# Stress, Effort, and Incentives at Work

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**Abstract**

An extensive medical and occupational-health literature finds that an imbalance between effort and reward is an important stressor which produces serious health consequences. We incorporate these effects in a simple agency model with moral hazard and limited liability, and study the impact on agents' effort and utility, as well as incentive pay provision, assuming agents differ in stress susceptibility. We test main model's implications using the 2015 wave of the European Working Condition Survey. We find that individuals who are more susceptible to stress work harder and have lower subjective well-being. The likelihood of receiving incentive pay is not monotone in stress susceptibility.

*JEL classifications*: D82, I31, J33, L2.

# 1 Introduction

The workplace is a social environment where subjects are exposed to a great variety of stressors of different nature and intensity. This is problematic as stress causes significant health consequences (Padgett and Glaser, 2003; Cohen, Janicki-Deverts and Miller, 2007). The cost of stress-related illnesses accounts for approximately 5 - 8% of annual healthcare costs in the U.S. and for 10 - 38% of differences in life expectancy across demographic groups (Goh et al., 2016). Stress in the workplace has therefore been the object of major attention in the occupational health and medical literature (see Ganster and Rosen, 2013 for a review).

One particularly powerful stressor is the perceived imbalance between the effort provided at work and the reward received: individuals who work with high intensity without obtaining an adequate reward are more vulnerable to pro-inflammatory immune reactions, paving the way to illnesses (see Siegrist et al., 2004, or Tsutsumi and Kawakami, 2004, for a survey).

In these studies, higher rewards are typically associated with lower stress (e.g. Siegrist, 1996). This extensive literature has the merit to highlight the existence of an empirical link between effort, rewards and stress, but it fails to recognize the relationship between effort and rewards suggested by the economic literature on incentives.[1] In the latter, agents who receive incentive contracts to deal with moral hazard, will be rewarded for their effort only if they meet the performance target. Thus, by inducing greater effort and by linking pay to performance risk, incentive pay may actually generate more rather than less stress. Taking into account the role of incentive pay may seem therefore important to understand how stress responds to rewards. Such link has not received so far specific attention.

In this paper, we make a first attempt to bridge this gap. First, we introduce stress considerations and effort-reward imbalance in a standard Principal-Agent model with moral hazard and limited liability. The welfare cost of effort-reward imbalance may be interpreted as a specific form of loss aversion.[2] Second, we use theoretical predictions to empirically test the implications of work-related stress for effort, incentive provision and well-being. We focus on one type of work effort, i.e. work intensity. It measures the intensive margin of work effort, which captures the rate of physical and/or mental inputs to work tasks during working hours, which, in turn, is the more natural empirical counterpart of what work effort is in principal-agent models, as opposed to extensive work effort, which captures the amount of time an employee works more than normal hours - overtime, long hours, etc. (Green, 2001). In the remaining of this paper, work effort and work intensity are used interchangeably.

Within economics, the evidence based on an integrated multidisciplinary approach like ours is limited to Avgoustaki and Frankort (2019). They analyse the implications of the demand-control model developed by Karasek (1979) for the role of job discretion in conditioning work effort (work intensity) associations with employees' well-being (i.e. stress, fatigue, and job satisfaction), and career-related indicators (i.e. career prospects, job security, and recognition). We complement and extend their analysis by focusing on the interactive effects of incentive pay for work effort and well-being, and on the mediating role that work-related stress plays in this context. This analysis is based on predictions from a Principal-Agent model.

Specifically, we consider a setting in which an agent's unobservable work effort increases the probability

[1] See Laffont and Martimort (2002) for a comprehensive presentation of the theory of incentives.

[2] See Frey (1997) and Rabin (1998) for the relevance of psychological and behavioral factors - including loss aversion - for the modelling of gain and losses associated with individual decisions.

of good performance; the realized performance is verifiable and the agent obtains some private non-monetary benefit as well as a monetary bonus when good performance realizes. An agent who exerts effort but does not receive the monetary bonus suffers a loss that increases with the level of effort exerted and with the agent's heterogeneity in stress susceptibility. Empirical evidence finds that such heterogeneity arises either because of personality differences (Hintsanen et al., 2011), or of job characteristics (Knowles et al., 2008). The agent does not suffer any loss when either he or she does not exert effort or when performance is good and thus receives the monetary bonus. In this context, when choosing effort, the agent balances off two possibly conflicting targets: maximizing the expected (monetary and non-monetary) reward linked to good performance and minimizing the expected stress-related loss linked to a possible effort-reward imbalance.

We show that, under some conditions, stress susceptibility motivates the agent to work harder in an attempt to reduce the risk of suffering the loss, and the more so the greater the stress susceptibility of the agent. This result rationalizes findings from the medical and occupational health literature according to which effort-reward imbalance is often associated with over-commitment, i.e. a passive coping strategy that reacts to the stressor by further increasing the level of effort (see for example Bellingrath et al., 2008). Our model also predicts that the principal gains from the stress susceptibility of the agent, whilst agents with greater stress susceptibility enjoy a lower utility at work.

Using the 2015 wave of the European Working Condition Survey, we show that, similarly to Avgoustaki and Frankort (2019), the correlation between effort and (proxies for) work-related stress susceptibility is positive. Consistently with the theoretical predictions of our model, this correlation is always increasing in susceptibility especially when the worker receives incentive pay. Further, the likelihood of receiving incentive pay is higher for higher than lower stress susceptibility, which is consistent with the principal gaining from incentive pay when stress susceptibility increases. Moreover, heterogeneity in stress susceptibility is negatively associated with workers' subjective well-being: types with intermediate to high levels of susceptibility to stress are more likely to report lower job satisfaction.

The rest of the paper is organized as follows. In Section 2 we present the theoretical framework and the testable implications for the empirical analysis. In Section 3 we introduce data and variables that are used in Section 4 for the empirical analysis. Section 5 concludes.

# 2 Stress, Work Effort, and Incentives

## 2.1 A Simple Model

We consider a risk-neutral agent employed by a risk-neutral principal to deliver some verifiable output, $q$. Output is stochastic and it is affected by the agent's unobservable work effort $a$ in the following way:

$$q = \begin{cases} \Delta & \text{with probability} \quad \pi(a) \in [0,1], \\ 0 & \text{with probability} \quad 1 - \pi(a), \end{cases}$$

with $\pi'(a) \geq 0, \pi''(a) \leq 0$. The cost of effort is denoted by $c(a)$ with $c'(a) \geq 0$ and $c''(a) \leq 0$.

The agent enjoys some non-monetary private benefit $b \geq 0$ in case of good performance and receives an incentive pay $\tau(q)$, which comprises a base payment $\tau^L$ paid in case of bad performance ($q = 0$) and a bonus $\tau^H > \tau^L$ in case of good performance ($q = \Delta$). We assume that the agent is protected by limited liability, in the sense that monetary payments must be non-negative: $\tau^L, \tau 2^H \geq 0$.

We depart from the standard Principal-Agent theory by assuming that the agent suffers a loss, due to stress and illness risk, when he receives no monetary reward for the effort exerted; the loss increases with effort and with the agent's susceptibility to work-related stress, which we denote by $\theta \in \left[0, \overline{\theta}\right]$. $\theta$ can be interpreted also as a measure of how stressful the job is, or as a mix of characteristics of the job and of the individual (e.g. temperament traits). The agent does not suffer any loss when he does not exert effort and/or when he receives the monetary bonus, $\tau^H$. Formally, the loss function is given by:

$$L(\theta, a, \tau(q)) = \begin{cases} \theta g(a) & \text{when } \tau(q) = \tau^L \text{ and } a > 0, \\ 0 & \text{when } \tau(q) = \tau^H \text{ and/or } a = 0. \end{cases}$$

The expression $\theta g(a)$ denotes the stress cost of an effort-reward imbalance. We assume: $g(0) = 0$ and $g'(a), g''(a) \geq 0, g'''(a) = 0$. Thus, the stress cost of bad performance is minimal when effort is zero and it is increasing and convex in effort. The expected utility of an agent with stress susceptibility $\theta$ is therefore:[3]

$$U(\theta) \equiv \pi(a)\tau^H + (1 - \pi(a))\left[\tau^L - \theta g(a)\right] - c(a). \tag{1}$$

Effort generates three effects on the agent's expected utility:

1. Incentive pay. It increases the likelihood $\pi(a)$ of receiving the bonus $\tau^H$ beyond enjoying the non-monetary benefits, $b$.

2. Loss probability. It reduces the likelihood $(1 - \pi(a))$ of incurring the loss $\theta g(a)$.

3. Loss size. It increases the size of the loss $\theta g(a)$.

Compared to a standard Principal-Agent setting where only the first effect is present, effort-reward imbalance adds the second and third effect. In other words, if susceptibility to effort-reward imbalance were absent, i.e., if $\theta = 0$, we would go back to a standard Principal-Agent formulation where only the first effect is present.

To analyse the implications of stress susceptibility to effort-reward imbalance, we consider the choice of effort by the agent under the optimal incentive scheme. As anti-discrimination regulations forbid unequal pay based on individual characteristics, we assume that the incentive pay $\tau(q)$ must be invariant with respect to individual stress susceptibility, $\theta$.

Maximizing the expected utility of the agent (ex. 1) with respect to $a$, we obtain the equilibrium level of effort $a^*(\theta) \equiv \min\{\hat{a}(\theta), \bar{a}\}$, where $\bar{a}$ denotes some maximal effort (for example the level of effort such that $\pi(a) = 1$) and $\hat{a}$ the interior solution to:[4]

[3] Loss averse individuals evaluate losses relative to a reference point as more painful than equal-sized gains (see Koszegi and Rabin, 2006, and 2007). Our utility formulation shares some feature with the loss aversion framework, if we think of stress susceptibility as some degree of aversion to a loss that arises when reward is below expectation. However, our agents are not averse to pay dispersion, as in the loss aversion literature, and the loss does not arise when effort is zero. Our concept is clearly different from guilt aversion (see Charness and Dufwenberg, 2006) as the agent's preferences over strategies do not depend on his (or her) beliefs about the beliefs of others.

[4] The second order condition is:

$$U'' \equiv \pi''(a)\left[b + \tau^H - \tau^L + \theta g(a)\right] + 2\theta g'(a) - [1 - \pi(a)]\theta g''(a^*) - c''(a) \leq 0. \tag{SOC}$$

which is satisfied provided $\theta g'(a)$ is sufficiently small.

$$\pi'(\hat{a})\left[b+\tau^H-\tau^L+\theta g(\hat{a})\right]-[1-\pi(\hat{a})]\,\theta g'(\hat{a})-c'(\hat{a})=0, \qquad (MH)$$

with

$$\frac{d\hat{a}\left(\theta,\tau^H,\tau^L\right)}{d\theta}=\frac{1}{-U''}\left[\pi'(\hat{a})\,g(\hat{a})-(1-\pi(\hat{a}))\,g'(\hat{a})\right].$$

At the interior solution, more susceptible agents exert (weakly) greater effort if:

$$\frac{\pi'(\hat{a})}{1-\pi(\hat{a})}\geq\frac{g'(\hat{a})}{g(\hat{a})}. \qquad (2)$$

When choosing his or her effort, the agent balances off two possibly conflicting targets: maximizing the expected reward and minimizing the loss due to stress. As in standard principal-agent models, greater effort increases the expected monetary reward. In addition, here effort also affects the expected loss due to the stress consequences of an effort-reward imbalance. In particular, on the one hand, by increasing the probability $\pi(a)$ of good performance, effort reduces the risk of incurring the loss $\theta g(a)$, thus generating a benefit $\pi'(a)\,\theta g(a)$ to the agent. On the other hand, greater effort raises the size of the loss $\theta g(a)$ suffered when bad performance realizes, and therefore generates an additional cost $(1-\pi(a))\,\theta g'(a)$ to the agent. Both effects increase with the agent's degree of stress susceptibility $\theta$. However, when condition (2) holds, the former effect dominates: the stress consequences of an effort-reward imbalance makes more susceptible agents work harder not just in pursuit of higher income, but also indirectly to avoid the stress consequences of weak performance.[5] As long as the private benefit or stress susceptibility are not too high to make the agent work at maximal effort even absent incentive pay, effort keeps increasing with the level of stress susceptibility of the agent.

To analyse the impact of stress susceptibility on the principal, consider the optimal incentive scheme. If the intrinsic benefit $b$ is high enough that the equilibrium effort is $\bar{a}$ absent incentive pay, then clearly the principal will simply offer the agent a base salary to satisfy his or her participation constraint.[6] This will continue to hold, as long as the corner solution $\bar{a}$ is obtained for a wide range of values of $\theta$. In the Online Appendix, we show an example where maximal effort is obtained for values of $\theta$ above a certain threshold, and thus for larger values of stress susceptibility $\theta$. Therefore, let us assume here that $b$ is small enough that for a wide range of $\theta s$ there is an interior solution to $(MH)$. In this case, it is easy to show that, as in standard Principal-Agent setting, the principal minimizes the base reward, by setting $\tau^L=0$.[7] Furthermore, the concavity of the utility function of the agent implies that when $(MH)$ is satisfied then the agent's expected utility is non-negative and thus the participation constraint, $U(\theta)\geq 0$, is satisfied. Therefore, the optimal bonus simply maximizes the principal's expected payoff given by:

$$V\left(\tau^H,\theta\right)\equiv E_\theta\hat{a}\left(\theta,\tau^H\right)\left(\Delta-\tau^H\right),$$

[5] Clearly, when (2) holds, effort is also greater than in standard moral hazard settings where $\theta=0$.

[6] Note that $\hat{a}(\theta)$ increases with $b$:

$$\frac{d\hat{a}(\theta)}{db}=\frac{\pi'(\hat{a})}{-U''}\geq 0.$$

[7] If $\tau^L$ were positive, the principal could lower it, reduce proportionally $\tau^H$ and leave effort unchanged whilst saving on the expected pay.

which yields:

$$\tau^{H*} = \Delta - \frac{E_\theta \hat{a}\left(\theta, \tau^H\right)}{E_\theta \frac{\pi'(\hat{a}(\theta,\tau^H))}{-U''}} < \Delta.$$

When (2) holds, and thus the agent responds to stress by working harder, the principal gains from the stress consequences of effort-reward imbalance:

$$\frac{dV(\theta)}{d\theta} = \left(\Delta - \tau^{H*}\right) \frac{E_\theta d\hat{a}(\theta)}{d\theta}.$$

Instead, more stress susceptible agents are always worse off, as (from 1):

$$\frac{dU(\theta)}{d\theta} = -\left(1 - \pi(\hat{a})\right) g\left(\hat{a}(\theta)\right) \leq 0.$$

Due to limited liability, in the presence of an incentive pay, the principal must give up an informational rent to the agent to incentivize his or her unobservable effort. By inducing the agent to work harder, for any given level of the monetary bonus, stress susceptibility to effort-reward imbalance then reduces the size of this rent, benefiting the principal but hurting the agent. As an illustration, in the Online Appendix we provide a linear example.

## 2.2 Testable Implications

A number of testable implications can be obtained from our theoretical framework. The first one relates to the relationship between stress susceptibility and effort, when (2) holds.

- Hypothesis 1: Individuals who are more susceptible to stress exert weakly greater work effort.

Our theoretical analysis also indicates that this link is affected by incentive pay. This suggests the following second implication:

- Hypothesis 2: The work effort of the individuals more susceptible to stress is greater especially in presence of incentive pay.

Our theoretical analysis also emphasizes that when stress susceptibility induces agents to work harder, the principal enjoys a greater payoff. This result is obtained assuming that an incentive pay scheme is available at no cost to the principal. However, if the adoption of an incentive scheme implied a fixed cost (e.g. administrative cost), the principal would be more likely to use it when the benefit is greater. This happens when stress susceptibility is higher. This theoretical result suggests the following third prediction.

- Hypothesis 3: Incentive pay is more likely when individuals report higher levels of stress susceptibility, unless their effort is already maximal.

The theoretical analysis finds that the stress-related consequences of effort-reward imbalance lead agents with higher stress susceptibility to enjoy a lower utility. Our fourth prediction is as follows.

- Hypothesis 4: Subjective well-being (e.g. job satisfaction) of individuals decreases with their degree of susceptibility to stress.

In the next session we discuss how to operationalize the concepts of stress, effort, rewards and well-being, finding empirical proxies for these economic concepts.

# 3 Data and variables

## 3.1 Data

Our dataset consists in the sixth European Working Conditions Survey (EWCS) carried out by the European Foundation for the Improvement of Living and Working Conditions in 2015. The survey's aim is to measure working conditions across European countries, identify groups of workers at risk of bad job quality, and also contribute to developing an EU policy aimed at improving job quality.The EWCS survey stratifies random samples of employees through (face-to-face) interviews that cover issues related to employment status, work organization, training, working time duration and organization, physical and psycho-social risk factors, health and safety, work–life balance, worker participation, earnings and financial security, as well as work and health.

The survey has been extensively used in the literature, for example, by Green and McIntosh (2001) to study work intensification in Europe; Avgoustaki (2016) and Avgoustaki and Frankort (2019) to study extensive and intensive work effort; Cottini and Lucifora (2013) to study how adverse working conditions affect workers' mental health; Menon, Salvatori and Zwysen (2020) to study the implications of computer use for work discretion and work intensity.

Depending on country size and national arrangements, the sample ranges from 1,000 to 3,300 people per country. In the 2015 wave of the EWCS, a total of 44,000 individuals were interviewed, covering 35 countries - the most comprehensive wave to date - i.e., the EU 28, Albania, the Former Yugoslavia Republic of Macedonia, Montenegro, Norway, Serbia, Switzerland, and Turkey. We omitted from our sample self-employed individuals below 15 and above 65 years old, as well as individuals who reported tenure above 50 years.[8] We also delete the observations in case of missing values on any of the variables included in our empirical specifications. Our final sample includes about 21,279 employees across 35 countries.

## 3.2 Variables

The first set of variables operationalize (intensive) work effort. Green (2006) provides an insightful definition of it: 'In part, work effort is inversely linked to the porosity of the working day, meaning those gaps between tasks during which the body or mind rests. Yet a gradation of effort is also exercised during tasks performance, which is hard to measure except in very specific circumstances (pp. 48 - 49)'. Conceptually, since work effort is the rate of physical or mental input to work tasks during working hours, it can be defined as the work intensity per unit of time. Units of such intensive work effort are not directly observable, they depend on specific tasks and are difficult to measure even in the case of physical effort. In practice, a measurement of intensive work effort is not available in survey data. The problem of measurement can be solved using people's perceptions of their own work intensity, such as working under a great deal of tension or working at a very high speed. In general, these judgments are relative, as they may reflect and be calibrated against a social norm, which may vary over time and across workplaces.

[8] The reason is that the information on incentive pay is available only for employees.

However, a number of experiments showed the reliability of subjective measures of work intensity, which correlate well with laboratory measures of physical and mental effort. In addition, a clear advantage of using subjective work intensity as a proxy for work effort is that the workers themselves are likely to be the best informed party (Green, 2006).[9]

Based on the prior work using EWCS and the definition by Green (2001a, 2001b, 2004) we construct a Work effort index that measures work intensity on a 0 - 100 scale. This is obtained normalizing in that interval the sum of answers to three survey questions. Whenever needed, we invert the scoring of the items such that the effort index is increasing in work intensity. The questions ask the following: Does your job involve: A- working at a very high speed; B- working to tight deadlines (1 - all of the time, 7 - Never)?; Do you have enough time to get the job done?

Another issue concerns individual susceptibility to stress, which is in general hard to measure using survey data. Instead, in EWCS there are questions where respondents are asked to report the perceived level of work-related stress. To construct estimates of propensity to stress we follow a two step procedure.

We first define two variables that capture work-related stress. They are both categorical and asking workers to indicate on a 5 point ordered scale increasing in the level of stress (4 = always, 3 = most of the time, 2 = sometimes, 1 = rarely, 0 = never) the extent to which: (i) they experience stress at work and (ii) over last 12 months, they kept worrying about work when not working. Since work stress (and stress susceptibility) is arguably multidimensional, the use of both would minimise informative losses.[10] The use of these two variables as proxies of stress susceptibility to study its relationship with work effort is problematic since subjective stress is a measure of subjective well-being and, as documented by previous studies, may be itself an outcome of work effort (e.g. Avgoustaki and Frankort, 2019). Conceptually, we may conceive the level of stress experienced at work as the combination of two components: the innate (ex-ante) individual-specific stress susceptibility ($\theta$) and the (ex-post) component caused by work, only the latter being endogenous to work effort.

Ideally, susceptibility to stress can be obtained once we take out from work stress the quote that is caused by work. In EWCS there are three questions that may be used to approximate the latter. The first 'Does your work affect your health?'. We use it to define the dummy Bad health due to work, which takes value one when respondents answer 'Yes, mainly negatively' (and zero when the answer is 'No' or 'Yes, mainly positively'). The second and the third are two questions for having being subject to the following forms of violence during the course of work: (in the last month) verbal abuse, unwanted sexual attention, threats, humiliation behaviours; (in the last twelve months) physical violence, sexual harassment, bullying/harassment. We use them to create the dummy Violence, which is one if at least least one of the above is mentioned.

In the second step, we estimate two regression models, one for Stress at work and one for being Worried at home for work issues, using Bad health due to work and Violence as regressors. Models' predictions are then used to construct two estimates of innate stress susceptibility: $\hat{\theta}_1$ (from Stress at work) and $\hat{\theta}_2$ (from Worried at home for work issues).[11]

[9] Also Hamermesh and Lee (2007) define work effort as work intensity, in particular as the 'intensity' of working time, e.g. tight deadlines: given the number of hours spent at work, this excess of effort is costly for the individual. Avgoustaki and Frankort (2019) use a similar concept involves the level of effort supplied per unit of working time (work intensity).

[10] Similar measures for work related stress have been used for example in Groot and Maassen van den Brink (1999).

[11] These two auxiliary regressions for perceived stress at work do not include any additional explanatory variable, such as personal or work characteristics. The reason is that we will already include them in main estimates. As a result, coefficients for the two thetas in, e.g., the model for work intensity are net of the effect of included common factors.

As for Incentive Pay, the amount of rewards linked to individual performance is rarely available with survey data and EWCS makes no exception. We know if the worker's earnings from the main job include a fixed salary/wage and/or also additional variable pay. Each worker may receive more than one form of variable pay, which are not mutually exclusive. We use this information to define two dummies (1 = yes, 0 = no) that summarize the reward structure. The first is for receiving basic salary/wage (Fixed pay), while the second for being rewarded with at least one of the following in addition to the base salary (Incentive Pay of any kind): (i) Piece rate or productivity pay, (ii) payments based on individual performance, (iii) on performance of the team/group/department, (iv) on the overall performance of the company and (v) on income from shares of the company. We also define two additional dummies that distinguish between incentive pay based on individual performance (Individual performance pay), i.e. (i) and (ii) as defined above, and on non-individual performance measures (Other performance pay), i.e. (iii) to (v) as defined above.

Finally, we capture $U$ (utility from working) through a 0 to 4 ordered variable increasing in job satisfaction (on the whole, 0 = not at all satisfied, 1 = not very satisfied, 3 = satisfied, and 4 = very satisfied with working conditions of the main job). With some caveats, categorical measures of reported job satisfaction have proved to be a reliable and reasonable proxy for work-related subjective well-being (see Judge and Klinger, 2008).

In the empirical analysis we also control for a large number of factors that may confound associations between work effort, incentive pay and well-being (Avgoustaki, 2016), such as for example additional work practices. Task rotation is a dummy (1 = yes, 0 = no) capturing whether an employee's job involves rotating tasks. The dummy Teamwork captures whether employees perform part of their work in a team. Physical demand is captured by the variable Hazard, a summary indicator for exposure to several hazards in the last two months.[12] The hazard index is the sum of answers with response options from 1 to 6 (the extremes are 'never' and 'all of the time') and it is normalized to vary in the 0 - 100 range.

Additional variables control for individual characteristics (age, education, and occupation), firm attributes (industry dummies), firm size and country dummies.[13]

Table 1 describes and presents summary statistics of the main variables used in the empirical analysis. The mean of the intensive work effort index is around 40, which is intermediate in the 0 - 100 scale.[14]

As for the two variables of work-related stress, the mean of Stress at work is around 2, an intermediate value in its range of variation (0 to 4). It results from about 30% of workers reporting having never or rarely suffered from stress at work, about 59% of workers reporting it occurs at least sometimes or most of the time, while only 11% of workers report to always suffer from it. As for the second, keep on thinking to job-related worries while at home is less an issue, as suggested by its mean of about 1.3. It never or rarely happens in the 57% of cases, while it is always a problem only for the 4% of individuals. The pairwise unconditional correlation between the two work stress variables is 0.35, suggesting that they

[12] They are: (i) noise so loud that requires raising the voice to talk with other people, or (ii) vibrations from hand tools, or (iii) vibrations from striking whole body, or (iv) bad lighting, (v) temperature fluctuations, (vi) coldness (work outdoor or in cold rooms) or draft, (vii) skin contact with refrigerants or lubricants, (viii) solvent vapour, and (ix) or passive smoke.

[13] Net monthly earnings are available in the survey, but with many missing answers (about 5,000). We preferred to preserve the sample size and to exclude the information on wages from the empirical analysis. In any respect, wage effects are indirectly accounted for by age, education, sector, occupation dummies etc, that we include in our analysis. Sensitivity checks run on the restricted sample with non missing earnings values (and controlling for log earnings) are qualitatively similar to the ones reported here and available upon request.

[14] A note of caution is that, since the effort index is an aggregation of ordinal variables, its interpretation in a cardinal sense may not be straightforward.

capture different features of work-related stress.

A fixed base salary is earned by 96% of the sample, while a little less of one third (30%) receives additional Incentive Pay components. Variable pay is based on individual performance measures in the 23% of cases and on other performance measures by the 16.4%. Satisfied or very satisfied workers represent more than the 80% of the sample, resulting in a job satisfaction ordinal indicator (scaled from 0 to 3) with a mean of 2.

As for the two variables picking the stress caused by work and used to construct our measures of stress susceptibility, 19% of the sample has been subject to at least one form of violence at work and 33% reports that the work negatively affected her health.

# 4 Empirical Analysis

We first construct estimates of stress susceptibility from models for Stress at work and Worried at home for work issues.[15] Results are shown in Table A1 in the Online Appendix. As expected, the two included variables (Bad health due to work and Violence) are significant and robust predictors of perceived stress. Stress susceptibility estimated measures $\hat{\theta}_1$ and $\hat{\theta}_2$ are then obtained as the sum of the residual and the constant of the corresponding model. Summary statistics for these variables are shown in Table A2. Likely, they are both increasing in the level of stress susceptibility, although their values have not a direct interpretation. We also compute the quartiles ($Q1$, $Q2$ and $Q3$, corresponding to the $25^{th}$, $50^{th}$ and $75^{th}$ percentile, respectively) of $\hat{\theta}_1$ and $\hat{\theta}_2$, which define the quarters of the corresponding distributions (the first quarter includes all the values of $\hat{\theta}_1$ and $\hat{\theta}_2$ smaller of equal to $Q1$). We then create a set of dummies that place each individual in the appropriate quarter of the stress susceptibility distribution according to the value of her thetas.

Tables 2 to 5 provide the empirical evidence on the main implications of the theoretical model. For all tables, we acknowledge that a number of selectivity concerns - e.g. that our stress susceptibility measures are only a naive proxy of true values and may still be correlated through unobservables with work intensity - prevent to interpret the results as causal. Rather, they will provide robust descriptive evidence about the relationships of interest or, at the best, higher bounds of true effects.

Table 2 shows OLS results from a regression of susceptibility to work-related stress on intensive work effort. The specification also includes controls for worker's age, country, industry, occupation, level of education and a set of variables capturing the work organization at the firm. Since the values of the 0 - 100 effort scale and susceptibility to work related stress have no direct interpretation, we standardize the original two variables and interpret regression coefficients in standard deviations terms. Regressions also include fixed pay and variable pay dummies. As for Variable pay, in Columns (1), (2), (5), (6), and (9) we control for the presence of Incentive pay of any kind. In the remaining columns, we distinguish between pay based on individual performance and on other performance measures. For the sake of brevity, we report only results for the variables of interest.[16]

[15]Because these are categorical and ordered variables, the standard approach is to use ordered logit or probit models for the estimates. In general, since the cardinal interpretation of ordered scales is often questionable, linear regression models are not recommended. However, differently to logits and probits, linear models allow a unique and straightforward computation of residuals. This is key since we need them to obtain our stress susceptibility measures. To circumvent violations of the cardinality assumption, we follow van Praag and Ferrer-i-Carbonell (2008) and re-scale the two ordered variables to standard normal, cardinal scaled, zero centered and unbounded variables. These are then used to estimate Probit-adapted OLS (POLS) models.

[16]Full result are available upon request from the authors. Overall, we find that job environment and organisation variables

In Columns (1) and (3) we report results for the continuous indicators of $\hat{\theta}_1$ and $\hat{\theta}_2$, while in the remaining columns we explore results by quarters of their distribution (as defined by the quartiles of the corresponding variable). Results show that workers who are more stressed exert on average greater effort, which, for both of our proxies, is increasing in the level of susceptibility to stress. For example, see Columns (1) and (2), as compared to workers who are never stressed by work, the level of effort of workers who feel such is 0.288 standard deviations higher.

This value increases up to 0.8 standard deviations for workers who are in the highest quarter of stress susceptibility. The effects are similar, in terms of sign and order of magnitude, see Columns (5) and (6), if we measure stress in terms of thinking about job-related issues while at home. If this refers to workers in the highest quarter of susceptibility they are more stressed by 0.5 standard deviation than workers in the lowest quarter. Columns (9) and (10) show that the two proxies for $\theta$ capture complementary features of stress susceptibility: when used together they both maintain their explanatory power.

In terms of matching between theory and empirical results, results of Table 2 suggest that Eq. (2) holds such that they are consistent with Hypothesis 1 that high susceptible workers, i.e. those for whom well-being losses from effort-reward imbalance matter more, are more likely to develop a deep attitude towards effort: they work hard and establish a high commitment to the job. Overall, the statistical association between fixed pay and effort is (weakly) negative and in some cases statistically significant. Conversely, receiving incentive pay of any kind is associated with higher effort, by about 0.11 standard deviation. These results are consistent with standard economic models of incentive provision. They also show that, whenever used, pay based on individual performance is two times more correlated with worker's effort than pay based on more aggregate performance measures. Incentives are stronger when the link between workers' effort and reward is stronger.

In Table 3 we focus on the role that incentive pay plays in the relationship between work effort and work related stress susceptibility. In particular, following Hypothesis 2 we analyse to what extent the positive association between incentive pay and effort (pure intercept effect), observed in Table 2, is due to a differential effect of susceptibility to work stress on work effort by incentive pay (slope effect). To this purpose, we interact the incentive pay dummies with the set of location dummies for quarters of the distribution of $\hat{\theta}_1$ and $\hat{\theta}_2$. Results show that effort is monotonically increasing in work stress susceptibility independently from the presence or not of incentive pay. Looking at the coefficients of the interaction terms, results show that workers who receive incentive pay exert additional effort with respect to the baseline, except possibly in the highest quarter of stress susceptibility, see Columns (1) and (3). In light of our theoretical model - and hence under incentive pay -, this seems to suggest that the sign of Eq. (2) may depend on $\theta$: it is positive for low to intermediate/high levels of stress susceptibility and negative for highly susceptible workers. For the latter, perhaps, the additional cost generated by greater effort when a bad performance occurs more than compensate the benefits associated with the reduction in the risk of facing that loss.

Finally, Table 3 also shows that this is true especially for rewards based on individual performance measures, see Columns (2) and (4). It also reports that the link between workers stress and effort is

have little effects on the relationship between work stress and effort. This suggests that effort-reward imbalance motives underlying observed behaviours are general enough to apply to different work environments. More in detail, as expected, all of these variables are significant determinants of intensive work effort. Interestingly, and in line with the theoretical predictions, the correlation between the fixed component of labour income and work effort is statistically significant but rather low. Working in an hazardous environment is positively associated with effort. A one standard deviation increase in the hazard scale result in a 0.24 standard deviation increase in effort.

somehow different when workers are rewarded by incentive pay based on 'other' (i.e. not individual pay for performance) performance measures. In this case, only workers in the highest quarter put on average additional effort, in the case of $\hat{\theta}_1$.

Table 4 is an empirical assessment of Hypothesis 3 and shows the statistical association between the variables measuring work stress susceptibility and incentive pay. We use a logit model and present results as odd ratios, i.e. the effect of a unit change in one explanatory variable on $Prob(Incentive\ pay = 1)/Prob(Incentive\ pay = 0)$.[17]

Estimates in Columns (1) and (2) refer to a model of incentive pay of any kind; Columns (3) and (4) of incentive pay based on individual performance; Columns (5) and (6) presents estimates of a model for incentives based on other types of performance pay. We include them for completeness and comparative purposes but we do not discuss them in detail, focusing on results from the first four columns. We first observe that there is a positive relationship between susceptibility to work related stress (as opposed to the baseline of being in the lower quarter of values of susceptibility to work related stress) and the likelihood of incentive pay, which, in the case of $\hat{\theta}_1$ is statistically significant when stress susceptibility is in the upper quarter - 12% more than the baseline, see Column (1). Especially in the case of rewards based on individual performances, this link is stronger for $\hat{\theta}_2$. For example, being in the second quarter of the distribution of susceptibility to work related stress, see Column (4), is associated with a 16% increase in the odds to receive individual performance pay as compared to the baseline individual. This percentage goes up to 28% for workers in the third and to 30% for workers in the highest quarter.[18]

Results are broadly consistent with Hypothesis 3. The probability of incentive pay increases when we move up from low values of stress susceptibility to intermediate/high levels. However, among the latter the estimated profile is flat, except in Column (4) and, to some extent, Column (1). One possibility is that effort of workers who are highly susceptible to stress is already maximal, making incentive pay ineffective. This is consistent with the results of Table 3: the ability of incentive pay policies to extract extra effort from workers who are highly susceptible to stress appears rather limited, such that their likelihood to receive incentive pay is not dissimilar from that of workers with intermediate stress levels, and perhaps lower.

Finally, Table 5 shows the job satisfaction implications of work stress. Results shown are in the form of odds ratios from an ordered logit model. We estimate two specifications. Columns (1) and (2) are the baseline. Columns (3), and (4) also include the dummy for incentive pay (of any kind).

In light of the theoretical model, Columns (1) and (2) are a naive empirical proxy of optimal well-being at different values of $\theta$. The empirical findings are consistent with Hypothesis 4: utility rents (job satisfaction) decrease moving from low to high levels of work-related stress. For example, the odds of high job satisfaction (e.g. satisfaction equal to 3 with respect to lower levels) decreases by about 25% when work-related stress moves up one step from first to second quarter, and by a substantial 62% when we step up from the baseline to the fourth quarter of the support of $\hat{\theta}_1$, see Column (1). Once we look at susceptibility based on work worries when at home, the qualitative picture is similar (see column 2).[19]

Coefficients of Columns (1) and (2) combine the direct effect of stress susceptibility and effort-reward

[17]An odds $> 1$ by $x$ decimal point (e.g. 1.20) means that a unit increase in the regressor makes Incentive pay relatively more likely by $x$% (20%). An odds $< 1$ (e.g. 0.7) is associated with a reduction in the relative likelihood by $1 - x$% (30%).

[18]A test for the equality of these coefficients returned a p-value of 0.05, suggesting they are statistically different. In other cases, for example for estimates in Columns (2) and (3), reported coefficients are not dissimilar in statistical terms.

[19]About work-related controls, results are as expected, e.g. one standard deviation (about 15 points out of 100) increase in the hazard index reduces the odd of high satisfaction by 25%.

imbalance on job satisfaction with the indirect effects through incentive pay. By controlling for Incentive pay, Columns (3) and (4) show - unsurprisingly - that they positively contribute to job satisfaction (around 35% more in the odds of being highly satisfied). We also find that even if we keep incentives constant, workers more susceptible to stress are still less likely to be very satisfied.

# 5 Conclusions

This paper constitutes a first attempt to bridge the economic theory of incentives and loss aversion with medical and occupational health studies on the causes and effects of stress at work. It shows that the stress and health consequences of incentive pay schemes can produce contrasting and surprising effects on workers' efforts and utility, and on the principal's welfare. The empirical evidence shows that work effort is increasing in susceptibility to work-related stress, e.g. by 0.5 to 0.8 standard deviations comparing workers in the lowest and the highest quarter of stress susceptibility, depending on how we measure it.

We also find that, despite these differences in the level of effort, workers with very low and low susceptibility to stress have a similar probability to receive incentive pay. This probability is higher for intermediate to high stress susceptibility. Our findings also suggest that workers with intermediate to high levels of susceptibility to stress are also more likely to report lower job satisfaction. For example, the odds of high job satisfaction decrease by about 62% when work-related stress susceptibility is in the highest quarter of its distribution as compared to the lowest.

While we are not claiming any causality of these results, we can interpret them as robust statistical associations that support the findings of the theoretical model, suggesting that when workers have heterogeneous levels of susceptibility to stress, effort-reward imbalance motivations matter for individual's well being and effort decisions. One obvious caveat is that our measures of stress susceptibility are naive proxies of true susceptibility levels, which are very hard to measure from survey data, such as the EWCS.

On the policy side, both the theoretical and empirical results warn that organizations may benefit from putting agents under stressful conditions, and that a heterogeneous susceptibility to effort-reward imbalance may result in inequality of opportunity even when agents are apparently rewarded the same.

# Supplementary Material

Supplementary material is available on the OUP website. These are the replication file (Stata do file to replicate the empirical analysis) and the Online Appendix.

The dataset used in this paper is the European Working Conditions Survey of 2015 by Eurofound. The Eurofound datasets are stored with the UK Data Service (UKDS) in Essex, UK and promoted online via their website. The data are available free of charge. To download the data, researchers need first to register online with the UKDS. For further information on data access, please visit: `https://www.eurofound.europa.eu/surveys/about-eurofound-surveys/data-availability#datasets`.

# Funding

This was supported by Università degli Studi del Piemonte Orientale [FAR-2017 to P.G.]; and Ministry of Research and Education [2017Y5PJ43_001 to E.I.].

## Acknowledgments

We presented previous versions of this paper at seminars at Universidad de Malaga and Università Cattolica di Milano and at the 2019 AIEL Annual Conference in Novara. We are grateful to participants for their comments, and in particular to Andrea Attar, Eloisa Campioni, Rosario Crinò, Maia Guell, Claudio Lucifora, Salvatore Piccolo, Guillaume Pommey and Federico Quartieri. We also thank two anonymous referees for comments and suggestions. EWCS data was kindly provided by the European Foundation for the Improvement of Living and Working Conditions.

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Table 1: Variables' definition and summary statistics

| Variable name | Description | Range | Mean | Std.Dv. |
|---|---|---|---|---|
| Intensive work effort | Normalized sum of answers to: Does your job involve: A-working at a very high speed? B-working to tight deadlines? Do you have you enough time to get the job done? | 0-100 | 40.938 | 24.073 |
| Stress at work | Ordered scale for stress at work | 0-4 | 1.960 | 1.141 |
| Worried at home for work issues | Ordered scale for keeping worrying about work when not working (last 12 months) | 0-4 | 1.279 | 1.150 |
| Fixed pay | The remuneration includes fixed pay | 0-1 | 0.964 | |
| Incentive pay (any kind) | The remuneration includes at least one of the following: Piece rate, Payments based on individual performance, Team/Department based pay, Profit or firm ownership sharing | 0-1 | 0.305 | |
| Individual performance pay | Variable pay is based on individual performance: Piece rate and/or Payments based on individual performance | 0-1 | 0.232 | |
| Other performance pay | Variable pay is based on non individual performance: Team/Department based pay and/or Profit and/or firm ownership sharing | 0-1 | 0.164 | |
| Job satisfaction | Satisfaction with working conditions in main paid job (ordered) | 0-3 | 2.005 | 0.699 |
| Bad health due to work | Work is negatively affecting health | 0-1 | 0.333 | |
| Violence | Having suffered at least one form of violence at work | 0-1 | 0.193 | |
| Other controls | | | | |
| Male | Gender is male | 0-1 | 0.534 | |
| Age | Age in years | 15-65 | 41.63 | 11.80 |
| Education | Highest attained schooling degree (ordered) | 0-6 | 2.781 | 1.637 |
| Hazard | Normalized sum of answers to items for exposure to job hazards in last two months | 0-100 | 17.100 | 15.563 |
| Task rotation | Whether an employee's job involves rotating tasks | 0-1 | 0.546 | |
| Teamwork | The job involves doing all or part of the work in a team | 0-1 | 0.633 | |
| N. observ. | 21,279 | | | |

Source: Authors' calculation.

Table 2: Intensive work effort and susceptibility to work-related stress (OLS estimates)

| | Dep.Variable: Intensive Work Effort | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| - Susceptibility to work-related stress ($\theta$) | | | | | | | | | | |
| 1) $\hat{\theta}_1$ (from Stress at work): | | | | | | | | | | |
| $\hat{\theta}_1$ | 0.288*** | | 0.288*** | | | | | | | |
| | (0.02) | | (0.02) | | | | | | | |
| $Q1 < \hat{\theta}_1 \leq Q2$ | | 0.497*** | | 0.496*** | | | | | 0.431*** | 0.431*** |
| | | (0.02) | | (0.02) | | | | | (0.02) | (0.02) |
| $Q2 < \hat{\theta}_1 \leq Q3$ | | 0.566*** | | 0.566*** | | | | | 0.316*** | 0.516*** |
| | | (0.03) | | (0.03) | | | | | (0.03) | (0.03) |
| $\hat{\theta}_2 > Q3$ | | 0.801*** | | 0.800*** | | | | | 0.702*** | 0.702*** |
| | | (0.05) | | (0.05) | | | | | (0.05) | (0.05) |
| 2) $\hat{\theta}_2$ (Based on worried when at home for work issues): | | | | | | | | | | |
| $\hat{\theta}_2$ | | | | | 0.170*** | | 0.170*** | | | |
| | | | | | (0.01) | | (0.01) | | | |
| $Q1 < \hat{\theta}_2 \leq Q2$ | | | | | | 0.110*** | | 0.110*** | 0.123*** | 0.123*** |
| | | | | | | (0.03) | | (0.03) | (0.02) | (0.02) |
| $Q2 < \hat{\theta}_2 \leq Q3$ | | | | | | 0.257*** | | 0.256*** | 0.238*** | 0.238*** |
| | | | | | | (0.03) | | (0.03) | (0.02) | (0.02) |
| $\hat{\theta}_2 > Q3$ | | | | | | 0.484*** | | 0.483*** | 0.408*** | 0.408*** |
| | | | | | | (0.03) | | (0.03) | (0.03) | (0.03) |
| - Pay variables: | | | | | | | | | | |
| Fixed pay | −0.093*** | −0.087*** | −0.081** | −0.076** | −0.076** | −0.103*** | −0.061* | −0.093*** | −0.069** | −0.059* |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Incent. pay (any) | 0.112*** | 0.112*** | | | 0.110*** | 0.121*** | | | 0.105*** | |
| | (0.02) | (0.02) | | | (0.02) | (0.02) | | | (0.02) | |
| Individ. perf. pay | | | 0.121*** | 0.119*** | | | 0.126*** | 0.126*** | | 0.113*** |
| | | | (0.02) | (0.02) | | | (0.02) | (0.02) | | (0.02) |
| Other perf. pay | | | 0.027 | 0.031 | | | 0.014 | 0.038* | | 0.026 |
| | | | (0.02) | (0.02) | | | (0.02) | (0.02) | | (0.02) |

Note: Number of observations: 21,279. Significance levels: *** 1%,**5%, *10%. Standardised OLS regression (coefficients are express in terms of standard deviations of the dependent variable). Standard errors of coefficients in parenthesis. Heteroskedastic-consistent standard errors are clustered by country. Estimates also include a constant term, gender and age dummies (35-49, 49+); country, industry, occupation, level of education dummies, training dummies,a dummy for being paid for overtime work, the Hazard index, a dummy for task rotation and one for teamwork. $Q1$, $Q2$ and $Q3$ are the quartiles ($25^{th}$, $50^{th}$ and $75^{th}$ percentile) of the corresponding distributions, respectively. When susceptibility to stress is expressed in terms of quartiles of its distribution, reference individuals (excluded category) are those whose $\hat{\theta}_1$ (or $\hat{\theta}_2$) is smaller or equal than the first quartile ($Q1$).
Source: Authors' calculation.

Table 3: Work effort and work-related stress susceptibility by Incentive pay (OLS estimates)

| Dep.Var: Work Effort | Work-related stress susceptibility ($\theta$): | | | |
|---|---|---|---|---|
| | $\hat{\theta}_1$ | | | $\hat{\theta}_2$ |
| | (1) | (2) | (3) | (4) |
| - Baseline coefficients (no Variable pay) | | | | |
| $Q1 < \hat{\theta}_{1,2} \leq Q2$ | 0.477*** | 0.478*** | 0.135*** | 0.139*** |
| | (0.02) | (0.02) | (0.03) | (0.03) |
| $Q2 < \hat{\theta}_{1,2} \leq Q3$ | 0.541*** | 0.542*** | 0.330*** | 0.330*** |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| $\hat{\theta}_{1,2} > Q3$ | 0.788*** | 0.788*** | 0.591*** | 0.589*** |
| | (0.05) | (0.05) | (0.04) | (0.04) |
| - Interactions with Incentive pay variables | | | | |
| *Incentive pay (any kind)* | | | | |
| $Q1 < \hat{\theta}_{1,2} \leq Q2$ | 0.065** | | 0.099*** | |
| | (0.03) | | (0.03) | |
| $Q2 < \hat{\theta}_{1,2} \leq Q3$ | 0.087*** | | 0.077** | |
| | (0.03) | | (0.03) | |
| $\hat{\theta}_{1,2} > Q3$ | 0.079 | | 0.088* | |
| | (0.04) | | (0.05) | |
| *Individual performance pay* | | | | |
| $Q1 < \hat{\theta}_{1,2} \leq Q2$ | | 0.059* | | 0.120*** |
| | | (0.03) | | (0.03) |
| $Q2 < \hat{\theta}_{1,2} \leq Q3$ | | 0.101*** | | 0.089** |
| | | (0.03) | | (0.03) |
| $\hat{\theta}_{1,2} > Q3$ | | 0.075 | | 0.065 |
| | | (0.04) | | (0.04) |
| *Other performance pay* | | | | |
| $Q1 < \hat{\theta}_{1,2} \leq Q2$ | | 0.049 | | 0.004 |
| | | (0.03) | | (0.04) |
| $Q2 < \hat{\theta}_{1,2} \leq Q3$ | | 0.014 | | 0.015 |
| | | (0.03) | | (0.03) |
| $\hat{\theta}_{1,2} > Q3$ | | 0.045 | | 0.125*** |
| | | (0.05) | | (0.04) |

Note: see Table 2. Here, estimates also include a dummy for fixed pay.
Source: Authors' calculation.

Table 4: Incentive pay and Work-related stress susceptibility (Logit estimates - Odds Ratios)

| Dep.Variable | Incentive pay (any kind) | | Individ Perf. Pay | | Other Perf. Pay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Susceptibility to work-related stress ($\theta$): | | | | | | |
| 1) $\hat{\theta}_1$ (from Stress at work): | | | | | | |
| $Q1 < \hat{\theta}_1 \leq Q2$ | 1.082 | | 1.133* | | 0.907 | |
| | (0.06) | | (0.07) | | (0.07) | |
| $Q2 < \hat{\theta}_1 \leq Q3$ | 1.057 | | 1.153* | | 1.021 | |
| | (0.05) | | (0.07) | | (0.05) | |
| $\hat{\theta}_1 > Q3$ | 1.123** | | 1.165** | | 1.047 | |
| | (0.06) | | (0.08) | | (0.07) | |
| 2) $\hat{\theta}_2$ (from Worried when at home for work issues): | | | | | | |
| $Q1 < \hat{\theta}_2 \leq Q2$ | | 1.212*** | | 1.166** | | 1.259*** |
| | | (0.08) | | (0.07) | | (0.09) |
| $Q2 < \hat{\theta}_2 \leq Q3$ | | 1.299*** | | 1.281*** | | 1.330*** |
| | | (0.08) | | (0.07) | | (0.10) |
| $\hat{\theta}_2 > Q3$ | | 1.247*** | | 1.301*** | | 1.171* |
| | | (0.07) | | (0.08) | | (0.10) |

Note: see Table 2. Standard errors of Odds Ratios in parenthesis.

Source: Authors' calculation.

Table 5: Job satisfaction and work-related stress susceptibility (Ordered Logit estimates - Odds Ratios)

| | Dep.Variable: Job satisfaction | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Susceptibility to work-related stress ($\theta$): | | | | |
| 1) $\hat{\theta}_1$ (From Stress at work): | | | | |
| $Q1 < \hat{\theta}_1 \leq Q2$ | 0.749*** | | 0.747*** | |
| | (0.02) | | (0.02) | |
| $Q2 < \hat{\theta}_1 \leq Q3$ | 0.685*** | | 0.683*** | |
| | (0.03) | | (0.03) | |
| $\hat{\theta}_1 > Q3$ | 0.379*** | | 0.376*** | |
| | (0.02) | | (0.02) | |
| 2) $\hat{\theta}_2$ (From Worried when at home for work issues): | | | | |
| $Q1 < \hat{\theta}_2 \leq Q2$ | | 0.800*** | | 0.793*** |
| | | (0.04) | | (0.04) |
| $Q2 < \hat{\theta}_2 \leq Q3$ | | 0.578*** | | 0.570*** |
| | | (0.03) | | (0.03) |
| $\hat{\theta}_2 > Q3$ | | 0.381*** | | 0.378*** |
| | | (0.04) | | (0.04) |
| Fixed pay | | | 1.397*** | 1.359*** |
| | | | (0.14) | (0.14) |
| Incentive pay (any kind) | | | 1.348*** | 1.352*** |
| | | | (0.06) | (0.06) |

Note: See Table 2. Standard errors of Odds Ratios in parenthesis.
Source: Authors' calculation.