	$X^2(4)=528.76^{***}$	$X^2(4)=491.53^{***}$	$X^2(4)=361.85^{***}$	$X^2(4)=48.85^{***}$	$X^2(4)=30.43^{***}$	$X^2(4)=72.75^{***}$
<i>Industry excluding construction</i>	0.154*** (4.84e-02)	0.416*** (5.32e-02)	-0.496*** (4.31e-02)	-0.197*** (4.49e-02)	-0.217*** (5.14e-02)	0.292*** (9.80e-02)	-0.0355 (0.177)
<i>Construction</i>	2.78e-1*** (5.15e-02)	5.76e-01*** (5.60e-02)	1.13e-01** (4.58e-02)	3.31e-01*** (4.77e-02)	-3.40e-02 (5.62e-02)	3.15e-01*** (1.06e-01)	1.11e-01 (1.92e-01)
<i>Retail</i>	-0.144*** (5.28e-02)	-2.86e-02 (5.84e-02)	-0.296*** (4.56e-02)	-0.206*** (4.83e-02)	-0.177*** (5.47e-02)	0.309*** (1.01e-01)	-7.95e-03 (1.82e-01)
<i>Other activities</i>	-7.26e-02 (4.74e-01)	2.26e-02 (5.24e-02)	-0.362*** (4.12e-02)	-0.116*** (4.35e-02)	-0.106* (4.96e-02)	0.402*** (9.55e-02)	0.353* (1.73e-01)
Personal characteristics							
<i>Current job tenure</i>	1.23e-03*** (2.41e-04)	9.58e-04*** (2.53e-04)	6.75e-04*** (2.24e-04)	6.12e-04*** (2.26e-04)	09.78 e-04*** (2.40e-04)	1.71e-03*** (3.25e-04)	1.67e-03*** (5.07e-04)
<i>Square of current job tenure</i>	-2.25e-06*** (5.83e-07)	-9.01e-07 (6.05e-07)	-1.14e-06* (5.44e-07)	-1.05e-06* (5.44e-07)	-1.25e-06* (5.7e-071)	-2.96e-06*** (7.69e-07)	-3.25e-06*** (1.20e-06)
<i>First job</i>	-9.36e-02*** (2.03e-02*)	-1.27e-01*** (2.13e-02*)	-9.94e-02*** (1.86e-02*)	-8.85e-02*** (1.87e-02*)	-1.04e-01*** (1.98e-02*)	-1.20e-01*** (2.71e-02*)	-6.95e-02* (4.01e-02*)
<i>Fixed-term contract</i>	-5.76e-02** (2.67e-02)	1.10e-03 (2.84e-02)	-5.84e-02** (2.39e-02)	-9.39e-02*** (2.45e-02)	-7.25e-02*** (2.71e-02)	-1.20e-02 (3.74e-02)	-3.52e-02 (5.86e-02)
<i>Female</i>	-3.17e-01*** (1.88e-02*)	-2.92e-01*** (1.97e-02*)	-2.10e-03 (1.70e-02)	-3.59e-01*** (1.72e-02*)	5.80e-02*** (1.79e-02*)	1.30e-01*** (2.41e-02*)	-6.62e-02** (3.70e-02*)
<i>Born in Italy</i>	1.33e-02 (3.00e-02)	-4.49e-02 (3.06e-02)	-1.28e-01*** (2.69e-02)	-5.44e-02** (2.77e-02)	-6.89e-02** (3.09e-02)	-2.79e-01*** (3.86e-02)	-2.28e-01*** (6.13e-02)

<i>Bad working conditions</i>	Exposure to dangers	Noisy workplace	Bad posture	Risk of injury	Excessive workload	Bullying or discrimination	Threats or physical violence
<i>Years of education</i>	-6.74e-02*** (1.88e-02)	1.28e-02 (2.01e-02)	-9.13e-02*** (1.75e-02)	-1.02e-01*** (1.75e-02)	-6.68e-02*** (1.80e-02)	4.58e-03 (2.41e-02)	-2.27e-02 (3.69e-02)
<i>Square of years of education</i>	2.53e-03** (7.77e-04)	-0.000764e-04 (8.39e-04)	2.98e-03** (7.22e-04)	3.79e-03** (7.15e-04)	2.95e-03** (7.19e-04)	1.22e-04 (9.61e-04)	1.54e-03 (1.46e-03)
<i>Educational activities in last four weeks</i>	0.285** (3.51e-02)	0.282** (3.73e-02)	0.394** (3.18e-02)	0.298** (3.25e-02)	0.367** (3.12e-02)	0.328** (3.91e-02)	0.303** (5.61e-02)
<i>Age</i>	2.16e-03 (5.43e-03)	8.81e-03 (5.71e-03)	1.32e-02** (5.02e-03)	1.40e-02** (5.06e-03)	2.17e-02** (5.69e-03)	1.81e-02** (8.08e-03)	1.61e-02 (1.29e-02)
<i>Square of age</i>	-439e-05 (6.41e-05)	-1.21e-04* (6.72e-05)	-1.91e-04** (5.94e-05)	-209e-04** (5.99e-05)	-2.39e-04*** (6.62e-05)	-1.68e-04* (9.34e-05)	-1.79e-04 (1.50e-04)
<i>Regional GDP per capita</i>	8.40e-05** (2.96e-05)	1.21e-04** (3.14e-05)	6.36e-05** (2.77e-05)	-1.17e-05 (2.80e-05)	2.80e-05 (2.96e-05)	7.35e-06 (3.92e-05)	-2.84e-05 (6.10e-05)
<i>Square of regional GDP per capita</i>	-1.37e-09** (5.17e-10)	-2.13e-09** (5.47e-10)	-9.45e-10* (4.83e-10)	1.02e-10 (4.88e-10)	-2.59e-10 (5.17e-10)	1.30e-10 (6.86e-10)	7.79e-10 (1.07e-09)
<i>Executive or entrepreneur as reference category</i>	$X^2(7)=919.76^{***}$	$X^2(7)=1169.22^{***}$	$X^2(7)=706.15^{***}$	$X^2(7)=963.64^{***}$	$X^2(7)=41.04^{***}$	$X^2(7)=9.87$	$X^2(7)=63.91^{***}$
<i>Intellectual or scientific occupation</i>	4.91e-01*** (8.73e-02)	3.82e-01*** (8.87e-02)	2.21e-01*** (8.06e-02)	2.35e-01*** (7.19e-02)	-2.87 e-01*** (5.57e-02)	1.12e-01 (8.69e-02)	-7.65e-02 (1.11e-01)
<i>Technical position</i>	5.28e-01*** (8.42e-02)	4.32e-01*** (8.53e-02)	4.81e-01*** (7.69e-02)	3.98e-01*** (6.87e-02)	-2.68e-01*** (5.31e-02)	9.27e-02 (8.52e-02)	-1.72e-01 (1.13e-01)
<i>Office clerk</i>	4.27e-01*** (8.70e-02)	2.98e-01*** (8.87e-02)	4.85e-01*** (7.92e-02)	1.96e-01*** (7.20e-02)	-3.42e-01*** (5.64e-02)	1.85e-01** (8.84e-02)	-2.30e-02 (1.19e-01)
<i>Qualified occupation</i>	6.01e-01*** (8.73e-02)	3.54e-01*** (8.96e-02)	7.08e-01*** (7.93e-02)	6.64e-01*** (7.14e-02)	-3.03e-01*** (5.73-e02)	8.76e-02 (9.07e-02)	1.36e-01 (1.19e-01)
<i>Craftsman, skilled worker or farmer</i>	1.218** (8.60e-02)	1.095** (8.74e-02)	1.061** (7.92e-02)	1.037** (7.11e-02)	-2.93e-01*** (5.77e-02)	1.21e-01 (9.15e-02)	-2.12e-01 (1.29e-01)
<i>Operator of industrial machinery</i>	1.090** (8.65e-02)	1.168** (8.77e-02)	9.14e-01*** (8.01e-02)	9.79e-01*** (7.18e-02)	-2.62e-01*** (5.87e-02)	1.17e-01 (9.23e-02)	-8.31e-02 (1.26e-01)
<i>Unskilled occupation</i>	9.46e-01*** (8.77e-02)	7.31e-01*** (8.96e-02)	9.68e-01*** (8.02e-02)	7.94e-01*** (7.26e-02)	-3.18e-01*** (5.98e-02)	1.20e-01 (9.36e-02)	-3.41e-01** (1.33e-01)

<i>Bad working conditions</i>	Exposure to dangers	Noisy workplace	Bad posture	Risk of injury	Excessive workload	Bullying or discrimination	Threats or physical violence
<i>Never married as reference category</i>	$X^2(3)=9.76^{**}$	$X^2(3)=12.48^{***}$	$X^2(3)=28.53^{***}$	$X^2(3)=24.68^{***}$	$X^2(3)=19.72^{***}$	$X^2(3)=24.36^{***}$	$X^2(3)=4.85$
<i>Married</i>	5.62e-02 <sup>***</sup> (2.15e-02)	7.92e-02 <sup>***</sup> (2.27e-02)	6.66e-02 <sup>***</sup> (1.97e-02)	7.98e-02 <sup>***</sup> (2.00e-02)	5.77e-02 <sup>***</sup> (2.15e-02)	-2.56e-02 (2.90e-02)	-1.10e-03 (4.64e-02)
<i>Separated or divorced</i>	9.06e-02 <sup>**</sup> (3.72e-02)	8.09e-02 <sup>**</sup> (3.97e-02)	1.66e-01 <sup>***</sup> (3.35e-02)	1.50e-01 <sup>***</sup> (3.44e-02)	1.43e-01 <sup>***</sup> (3.57e-02)	1.58e-01 <sup>***</sup> (4.55e-02)	1.28e-01 <sup>*</sup> (7.18e-02)
<i>Widow/widower</i>	-1.21e-02 (0.0692)	6.18e-02 (0.0709)	1.58e-02 <sup>***</sup> (0.0586)	3.53e-02 (0.0641)	1.62e-01 <sup>***</sup> (0.0611)	-1.48e-01 <sup>*</sup> (0.0895)	-8.52e-02 (0.152)
Constant	-3.113 <sup>***</sup> (5.04e-01)	-4.318 <sup>***</sup> (5.32e-01)	-2.234 <sup>***</sup> (4.67e-01)	-9.11e-01 <sup>*</sup> (4.72e-01)	-2.090 <sup>***</sup> (4.99e-01)	-3.300 <sup>***</sup> (6.77e-01)	-2.835 <sup>***</sup> (1.045)
Number of observations	42,198	42,198	42,198	42,198	42,198	42,198	42,198
Pseudo R <sup>2</sup>	0.1292	0.1777	0.0840	0.1283	0.0476	0.0480	0.0900

Significance levels: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ;

When  $X^2(-)$  is reported instead of coefficient and standard error, the joint significance of the battery of dummy variables is tested;

Sources: 2007 Istat Labour Force Survey; "Conti economici regionali", Istat.

Among the job characteristics, the main difference with the model on the composite index is that the majority of psychological components of bad working conditions are not significantly affected by full-time work.

With regard to firm characteristics, the important difference is that workers in industry (except construction) have worse bad working conditions in terms of exposition to dangers, noisy places and bullying or discrimination. As for bullying or discrimination, also retail sector overturns the significant sign being now positive. While construction is the worst sector in terms of composite index of bad working conditions, this result does not hold if threats or physical violence is individually considered.

In terms of personal characteristics, the majority of psychological components of bad working conditions are not significantly affected by fixed-term contract. Workers indicating noisy workplaces are not significantly affected by fixed-term contract either. Furthermore, bad posture is not significantly predicted in a different way for men and women. Being born in Italy does not change the prediction of exposure to dangers and noise. Years of education do not affect reporting noisy workplaces, bullying or discrimination and threats or physical violence. The effect of age ceases to be significant for exposure to dangers, noisy workplace and threats or physical violence. The effect of regional GDP per capita is confirmed only for the physical components of bad working conditions exposure to dangers, noisy workplace and bad posture, albeit marginally in the last case. Finally, occupation dummies lose significance for bullying or discrimination, and marital status dummies for threats or physical violence.

*Table 5 – Variable distinction: expected vs. actual*

	Actual	Expected
Job characteristics		
<i>Full-time contract</i>	✓	
<i>Overtime hours</i>	✓	

<i>Shift work</i>	✓
Firm characteristics	
<i>Seat +10</i>	✓
<i>Agriculture as reference category</i>	✓
<i>Industry excluding construction</i>	✓
<i>Construction</i>	✓
<i>Retail</i>	✓
<i>Other activities</i>	✓
Personal characteristics	
<i>Current job tenure</i>	✓
<i>First job</i>	✓
<i>Female</i>	✓
<i>Fixed-term contract</i>	✓
<i>Born in Italy</i>	✓
<i>Years of education</i>	✓
<i>Educational activities in last four weeks</i>	✓
<i>Age</i>	✓
<i>Regional GDP per capita</i>	✓
<i>Executive or entrepreneur as reference category</i>	✓
<i>Intellectual or scientific occupation</i>	✓
<i>Technical position</i>	✓
<i>Office clerk</i>	✓
<i>Qualified occupation</i>	✓
<i>Craftsman, skilled worker or farmer</i>	✓
<i>Operator of industrial machinery</i>	✓
<i>Unskilled occupation</i>	✓
<i>Never married as reference category</i>	✓
<i>Married</i>	✓
<i>Separated or divorced</i>	✓
<i>Widow/widower</i>	✓

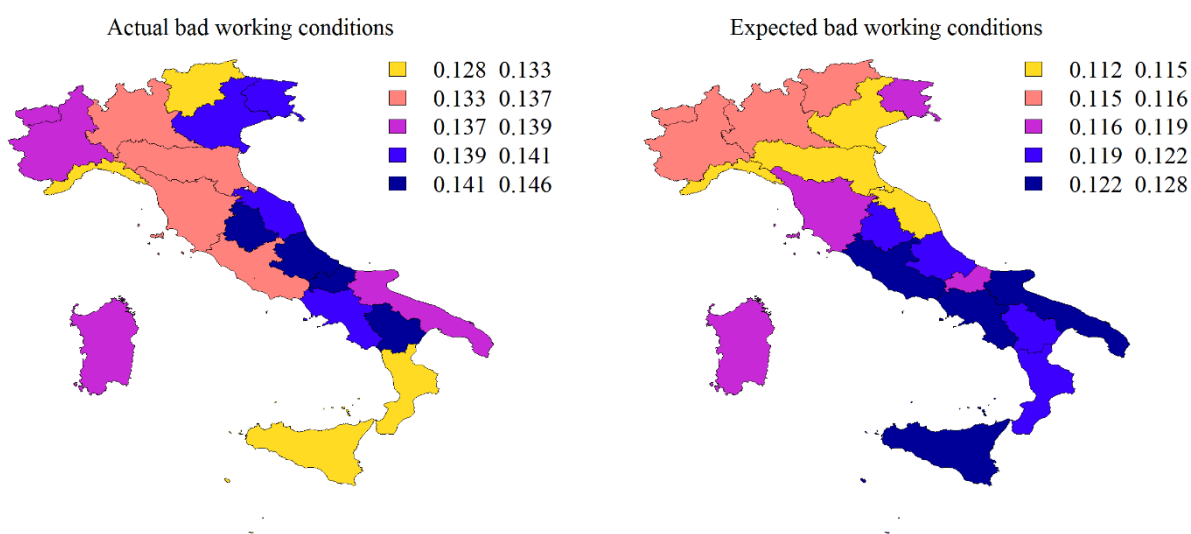
In order to propose a more insightful interpretation of the results, we present a (possible) variable classification into variables mainly driving actual working conditions and variables mainly driving expectations, as depicted in Table 5. Some variables do not fall under the category “actual”, following clear indications in the literature and the confirmation of our results in favour of an expectation interpretation. This is the case of Fixed-term contract, Female, Years of education, Educational

activities in last four weeks, Age and marital status.

For some other variables, we do not find a robust support in the literature pointing to an actual or expectation interpretation. Yet, the sign of their estimated coefficients is puzzling. Therefore, our categorisation is based on our empirical findings. As an illustrative example, one would expect that higher Regional GDP per capita is associated to better working conditions. Surprisingly, we find an opposite result, which we interpret through the lenses of expectations of working conditions. Finally, for the remaining variables, we cannot back up any finding in the literature. The categorization of these variables is therefore carried out on mere economic arguments looking at the sign of their estimated coefficients.

By means of the first model of Table 2 and the classification in Table 5, we are able to disentangle the effects of different sources of variation of bad working conditions. In Figure 4, the panels represent the regional distribution breakdown of the predictions of bad working conditions, divided into actual and expected bad working conditions. Actual bad working conditions are obtained as predictions but previously fixing all the variables identified in Table 5 as mainly driving expectations to sample (national) averages. In so doing, all the variation is due only to the variables driving actual bad working conditions. The reverse is done for expected bad working conditions.

Figure 4 – Regional distribution breakdown of the predictions of bad working conditions



The quintiles of regional averages are shown. Worse (higher) bad working conditions correspond, on average, to darker shadowed regions.

As shown in the left panel, actual bad working conditions are less clustered, since present in the South, Centre and North of Italy. The right panel confirms the comment of Figure 2 about the lower regional GDP per capita and higher expected bad working conditions in the South of Italy.

## 5. Discussion

Our study investigates the determinants of bad working conditions using the 2007 Italian Labour Force Survey, which includes a special ad-hoc section on working conditions.

We provide a theoretical formulation aiming to explain how working conditions are perceived by workers: in defining the perception of working conditions, actual working conditions are filtered by expectations about them, implying that the same level of actual (real) working conditions can lead to different reported (perceived) working conditions. We hence apply the behavioural concepts of reference point and disappointment in the field of working conditions.

We envisage few regressors in our analysis that may shift upward or downward expectations on bad

working conditions: among the former, being a female and being employed at the first job, among the latter, education and regional GDP per capita.

The coefficients of the variables for which an expectation interpretation can be provided show the expected signs: women report lower bad working conditions than men and also being employed at the first job improves the quality of perceived working conditions. On the contrary, regional GDP per capita positively affects reported bad working conditions. As for education, there is a U-shaped relationship between education and poor working conditions, suggesting that expectations which arise with education interplay with actual experience. However, when we controlled for education activities in the last four weeks, which is strongly unrelated to actual bad working conditions, we find a positive influence on perceived bad working conditions. Finally, the seemingly counterintuitive result obtained for workers with fixed-term contract can be ascribed to the same mechanism. Temporary workers report lower bad working conditions than permanent workers having completely different expectations (reference point) on their job.

Workers with full-time contracts, working overtime or with shifts are likely to report higher bad working conditions, as well as workers in a seat with more than 10 employees. In such cases, we consider actual bad working conditions mirroring perceived bad working conditions, with no expectation mechanism at work.

When we look at individual probit regression models on each component of Bad working conditions, the majority of the psychological components of bad working conditions are not significantly affected by the type of contract, both full-time and fixed-term. Furthermore, the effect of regional GDP per capita holds only for the physical components of bad working conditions exposure to dangers, noisy workplace and bad posture.



## **5.1. Implications, limitations and future directions of research**

In this analysis, working conditions were investigated by a thorough discussion of their determinants. To present a meaningful reading of the results, we proposed a behavioural explanation of how working conditions can be perceived by workers. The discrepancy between actual and expected working conditions is the rationale to state that the declaration of (perceived) working conditions is afflicted by the difference between actual and expected working conditions.

In a domain afflicted by cognitive bias, policy implications very likely fail to be general and are very sensible to the changing perceptions of individuals. As noted by Clark (1997) about the decreasing gender-job satisfaction gap over time, the psycho-socio-economic evolution of customs may drastically change the relations among variables related to expectations. However, our estimations may be considered useful by policymakers willing to consider the psychophysical balance of workers influenced by perceptions and expectations. Moreover, our results show that education and information are key factors able to shift expectations about working conditions (hopefully) closer to the actual ones, diminishing cognitive biases and making workers more self-aware of their actual conditions.

Among the most interesting results in terms of policy on actual working conditions, we stress that, to improve them, workers should not work an excessive amount of time and in difficult hours and should work in small seats. By looking at the results of Job characteristics, we conclude that should be paid special attention to excessive employers' bargaining power, since this could be responsible for the worsening of working conditions. Lastly, our results on marital status confirm well-known findings: a more balanced and positive personal life positively influences also job satisfaction and therefore working conditions.

Directions of future research should encompass an elicitation of subjects' expectations in survey questions, as well as questions aiming at assessing whether the subject's condition is better, equal or worse than the condition of other colleagues in the same task. In order to improve the value of empirical studies, firm-level micro-data would certainly provide a better clue in the direction of an expectation interpretation. In this case, finding two workers with the same task, who report different working conditions, would be a clear indication of a subjective perspective when investigating working conditions.

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## Appendix

*Table A1 – Variable definitions*

	<i>Dummy</i>	<i>Definition</i>
<b>Independent variables</b>		
Job characteristics		
<i>Full-time contract</i>	D	The worker has full-time contract
<i>Overtime hours</i>	D	The worker does overtime hours
<i>Shift work</i>	D	The worker does shift work
Firm characteristics		
<i>Seat +10</i>	D	The worker’s seat has more than ten workers
<i>Agriculture as reference category</i>	D	
<i>Industry excluding construction</i>	D	
<i>Construction</i>	D	Sector of activity of the worker’s firm
<i>Retail</i>	D	
<i>Other activities</i>	D	
Personal characteristics		
<i>Current job tenure</i>		Months of the worker’s current job tenure

<i>First job</i>	D	The worker is new to the workforce
<i>Fixed-term contract</i>	D	The worker has fixed-term contract
<i>Female</i>	D	The worker's gender is female
<i>Born in Italy</i>	D	The worker's birthplace is in Italy
<i>Years of education</i>		Years of education of the worker
<i>Educational activities in last four weeks</i>	D	The worker had had educational activities in the four weeks preceding the interview
<i>Age</i>		Years of age of the worker
<i>Regional GDP per capita</i>		Gross Domestic Product per capita of the worker's region
<i>Executive or entrepreneur as reference category</i>	D	
<i>Intellectual or scientific occupation</i>	D	
<i>Technical position</i>	D	
<i>Office clerk</i>	D	
<i>Qualified occupation</i>	D	Specific kind of the worker's job (occupation)
<i>Craftsman, skilled worker or farmer</i>	D	
<i>Operator of industrial machinery</i>	D	
<i>Unskilled occupation</i>	D	
<i>Never married as reference category</i>	D	
<i>Married</i>	D	Marital status of the worker
<i>Separated or divorced</i>	D	
<i>Widow/widower</i>	D	
<b>Dependent variables</b>		
<i>Bad working conditions</i>		Normalized (from 0 to 1) sum of the indications of the risk factors
<i>Exposure to dangers such as dust, etc.</i>	D	
<i>Noisy workplace</i>	D	
<i>Bad posture induced by work</i>	D	
<i>Feeling exposed to risk of injury</i>	D	Risk factor
<i>Excessive workload</i>	D	
<i>Feeling exposed to bullying or discrimination</i>	D	
<i>Feeling exposed to threats or physical violence</i>	D	

Sources: 2007 Istat Labour Force Survey; "Conti economici regionali", Istat.