Measuring the Job Stress of the Employed Population. The Case of Labor Market in Cali-Colombia

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ABSTRACT

From Survey of Employment and Quality of Life, the hypothesis of job stress is analyzed for individuals who meet the condition of being employed and being between the ages of 16 years old (the age at which is assumed that they have completed median education) and 62 years old (retirement age for men) in Cali-Colombia; resulting a sub-sample of 10,158 observations. As a theoretical foundation, we use a variant of the leisure-consumption model, in which the appearance of stress is based on the imbalance of the equilibrium condition. The results suggest that, in effect, there are signs of job stress in the labor market in Cali. As a complementary activity, we estimated an econometric model to know the profile of the individuals who present a greater probability of being stressed based on three components: sociodemographic, health and labor characteristics of the individual. Thus, working more than 48 hours a week, not having a work premium, reducing a low proportion of income to leisure activities, being a woman, among other factors are associated with a high probability of job stress.

Midiendo el estrés laboral de la población empleada. El caso del mercado laboral en Cali-Colombia

RESUMEN

A partir de la encuesta de empleo y calidad de vida, se analiza la hipótesis del estrés laboral para las personas que cumplen la condición de ser empleados y que tienen entre 16 y 40 años (la edad en que se supone que completaron la educación media) y 62 años (edad de jubilación para hombres) en Cali-Colombia; resultando una submuestra de 10.158 observaciones. Como fundamento teórico, utilizamos una variante del modelo de consumo de ocio, en el que la aparición del estrés se basa en el desequilibrio de la condición de equilibrio. Los resultados sugieren que, en efecto, hay signos de estrés laboral en el mercado laboral en Cali. Como actividad complementaria, estimamos un modelo econométrico para conocer el perfil de los individuos que presentan una mayor probabilidad de estar estresados en función de tres componentes: características sociodemográficas, de salud y laborales del individuo. Por lo tanto, trabajar más de 48 horas a la semana, no tener una prima de trabajo, reducir una baja proporción de ingresos a actividades de ocio, ser mujer, entre otros factores, se asocian con una alta probabilidad de estrés laboral.

Palabras claves: mano de obra; estrés laboral; modelos multinomiales; elección social.
Clasificación JEL: J21; J28; C25; J24.
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1. Introduction.

The economic contexts in which the participants are immersed in the labor market (employed) directly affect the development of their skills and abilities because, ultimately, being employed means obtaining payment (wage). In theory, this payment should compensate the education level of the agents as well as the decision to not spend time on leisure activities. However, within these contexts, organizational situations have been detected that affect individual performance and that result in conditions that make the individual prone to job stress. This state causes individuals to react positively or negatively to the environment to which they have been exposed (Lazarus & Folkman, 1984). It's clear that one of the production factors of an organization is the work, therefore characterizing individuals who exhibit some degree of job stress is justified because it directly affects their quality of life and the general productivity of organizations, ultimately causing some unintended effect on the economic performance of societies.

Job stress has been defined based on different theoretical perspectives (Väänänen, Murray, & Kuokkanen, 2014), among which the transactional approach has prevailed (Ganster & Rosen, 2013). This approach assumes that stress is the result of a transaction between a person and the situation with which he or she must confront (Lazarus, 2013; Lazarus & Folkman, 1984). Thus, the European Agency for Safety and Health at Work defines job stress as the situation in which workers suggest that: " the demand of time of their work exceed their ability to cope with them. In addition to mental health problems, workers exposed to prolonged job stress may develop physical health problems; this implies negative effects for the organization, including poor business performance, increases in absenteeism, and higher accident rates" (AESST, 2010).

Adopting a traditional approach to job stress implies recognizing that this phenomenon depends on the agents and the work environment. In this manner, the aim of this research is to identify the characteristics of the city labor market that allow us to establish the presence of job stress, and for that the Survey of Employment and Quality of Life for the city of Cali in 2012 is used. In an exploratory analysis of survey, we found that the employed population had a prominent perception of job instability (32%) as well as that the agents destine a low proportion of their household expenditure allocated to recreation and vacations, which in turn means an interest for changing jobs (25.37%).

Among other characteristics that are associated with job stress, we found that i) 16.78% of the agents report that there is incompatibility between their job and family responsibilities; ii) 25.37% of them express the desire to change jobs; iii) 21.83% are dissatisfied with their working hours; iv) 20.81% are dissatisfied with the number of hours that they work per week, with the average being 51 hours per week; v) 34.08% are dissatisfied with the salary that they receive; and, finally, vi) 15% acknowledge having a regular or bad state of health. The findings above suggest that a proportion of the employed population in Cali-Colombia exhibits symptoms such as work overload, inconformity with their salary in proportion to the number of hours worked, and job instability, among other conditions that are directly associated with job stress. In this context, this study focuses on investigating the main social, economic, and demographic factors that characterize the exhibition of signs of job stress by the employed population in the Cali-Colombia labor market.

In this sense, the relationship between stress and the labor market conditions constitutes an incentive that justifies research since this relationship has been little explored in the economic sciences; where the research hypothesis: the Cali-Colombia population employed present job stress, and therefore, it´s necessary to classify his intensity. So, this articles is developed in five sections, being this introduction the first one. The second section presents the literature review, and the third analyzes the theoretical

foundation of the leisure-work model. Furthermore, the fourth section presents the methodological approach, in which the econometric specification and the variable definitions is defined, and the fifth section consists of the study's conclusions and recommendations.

2. **Literature Review.**

The phenomenon of job stress has been conceptually developed in the psychological sphere. Even if the stress concept was developed in other fields, like mechanics of materials (Weibel, Ord, & Rössler, 2005) and Physiology (Selye, 1950, 1998; 1936), the stress concept is one of the most studied topics in different scientific disciplines such as Biology, Sociology, Management science, and Psychology (Lazarus & Folkman, 1984, p. 1). This generalized enthusiasm is motivated not only by "the hope to explain it and therefore control its effects" (Graziani, Pedinielli, Swendsen, & Pedinielli, 2004, p. 7) but also by the ability of this concept to help explain phenomena in which the same causes do not lead to the same effects. In Psychology, in fact, there are different types of stress like family stress (McCubbin & Patterson, 1983); educational stress (Arslan, 2015), le syndrome de stress posttraumatic (Ljubotina & Muslić, 2003), and job stress. It is important to note that we considered that the terms "occupational stress", "job stress" and "work stress" are synonymous.

Inspired on the work of (Selye, 1950, 1998; Selye & others, 1936), (Lipp, 2000) identifies and classifies physical and psychological symptoms according to the three stages of stress: alarm, resistance, and exhaustion. However, the most of theoretical models for job stress are based on symbolic interactionism, a theoretical approach, that is related to pragmatism (Dewey, 2005). The symbolic interactionism supposes that there is an external reality to the individuals (Wicks & Freeman, 1998) that can be known by the experience of each one (Goles & Hirschheim, 2000). This proposition leads to each individual to have his own interpretation and therefore his own understanding of the environment (Bensebaa & Béji-Bécheur, 2007). Thus, based on this current, the theoretical models of work stress argue that each individual interprets their work environment, or its demands, and develops work stress if this lecture indicates that he does not have enough resources to meet the demands of his work. The most known interactional models developed to represent job stress are the role stress theory (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964), the person-environment fit model (Spielberger & Reheiser, 1995), the job demands-control model (Karasek et al., 1998; Karasek Jr, 1979), the effort-reward imbalance model (Siegrist, 1996) and the transactional model (Lazarus & Folkman, 1984).

The links between job stress and the incidence of coronary heart disease, nervous breakdown, poor health, job dissatisfaction, accidents, family problems, certain types of cancer, and poor performance have been demonstrated in many studies (Cooper & Watson, 1991; Frese, 1985; Silva & Barreto, 2012). So there are so many authors who have been interested in how to reduce the job stress, for example Leong, Furnham, & Cooper (1996) studied the effect of commitment on job stress; (Petarli, Zandonade, Salaroli, & Bissoli, 2015) find a positive effect of social support on the reduction of job stress.

The consequences of job stress are expensive (Trentzsch-Joye, 2011) because, in addition to the effects on individuals and organizations, it has considerable costs for society in general (Cholewinski, 2010). Indeed, the costs of medical care and disability due to work stress can be very high, but the true price of this problem is greater than the value of medical costs considered isolated (Kalia, 2002). Despite, the relevance of job stress, its development in the economic sciences has had very limited academic documentation. In research conducted by (Hoel, Sparks, & Cooper, 2001), it is possible to formulate the hypothesis of the negative impact of work stress on certain organizational components with some degree of caution. The authors suggest that although the main measurement problem is associated with

the identification and measurement of the different costs that organizations incur due to job stress, the primary focus lies in the loss of productivity, loss of opportunities, increase in personnel selection costs, and deterioration to the organizational image.

Moreover, the study by (Europeia, 1999) reverses the relationship between the organization and job stress, rethinking it in terms of the benefits that are generated if this phenomenon is recognized as a problem that negatively affects productive structures instead of as the costs associated with experiencing it, as proposed by previous authors. Thus, in light of this recognition, organizations experience benefits associated with increases in productivity and improvements in both corporate image and organizational management results. The above is generated by the adaptation of more efficient processes from the implementation of minor rotations in job positions and from improvements in satisfaction and motivation to perform the assigned task.

Meanwhile, authors such as Atalaya (2001) and Durán (2010) conduct a review of the different factors that may cause job stress. Among these factors are those associated with uncertainty due to difficulties that may be generated during employment as well as environmental and organizational factors within businesses and differences in abilities and personalities among employees. In this approach, job stress is associated with adverse reactions to jobs that demand additional efforts from workers, given their experience and level of training (Cox, 1993). However, the academic contribution of the second author is determined in that she names the different levels of job stress that may occur among employees for different types of occupations and the pressure that employers may exercise with varying health consequences. These levels of stress can be mild, moderate, or high and are ultimately generated according to the time required for the performance of activities and the abilities that each individual possesses.

A study performed by the Colombian Ministry of Social Protection (2004), together with the University of Antioquia, identifies organizational factors that create job stress for employees, compiling these under the term workplace violence. This study analyzes the occurrence of workplace violence, defined as the presence of lewd phenomena toward employees such as workplace harassment, abuse, and bad communication practices by the employer, finding that such regularity is intensified in jobs with low salaries. Consequently, such phenomena develop into job stress and into psychological and physical illnesses (particularly cardiovascular diseases), which can be massively spread according to the type of economic sector to which the employee belongs, highlighting that, although the sectors with greater physical demand such as mining or agriculture have high exposures to job stress, jobs with higher wages also have this characteristic.

The study by (Blanchflower, 2004) is useful for understanding some of the determinants of job stress. Using the data collected for 70 countries (developed and developing), he finds that job stress associated with self-employment is significantly higher than that for salaried workers in the entire sample. Moreover, the determinants of this stress are associated with the acceptance of more responsibilities by self-employed individuals compared to salaried workers because they are constantly coping with the challenges caused by the business environment in their respective countries. This approach leaves open the debate on the proper measurement for the concept of self-employment. However, it presents an argument that deserves to be well investigated in studies on job stress such as this study, given that a certain empirical proximity is calculated for the profile of a worker with higher job stress according to whether the employee is salaried or independent.

Atalaya (2001) demonstrates that one of the major determinants of job stress is associated with job quality. Therefore, how the organizational environment produces job stress is articulated, recognizing a certain degree of multidimensionality. Farné & Vergara (2007) conduct a detailed review of job satisfaction for workers in Colombia to show that jobs in Colombia are considered to be "low quality" insofar as the work conditions are not positively related to the improved economic cycle that Colombia has experienced during the first decade of the 21st century. Factors such as the presence of contracts that establish low salaries for activities that should include a better salary, the absence of conditions that ensure job security, outsourcing, and low welfare in terms of job health, among others, determine the high stress exposure experienced by employees. Therefore, this exposure results in high turnover among jobs, triggering costs associated with training and low productivity as a result of the low motivation to do their jobs that employees have.

Houtman, Jettinghof & Cedillo (2008) present the consequences that job stress causes in developing countries based on a review of occupational health research. These authors suggest that job stress is associated with not only psychological problems but also cardiovascular and other diseases; for this reason, stress directly affects employee health, causing a decline in enterprise economic activity. Nonetheless, the substantial contribution of this study is when social consequences are introduced because they suggest that job stress is accentuated in countries where there are high rates of informality, implying the lack of access to programs and education on job health. This access is more necessary in this sector of the population due to job insecurity and "mentally demanding" workloads.

Combining data from the International Social Survey Programme (ISSP) with household surveys in Spain, Gamero-burón (2010) explores the primary causes of absence from work as a response to stressful situations under the premise that this phenomenon is harmful and toxic for worker health. Thus, different work and psychological loads associated with excess work or with work pressure result in absences from work. To support this claim, the proposed model incorporates sociodemographic characteristics and some questions that investigate the feeling of stress among workers (sometimes, frequently, always). The author finds that the number of hours worked per week, whether the work is part-time, whether the individual lives with a partner, and whether the job is under supervision are some of the stress conditions.

Some of the hypotheses formulated around job stress and its effect on health can be supported by the fact that one of the determinants of job stress is underemployment, which is in turn associated with dissatisfaction with salary, a low number of hours worked, or the level of education (Mora & Ulloa 2011). Thus, the study by (Arango, Escobar, & Monsalve, 2013) becomes a point of reference, finding that, although the labor market conditions in Colombia should improve, a significant proportion of the employed population is satisfied with its employment and, simultaneously, job quality is not as low as Farné & Vergara (2007) claim. Thus, a hypothesis regarding job satisfaction and stress is proposed, with the particularity that job quality is associated with the level of education whereas low job quality is associated with low levels of training and, thus, low wages (Mora & Ulloa 2011).

Regarding the conditions under which stress can be measured, job quality is found. Fedesarrollo (2013) provides a labor market report in Colombia, whose results are consistent with those Farné & Vergara (2007) in that the conditions of informality, low income, and outsourcing in the Colombian labor market are very high. Furthermore, this same study finds that the working conditions for Colombians generate scenarios that enable the appearance of job stress, in accordance with the formulations expressed by Durán (2010) and Mora & Ulloa (2011).

Thus, some international experiences such as those suggested by Lengagne (2014) may represent solutions to this problem that affects organizations. The author presents the results of a job compensation scheme for workers when faced with stress scenarios associated with difficulties at work, job quality, and other factors. Therefore, the author proposes different scenarios in which premiums are paid according to the stress exposure that workers experience. For this reason, analyzing a person's level of exposure to job stress becomes relevant to ensure certain amounts in compensation premiums.

In a study developed by Sultan-Taieb, Chastang, Mansouri, & Niedhammer (2013) on the economic burden of work-related illnesses in France, they find that, in general, between 8.8 and 10.2% of the morbidity of cardiovascular diseases is attributable to job stress. Mortality among men from cardiovascular diseases attributable to job stress is between 9.4 and 11.2%. In addition, mental disorders associated with job stress have a morbidity between 15.2 and 19.8% for men and between 14.3 and 27.1% for women. Thus, these authors estimate the total costs of cardiovascular diseases and mental disorders between 1.8 and 3 billion euros for the year 2003. These costs are composed of medical costs (11%), living costs (13-15%) and sick leave (74-77%).

LaMontagne, Sanderson, & Cocker (2010) in the case of Australia, conclude that the costs of mental illness associated with job stress can be estimated at $ 84 million Australian dollars. In the United Kingdom, during the year 2016, work stress accounts for 45% of absentee days. Despite the fact that the consequences of job stress for countries can be significant, work at this level remains very limited.

3. Theoretical Foundation.

In common parlance, stress is defined as a tension caused by overwhelming situations that result in psychosomatic reactions or sometimes serious psychological disorders (la Lengua Española, 2001). The everyday use of the term can be attributed to the media coverage of job stress, given that it is currently one of the most important psychosocial risks that employees face. In fact, approximately 20% of European employees recognize that job stress affects their health.

Currently, the most commonly used stress model in the domain of psychology is the *Transactional Model* proposed by Lazarus & Folkman (1984). For these authors, stress is the result of a transaction between a person and a situation to be addressed in a defined environment. Individuals, who have set goals regarding a situation, must foresee the dynamic evolution of this situation to establish a balance between resources and the demands imposed by the situation. When individuals estimate that this balance is not favorable in relation to their objectives, they experience stress. It is important to note that, for these authors, a situation is a configuration of the environment.

Among the environmental or situational conditions that the individual faces, there are the tasks required of workers in the framework of their contractual activity, as well as authority, dependence in terms of resources, and danger, viewed as the possibility of experiencing damage or loss, among others (Lazarus & Folkman, 1984). Therefore, the presumption is that stress will result in physiological reactions, changes in social behavior, somatization, disease, and other consequences (effects) for the individual, as some authors had showed (Conway, Campanini, Sartori, Dotti, & Costa, 2008; Gómez-Ortiz & Moreno, 2009; Radi, Ostry, & LaMontagne, 2007; Strazdins, D'souza, L-Y Lim, Broom, & Rodgers, 2004; Thorsteinsson, Brown, & Richards, 2014).

This allows us to justify the argument that stress is a cognitive process that is specific to each person, who will judge the situation that he or she faces and cope with it according to his or her available

resources. This is evident in the most cited definition of job stress. Indeed, the state of job stress is triggered when there is an imbalance between the perception that individuals have of the restrictions imposed on their environment and the perception of their own resources to address these restrictions. Thus, this evaluation process is psychological; the effects of stress are not only physiological because stress also affects the physical health, well-being, and productivity of the person suffering from it (AESST, 2010).

That said, the previously presented etymological basis of stress allows us to develop a proposal for a conceptual articulation of the term in the field of labor economics. The agent's choice concerning the time allocated to performing work activities and those of everyday life is clearly supported by analytical reviews of the basic work model (Leisure-Consumption). Given that these are mutually exclusive factors, the imbalance of the first-order conditions of the model suggests the occurrence of job stress. To test the formulation, this research takes note of the mathematical development presented by (Wickens, 2011, pp. 33–35).

The basic extension of the model begins with the choice that economic agents make regarding the time spent on activities of leisure (O_t), providing utility indirectly to the individual, and work (η_t), whose utility is direct in the sense that the payment for productivity (wages) is immediately reflected in the ability to acquire consumer goods. However, the natural restriction of time is set as one of the most important conditions in the model development. The literature practically suggests that it is normalized to one, as follows:

$$o_t + n_t = 1 \qquad\qquad [1]$$

The instantaneous utility that leisure and work produce for agents meets the classic conditions of a utility function, i.e., provided that agents spend more time performing work activities (leisure), their instantaneous utility increases but not indefinitely because, by reaching a saturation point, the utility is less each time and, therefore, decreases:

$$U\left(c_{t+s}, o_{t+s}\right) \rightarrow \quad U_c > 0; \quad U_o > 0 \quad \text{and} \quad U_{cc} \leq 0; \quad U_{oo} \leq 0 \qquad [2]$$

To construct the model solution, it is necessary to introduce a second restriction that the agent faces. Assuming that work is one of the production factors employed by the economy (business) and considering that the production function is neoclassical without the introduction of technology to not address the component of efficient work and technological shocks, this restriction is conditioned by the production factors, i.e., capital (k_t) and work (η_t), in the following equation:

$$F(k_t, n_t) = c_t + k_{t+1} - (1-\delta)k_t \qquad\qquad [3]$$

Equation 3 establishes the relationship between the productivity of the economy, the agent level of consumption, and the available capital stock during the following period, considering the capital deprecation rate, which represents the natural wear of use and replacement. Thus, using the three previous equations, the development of the model implies the incorporation of the Lagrange method for dynamic optimization (intertemporal), whose first-order conditions are key to establishing the theoretical foundation on which this research is based: job stress arises when the condition of equality between the marginal utility of leisure and consumption is not met, weighted by the marginal productivity of work.

$$\ell = \sum_{s=0}^{\infty} \beta^s \left\{ U\left(c_{t+s}, o_{t+s}\right) + \lambda_t \left[F\left(k_{t+s}, n_{t+s}\right) - c_{t+s} - k_{t+s-1} + (1-\delta)k_{t+s} \right] + \mu_{t+s}\left[1 - \eta_{t+s} - o_{t+s}\right] \right\} \quad [4]$$

$$\frac{\partial \ell}{\partial \eta_{t+s}} = 0 \rightarrow \lambda_{t+s}\left[F_{n,t+s}\right] - \mu_{t+s} = 0 \quad \text{with } s \geq 0 \qquad \frac{\partial \ell}{\partial o_{t+s}} = 0 \rightarrow \beta^s U_{o,t+s} - \mu_{t+s} = 0 \quad \text{with } s \geq 0$$

$$\frac{\partial \ell}{\partial c_{t+s}} = 0 \rightarrow \beta^s U_{c,t+s} - \lambda_{t+s} = 0 \quad \text{with } s \geq 0 \qquad \frac{\partial \ell}{\partial k_{t+s}} = 0 \rightarrow \lambda_{t+s}\left[F_{k,t+s} + 1 - \delta\right] - \lambda_{t+s-1} = 0 \quad \text{with } s \geq 0$$

The model solution emerges by combining the first-order condition of work (η_{t+s}), leisure (O_{t+s}), and consumption (C_{t+s}). By performing the required algebraic procedures, equality is obtained between the marginal utility of leisure and consumption, weighted by the marginal productivity of work, commonly referred to as a salary:

$$\begin{cases} \beta^s U_{o,t+s} = \beta^s U_{c,t+s}\left[F_{n,t+s}\right] \\ U_{o,t+s} = U_{c,t+s}\left[F_{n,t+s}\right] \end{cases} \qquad [5]$$

It is possible to detect the occurrence of job stress from the result of Equation 5. In this study, by holding that, if the agent allocates a greater number of hours to work activities (job) than to the rest of their everyday activities (leisure), salary increases but not indefinitely and that it will always do so at a lower rate so that it will reach a peak (saturation), this result leads to a reduction in the marginal utility of consumption; therefore, the tradeoff between work and leisure is not offset by an increase in wages.

Accordingly, when faced with a reduction in the time available for other enjoyable activities, agents experience a welfare loss, if allocating more time to work does not indicate a salary that is equal to their effort. This makes individuals more likely to interact in contractual environments that will inevitably affect their physical and mental health. Thus, the individuals' rational choice should be to allocate slightly more time to recreational activities (leisure), expressed mathematically as follows:

$$\left[F_{n,t+s}\right] \leq \frac{U_{o,t+s}}{U_{c,t+s}} \qquad [6]$$

When this theoretical assumption is fulfilled, the model closure is given by solving the Euler equation as a result of the fourth condition of the first order of the optimization process. This contributes to explaining why job stress negatively affects economy productivity (enterprise). Nonetheless, the scope of this research is aimed at analyzing job stress conditions and not their effects on productivity, leaving open the possibility for developing further research.

4. Methodological Approach.

A. Source of the data and variable definitions

The database used in this research corresponds to the Survey of Employment and Quality of Life[1] (EECV – Spanish acronym) conducted by the Colombian Ministry of Labor and the Municipality of Santiago de Cali for the period of November 2012 to January 2013. The justification of its use lies in the methodological clarity in being able to divide the employed population in the city of Cali-Colombia, even considering ethnographic conditions that are rarely investigated in labor market research. In short, the EECV possesses 30,458 observations representing 2,290,268 individuals; however, the study population is defined as the individuals who meet the condition of being employed, with ages between 16 (the age at which it is presumed that they have completed secondary studies) and 62 (the age of retirement for men), creating a sub-sample of 10,158 observations representing 865,713 citizens. However, in the construction of the dependent variable, the number of effective observations used in the econometric estimation is reduced to 9,469; showing homogeneity in the characterization of the individual by age and sex, given that their sample sizes are not dissimilar as the percent of women is 42.78% and men is 57.22% (see annex 1). The representativeness final is 818,836 citizens.

The dependent variable corresponding to the Job Stress Index (JSI) was constructed taking Principal Component Analysis (PCA) into account from the consideration of the following eight variables that are categorically associated with job quality and perception: satisfaction with the current job, with the number of hours worked per week, with job knowledge, with wages, with benefits, with working days, and the consideration of work security and compatibility with the allocation of responsibilities. The functional form of the variables is presented in table 1.

To demonstrate the feasibility of scaling a score between 0 and 100 from the abovementioned variables, the significance of the correlation matrix was assessed, finding a correlation above 1% between the variables. Meanwhile, the factor extraction process and the calculation of the principal components began. The JSI was constructed with these, and finally, the index was divided into four categories, considering quartiles, a non-central position of measurement: very high job stress, high job stress, medium job stress, and low job stress (see table 2).

Three components were specified as explanatory variables. The first was called job characteristics, in which variables such as hours worked per week, income derived from economic activity (logarithms), potential experience, potential experience squared, whether the individual is salaried, whether overtime was worked, whether overtime was compensated, whether bonuses were received, whether premiums were received, whether the need to change jobs was contemplated, and the proportion of revenue allocated to leisure activities and vacations were assessed. Therefore, the hypotheses of job stress developed in this study are tested from the results of this component.

The second component is called health and is formed by the state of health variables: whether the individual has health problems or any chronic diseases. The third component allows us to characterize the individual; variables are introduced such as sex, whether the individual is the head of the household, marital status, academic degree, whether the individual belongs to an ethnic minority identified in the city, the commune of residence, socioeconomic level, and birth cohort. These last two components are

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[1] In particular, the survey allows analyzing demographic characteristics of the population, their health, housing and migration conditions and identifying the particularities of the work dynamics in each of the 22 communes of Cali and the rural area of the city. Additionally, the survey deals with labor issues that are not usually present in traditional surveys, such as the working conditions of those who work for the provision of services and informally. This database and more details about its construction methodology can be found in the following link http://planeacion.cali.gov.co/amda/index.php/catalog/1.

treated as control variables; the definitions and coding of the variables are reported in table 3, whereas the main statistics are found in table 4.

B. Econometric model specification

The ordered multinomial logistic models are based on the theory of the economic agent's utility, in which it is assumed that a rational agent will choose the alternative that provides the greatest utility (Astorquiza, 2015). Thus, by having a set of characteristics associated with job stress as determinants, it is possible to quantify the probability of remaining in one of the four categories established for the index. Now, considering that the dependent variable has a polynomial structure of the form Y= {1,2,3,4}, with probabilities of occurrence equal to $p_1=p(Y=1)$, $p_2=p(Y=2)$, $p_3=p(Y=3)$, $p(Y=4) =1-p_1-p_2-p_3$, and taking the index of very high job stress as a category of reference, the specification to be estimated is the following:

$$\ln\left(\frac{p_j}{p_1}\right) = \beta_{0j} + \sum_{i=1}^{23} \beta_{1j} \quad \text{with j=2,3,4} \tag{7}$$

The multinomial logistic model assumption supposes that the functional distribution is also logistic. However, its foundation depends on the fulfillment of the assumption of Independence of Irrelevant Alternatives (IIA) because it should support that, if one of the dependent variable categories is eliminated, the estimated coefficients are not altered. For example, if there are only the occupational categories of very high, high, and medium job stress (excluding low stress), then substantial variations should not be obtained in the estimates reported with the three alternatives. To contrast this assumption, the test by Small & Hsiao (1985) is used, in which, in the event of rejecting the null hypothesis, i.e., *there are no differences between the estimated coefficients between the dependent variable categories*, it is concluded that the model adopts a normal distribution and, therefore, the multinomial probability model should be estimated, which does not require the IIA assumption. According to the results presented in table 5, which is based on the creation of random samples that allow us to reject or support the null hypothesis, it is verified that the coefficients do not vary when one of the job stress index categories is eliminated. This finding ensures the fulfillment of the assumption (IIA) and the validity of the reported coefficients.

C. Econometric estimation results

The econometric inference suggests the existence of job stress in the labor market in the metropolitan area of Santiago de Cali. In principle, the assessment is supported because the probability of presenting a very high, high, and moderate JSI, which is conditioned by a set of preset characteristics (explanatory variables), is 40.32%, 13.15%, and 31%, respectively. In light of this result, the statistical review of the variables in the three defined components is presented in table 6, considering that its econometric form conforms to the classic marginal effects of an ordered multinomial logit regression model. Therefore, its correct interpretation is made by multiplying the coefficient by 100 to obtain changes in percentage points.

The job characteristics component provides evidence that supports the occurrence of job stress, considering the articulation of the basic leisure-consumption work model. The results suggest that working more than the number of hours defined by Colombian Law as a workday may lead to a work overload whose solution does not always increase the agent's salary because it leads to a welfare loss at some point.

In short, by observing the coefficients reported in the working hours variable, it is found that working exactly 48 hours reduces the probability of presenting a very high JSI by 11.4 percentage points compared to those who work less than 48 hours. Furthermore, working more than 48 hours a week increases the probability by 2.04 percentage points. The above suggests that the ideal time to perform work activities would be approximately 48 hours per week if the strategy pointed to decreasing the stress of the employed population. In addition, this number of hours is accepted given the social construct established by the Colombian Legislation of Maximum Ordinary Working Hours in article 161 of the Substantive Labor Code. Thus, any imbalance of these hours, either above or below, cements the conditions for the emergence of stress.

The results for the income variable (in logarithms) show that, although the increase in this variable reduces the probability of a very high JSI by 0.356 percentage points, the sensitivity of the indicator is almost zero. Thus, one implication derived from a salary increase as a response to better compensation for time allocated to work would mean an imminent decline in the utility of consumption. Therefore, spending more time on work activities, even at the expense of an increase in salary, is ultimately not a rational action because, in the medium term or the long term, it will undoubtedly cause a welfare loss.

The salaried employed population consists of those who have a clearly established contractual relationship. This has the establishment of both the time of the contract (fixed or indefinite) and the compensation for the contracted service as a common denominator. This precision implies greater job security and a stream of steady income that, altogether, are associated with a reduction of 14.9 percentage points in the probability of having a very high JSI compared to those who are not salaried, i.e., those who work on their own or are independent.

Now, on the basis that those who are not salaried are more likely to have a greater JSI, we investigated the provision of hours outside of those agreed to contractually and that should generally be paid. Thus, by analyzing the coefficients of the overtime variable, it was found that the probability of having a very high JSI for agents who work overtime and those who do not decreases by 20.1 and 22.5 percentage points, respectively. The reason for these results is that, for the individual, having a work contract directly involves performing work activities that may be outside of the regular schedule and, similarly, there is the possibility that these are compensated whereas, for the population that does not work overtime, this corresponds to the premise of working exactly 48 hours a week.

In this study, it is recognized that it is not possible to ensure that working overtime directly implies adequate compensation. Moreover, the strategy for appropriately addressing this question should be the implementation of a qualitative analysis, which is outside the scope of the study. However, by exploring the coefficients obtained for those who worked overtime and who were compensated, a reduction of 4.55 percentage points in the probability of having a high JSI is demonstrated.
Workers' compensations as a result of good results in fulfilling their responsibilities (bonuses) and by being part of the legal agreements in labor formalization (premiums) show two somewhat interesting results. The first argues for the lack of significance of bonuses because no difference was noted between receiving them or not in any category. The second result indicates that, for the employed population that did not receive a premium, the probability of having a very high JSI increases by 25.3 percentage points compared to those who received a premium.

Moreover, the feeling of well-being within the work environment, without specifying its cause and that leads to not considering the alternative of changing jobs, is associated with a reduction in the probability

of having a very high JSI of 51.2 percentage points. This result becomes the coefficient with the greatest magnitude in the study and denotes the importance of incorporating alternatives that create this feeling of well-being within jobs, opening an entire field of action for the elaboration of academic studies that allow us to understand the factors that cause the economic agent to decide to continue with a job.

As a closure of this component, the effect that the allocation of labor income to enjoyable activities (recreation and vacation) has on the JSI was assessed, showing a decrease in the probability of finding a very high level of job stress. In short, it was found that spending an average or above average proportion of salary on recreation leads to a reduction in job stress by 8.71 percentage points for the very high category and 4.56 percentage points for the high category. Moreover, spending a proportion of salary on vacations has two effects. The first points to a reduction in the probability of having a very high JSI by 6.91 percentage points when the expenditure is average or above average; regarding the second, the probability of having a low JSI increases by 5.45 and 3.52 percentage points, respectively.

In the health component, it is found that the probability of having a very high JSI is substantially reduced for those who reported having a health status different from poor condition because the range is between 15.7 and 23.3 percentage points, depending on whether the agent reports having a regular, good, or very good state of health. In addition to these results, an effect is also found that going to health providers has when the individual has a chronic disease on the probability of presenting a low JSI (the probability decreases by 2.39 percentage points). Meanwhile, this probability increases by 10.3 percentage points for those who have a chronic disease and do not consult a doctor. Finally, the results are somewhat dissimilar for those who do not have health problems because the probability of having a very high JSI is reduced by 6.35 percentage points. However, the probability of having a medium JSI increases by 7.20 points.

The sociodemographic component allows us to characterize the economic agent with the highest of a very high JSI; this is where its relevance in the study lies. Initially, it was found that any type of education level above basic education or no education is associated with lower levels of job stress. The results indicate that as the level of schooling passes from secondary school to technical, technological, or university, the probability of presenting job stress decreases and, apparently, a consistent pattern is followed.

However, when the review is conducted by postgraduate level of education (specialization, master's, and PhD), although the first level of education reports a reduction in the probability of having job stress, the magnitude decreases compared to its predecessors. Moreover, for the last two highest academic qualifications, the probability of having a low JSI only increases for agents who have a master's degree. This finding leads us to consider that higher academic levels will carry greater responsibilities and, therefore, it is justified that there is always a level of stress; the issue determines an individual's tolerance.

In terms of the ethnographic variable, although it is observed that belonging to an ethnic minority in the city of Santiago de Cali increases the probability of having a high and a low JSI, its effects are of low magnitude (approximately 2 percentage points). On the other hand, as a strategy of characterizing the agents' power of acquisition, the stratum variable was introduced, with which it is demonstrated that the probability of having a very high JSI for the employed population belonging to the high strata decreases by 18.7 percentage points. Meanwhile, the probability for the medium strata is reduced by 9.89 points; both population segments are compared to the low strata. Finally, it is found that neither birth cohort nor individual experience affects this indicator, whereas being male reduces the probability

of having a JSI by 3.44 percentage points compared to females. Furthermore, being single increases the probability of having a very high JSI by 3.49 percentage points compared to married individuals.

5. Conclusions and Recommendations.

In general, job stress is a psychological phenomenon that affects health and, therefore, the performance of economic agents. Thus, by incorporating this concept into the field of labor economics, a new academic branch is formed that well deserves to be explored in greater depth, not only making use of quantitative analysis, as in this study, but also aiming for supplementary qualitative studies. Therefore, a better understanding of the effects that job stress causes for the employed population will be obtained.

Given that job stress is determined by various factors that are not only situational but also personal, it is possible to conceive that certain levels of job stress may lead to increases in individual productivity and that increases in the levels of stress may be detrimental to health and productivity. However, the main objective of this study lies in focusing on the analysis of very high job stress because it certainly leads to behaviors that endanger employee health and social relationships. For this reason, the interpretation of the ordered multinomial model, once its correct estimation is validated, is made considering the marginal effects of the category of reference.

The flexibilization from the new assumptions in the basic theoretical model of labor market leisure-consumption allows the articulation of the etymology of the term "job stress" and its possible appearance in the labor market. With the analytical development of the model, it is established that the greater the time allocated to work activities, the lower the utility that is derived from consumption will be, insofar as wage remuneration will not compensate for the additional time allocated to daily activities (leisure). Thus, finding significance for the variables of the work component such as working hours, overtime, compensation for overtime, receiving bonuses and premiums, and expenses allocated to leisure and, to a lesser extent, to vacations, it is possible to suggest the importance of continuing with a labor regulatory framework that promotes work not only according to salary but also oriented toward maintaining a number of predetermined hours and additional time for the execution of supplementary activities.

A very interesting result is that as labor income increases, although the probability of having a very high JSI decreases, its magnitude is very close to zero. Therefore, it is recognized that even when payment is fair for this productive factor, it does not compensate for the level of utility and, thus, there is no statistical evidence supporting that job stress substantially changes with higher or lower employee earnings.

The main limitation of this research lies in the construction of the dependent variable that seeks to quantify the job stress of the population occupied in the city of Cali-Colombia. This limitation is not due to the construction methodology proposed for the index, but due to the absence of quantitative variables of medical and psychological nature that possibly enrich the robustness of the proposed indicator. In this sense, it is a precedent that could be approached in future investigations; for the literature broadly supports the association between stress and the two mentioned factors. Finally, this research should not be seen as a purely predictive model of job stress but as a model that, conditioned to the set of factors introduced in the analysis, lead to establish probabilities of its appearance; which of course is still determined by multiple factors that as economic science deepens on this field, will be documented in greater detail.

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STUDY APPENDICES

ANNEX 1
Distribution gender and birth cohort by JSI Categories

JSI Categories	Gender		Birth cohort			
	Men	Women	1950-1960	1961-1972	1973-1984	1985-1996
Very high job stress	42.1%	39.7%	40%	41%	39%	43%
High job stress	11.2%	11.1%	12%	11%	11%	11%
Medium job stress	29.7%	31.0%	29%	29%	32%	31%
Low job stress	17.0%	18.2%	19%	19%	18%	15%
Total	100.0%	100.0%	100%	100%	100%	100%

Source: Prepared by the authors based on the EECV.

APPENDIX 1
Table 1. Variables used for the construction of the Job Stress Index

Variables	Coding
Satisfaction with current job	0 = Very Dissatisfied 1 = Dissatisfied 2 = Satisfied 3 = Very Satisfied
Satisfaction with the number of hours worked per week	0 = Very Dissatisfied 1 = Dissatisfied 2 = Satisfied 3 = Very Satisfied
Satisfaction with work knowledge	0 = Very Dissatisfied 1 = Dissatisfied 2 = Satisfied 3 = Very Satisfied
Satisfaction with wages	0 = Very Dissatisfied 1 = Dissatisfied 2 = Satisfied 3 = Very Satisfied
Satisfaction with benefits	0 = Very Dissatisfied 1 = Dissatisfied 2 = Satisfied 3 = Very Satisfied
Satisfaction with the workday	0 = Very Dissatisfied 1 = Dissatisfied 2 = Satisfied 3 = Very Satisfied
Consideration of job security	0 = Very Unstable 1 = Unstable 2 = Stable 3 = Very Stable
Compatibility with the assignment of responsibilities	0 = Very Incompatible 1 = Incompatible 2 = Compatible 3 = Very Compatible

Source: Author calculations based on the EECV using Stata 13.0 software

APPENDIX 2
Table 2. Job Stress Index

JSI Categories	*Observations*	*Percent*	*Mean*	*Minimum*	*Maximum*
Very high job stress	3,842	40.57%	0.0000	0.0000	0.0000
High job stress	1,053	11.12%	3.8099	0.0528	5.4897
Medium job stress	2,876	30.37%	13.3012	5.4985	14.7263
Low job stress	1,698	17.93%	48.7359	14.7865	100

Source: Prepared by the authors based on the EECV.

Table 3. Presentation of the explanatory variables

Variables	Coding
State of health	0 = Bad 1 = Regular 2 = Good, 3 = Very Good
Chronic disease	0= Does not have a chronic disease 1 = Chronic disease and medical consultation 2= Chronic disease and no consultation
Health problems	0= Had problems 1 = Did not have problems
Hours worked per week	0 = Less than 48 hours 1 = 48 hours 2 = More than 48 hours
Income	Logarithm of monthly earnings
Potential experience	Age- Years of Education - 6 (continuous)
Salaried	0 = Independent 1 = Salaried
Works overtime	0= Does not have a contract 1 = Works 2 = Does not work
Received bonuses	0= Does not have a contract 1 = Yes 2 = No
Received premiums	0= Does not have a contract 1 = Yes 2 = No
Received payment for overtime	0= Does not have a contract 1 = Yes 2 = No
Changing jobs	0= Does not plan to change jobs 1= Plans to change jobs
% of income allocated to recreation	0 = Below average 1 = Average 2 = Above average
% income allocated to vacation	0 = Below average 1 = Average 2 = Above average
Sex	0 = Male 1 = Female
Head of household	0 =Other member of the household 1 = Head of household
Marital status	0 = Married 1 = Civil union 2 = Widowed 3 = Separated 4 = Single
Academic degree	0 = None or Basic 1 = Secondary school 2 = Technical or Technology 3 = University 4 = Specialization 5 = Master's 6 = PhD
Ethnic minority	0 = Non-ethnic 1 = Ethnic minority (indigenous, Romany, Afro-Colombians, Raizals, and palenqueros)
Commune	0 = South 1 = East 2 =Agua Blanca District 3 = Northeast 4 = Northwest
Socioeconomic level	1 = Low Stratum (1 and 2) 2 = Middle Stratum (3 and 4) 3 = High Stratum (5 and 6)
Birth cohort	0 = 1950-1960 1 = 1961-1972 2 = 1973-1984 3 = 1985-1996

Source: Author calculations based on the EECV.

Table 4. Main statistics

Variables	Observations	Mean	Deviation	Minimum	Maximum
JSI	9469	13.203	20.953	0.000	100.000
Job Stress Index	9469	1.257	1.167	0.000	3.000
State of health	9469	2.026	0.565	0.000	3.000
Chronic disease	9469	0.117	0.366	0.000	2.000
Health problems	9469	0.912	0.284	0.000	1.000
Hours worked per week	9469	1.099	0.811	0.000	2.000
Ln (Income)	9469	10.700	5.306	0.000	16.811

Table 4. Main statistics

Variables	Observations	Mean	Deviation	Minimum	Maximum
Salaried workers	9469	0.562	0.496	0.000	1.000
Works overtime	9469	1.187	0.955	0.000	2.000
Received bonuses	9469	1.188	0.973	0.000	2.000
Received premiums	9469	1.171	0.966	0.000	2.000
Received payment for overtime	9469	1.098	0.962	0.000	2.000
Changing jobs	9469	0.740	0.439	0.000	1.000
% of income allocated to recreation	9469	0.187	0.510	0.000	2.000
% income allocated to holidays	9469	0.272	0.663	0.000	2.000
Academic degree	9469	1.125	1.158	0.000	6.000
Ethnicity	9469	0.317	0.465	0.000	1.000
Commune	9469	1.982	1.402	0.000	4.000
Socioeconomic level	9469	0.648	0.708	0.000	2.000
Birth cohort	9469	1.596	1.006	0.000	3.000
Experience	9469	21.895	12.931	-3.000	55.000
Experience^2	9469	646.561	629.369	0.000	3025.000
Gender	9469	0.430	0.495	0.000	1.000
Head of household	9469	0.435	0.496	0.000	1.000
Marital status	9469	2.043	1.652	0.000	4.000

Source: Author calculations based on the EECV using the Stata 13.0 software

APPENDIX 5

Table 5. Small-Hsiao test to validate the IIA assumption

Ho: Odd are independent of other alternatives **Number of observations:** 8247						
Omitted	lnL (complete)	lnL (omitted)	Chi2	df	P>chi	Evidence
Very High	-2714.031	-10300.00	-15100.00	144	1	Ho not rejected
High	-3629.745	-5108.548	-2957.605	144	1	Ho not rejected
Medium	-2593.897	-5108.548	-5029.302	144	1	Ho not rejected
Low	-3210.333	-5108.548	-3796.429	144	1	Ho not rejected

Source: Author calculations based on the EECV.

APPENDIX 6

Table 6. Ordered multinomial logit regression model (marginal effects)

Job Stress Index	Very high	High	Medium	Low
48 hours per week	-0.114***	0.0269**	0.0742***	0.0131
	(0.0154)	(0.0109)	(0.0140)	(0.0099)
More than 48 hours per week	-0.00774	0.0204**	0.0104	-0.0231**
	(0.0152)	(0.0103)	(0.0138)	(0.0098)
Ln (Income)	-0.00356***	-0.000806	0.000615	0.00375***
	(0.0012)	(0.0007)	(0.0010)	(0.0008)
Salaried workers	-0.149***	-0.00632	0.103***	0.0527***
	(0.0172)	(0.0112)	(0.0147)	(0.0108)

Table 6. Ordered multinomial logit regression model (marginal effects)

Job Stress Index	Very high	High	Medium	Low
Worked overtime	-0.201***	0.000088	0.104*	0.0966*
	0.0528	(0.0410)	(0.0572)	(0.0517)
Did not work overtime	-0.225***	0.0154	0.140***	0.0697**
	(0.0639)	(0.0335)	(0.0452)	(0.0327)
Compensation for overtime	0.0264	-0.0455**	0.0173	0.00187
	(0.0448)	(0.0212)	(0.0365)	(0.0244)
Not compensated for overtime	0.0444	-0.000289	-0.0131	-0.0309
	(0.0359)	(0.0210)	(0.0281)	(0.0204)
Received bonuses	-0.0898	-0.0464	0.0889	0.0472
	(0.0761)	(0.0371)	(0.0729)	0.0528
Did not receive bonuses	-0.0683	-0.0263	0.0847	0.00991
	(0.0682)	(0.0449)	(0.0541)	(0.0367)
Received a premium	0.0249	0.0241	-0.0472	-0.00175
	(0.0898)	(0.0584)	(0.0581)	(0.0422)
Did not receive a premium	0.253***	-0.000101	-0.197***	-0.0553
	(0.0700)	(0.0453)	(0.0566)	(0.0391)
Does not plan to change jobs	-0.512***	0.0553***	0.292***	0.165***
	(0.0108)	(0.0071)	(0.0090)	(0.0069)
Spends the average amount on leisure activities	-0.0871***	-0.00566	0.0576***	0.0352**
	(0.0237)	(0.0142)	(0.0207)	(0.0152)
Spends above the average on leisure activities	0.00213	-0.0456***	-0.00363	0.0471***
	(0.0280)	(0.0145)	(0.0231)	(0.0180)
Spends the average amount on vacations	-0.0692*	0.000772	0.0138	0.0545**
	(0.0396)	(0.0236)	(0.0311)	(0.0243)
Spends above the average on vacations	-0.0114	0.00761	-0.0289*	0.0327***
	(0.0191)	(0.0122)	(0.0156)	(0.0123)
Regular state of health	-0.128*	0.213	-0.02	-0.065
	(0.0747)	(0.1520)	(0.0927)	(0.0457)
Good state of health	-0.157**	0.128**	0.0423	-0.0141
	(0.0679)	(0.0594)	(0.0711)	(0.0546)
Very good state of health	-0.233***	0.215	-0.0397	0.0578
	(0.0587)	(0.1480)	(0.0859)	(0.0763)
Chronic illness and consultation	0.0315	-0.00678	-0.000741	-0.0239*
	(0.0231)	(0.0138)	(0.0206)	(0.0140)
Chronic illness and no consultation	0.103*	0.00598	-0.0443	-0.0649**
	(0.0568)	(0.0328)	(0.0445)	(0.0266)
Does not have health problems	-0.0635***	-0.00285	0.0720***	-0.00561
	(0.0227)	(0.0143)	(0.0184)	(0.0154)
Secondary education	-0.0683***	-0.00387	0.0512***	0.0210*
	(0.0166)	(0.0103)	(0.0154)	(0.0119)
Technical or technological education	-0.0730***	-0.0159	0.0347	0.0542***
	(0.0258)	(0.0157)	(0.0240)	(0.0207)
University education	-0.134***	-0.0322**	0.0807***	0.0857***
	0.0249	(0.0152)	(0.0251)	(0.0218)

Table 6. Ordered multinomial logit regression model (marginal effects)

Job Stress Index	Very high	High	Medium	Low
Specialization	-0.0960**	-0.0495**	0.00982	0.136***
	(0.0452)	(0.0229)	(0.0382)	(0.0385)
Master's degree	-0.106	-0.0104	-0.0143	0.130**
	(0.0699)	(0.0404)	(0.0523)	(0.0513)
PhD	-0.143	-0.00152	-0.119	0.264
	(0.2070)	(0.1260)	(0.1330)	(0.1770)
Ethnic minorities	-0.00684	0.0161*	-0.0262**	0.0170*
	(0.0133)	(0.0084)	(0.0114)	(0.0087)
East	-0.0227	-0.0278**	0.0508**	-0.000263
	(0.0219)	(0.0125)	(0.0207)	(0.0140)
Agua Blanca District	0.00213	-0.0111	0.031	-0.0220*
	(0.0209)	(0.0123)	(0.0194)	(0.0130)
Northeast	-0.0349*	-0.011	0.0412**	0.00477
	(0.0185)	(0.0112)	(0.0168)	(0.0116)
Northwest	0.0138	-0.000489	0.0107	-0.0240**
	(0.0204)	(0.0123)	(0.0176)	(0.0111)
Middle strata	-0.0989***	-0.00372	0.0647***	0.0379***
	(0.0139)	(0.0090)	(0.0129)	(0.0099)
High strata	-0.187***	-0.0238*	0.124***	0.0868***
	(0.0203)	(0.0138)	(0.0225)	(0.0182)
1961-1972 Cohort	0.033	-0.00743	-0.0171	-0.00843
	(0.0294)	(0.0176)	(0.0250)	(0.0177)
1973-1984 Cohort	0.0385	0.00347	-0.0192	-0.0228
	(0.0442)	(0.0271)	(0.0377)	0.0264
1985-1996 Cohort	0.068	0.000997	-0.0455	-0.0234
	(0.0602)	(0.0368)	(0.0490)	(0.0350)
Potential experience	0.000226	-0.000465	-0.00132	0.00156
	(0.0032)	(0.0020)	(0.0027)	(0.0020)
Potential experience squared	0.0000	0.0000	0.0000	0.0000
	(0.0001)	(0.00)	(0.00)	(0.00)
Male	-0.0344**	0.00348	0.0178	0.0131
	(0.0134)	(0.0085)	(0.0116)	(0.0088)
Head of household	-0.00471	0.00656	-0.0171	0.0153*
	(0.0144)	(0.0090)	(0.0125)	(0.0093)
Civil union	0.0155	0.00142	-0.0066	-0.0103
	(0.0176)	(0.0108)	(0.0149)	(0.0105)
Widowed	0.0157	0.0204	-0.0153	-0.0208
	(0.0434)	(0.0306)	(0.0387)	(0.0273)
Separated	0.0268	0.00978	-0.0147	-0.0219*
	(0.0232)	(0.0148)	(0.0193)	(0.0132)
Single	0.0396**	-0.0243**	-0.00714	-0.00822
	(0.0188)	(0.0112)	(0.0158)	(0.0111)
Probability of Occurrence	40.32%	13.15%	31.0%	15.53%

Source: Author calculations based on the EECV using Stata 13.0 software