



WP-EC 2014-04

Wellbeing at work and the Great Recession: The effect of others' unemployment

Cristina Borra and Francisco Gómez-García

Ivie

Working papers
Working papers
Working papers

Los documentos de trabajo del Ivie ofrecen un avance de los resultados de las investigaciones económicas en curso, con objeto de generar un proceso de discusión previo a su remisión a las revistas científicas. Al publicar este documento de trabajo, el Ivie no asume responsabilidad sobre su contenido.

Ivie working papers offer in advance the results of economic research under way in order to encourage a discussion process before sending them to scientific journals for their final publication. Ivie's decision to publish this working paper does not imply any responsibility for its content.

La Serie EC, coordinada por Matilde Mas, está orientada a la aplicación de distintos instrumentos de análisis al estudio de problemas económicos concretos.

Coordinated by Matilde Mas, the EC Series mainly includes applications of different analytical tools to the study of specific economic problems.

Todos los documentos de trabajo están disponibles de forma gratuita en la web del Ivie <http://www.ivie.es>, así como las instrucciones para los autores que desean publicar en nuestras series.

Working papers can be downloaded free of charge from the Ivie website <http://www.ivie.es>, as well as the instructions for authors who are interested in publishing in our series.

Versión: octubre 2014 / Version: October 2014

Edita / Published by:
Instituto Valenciano de Investigaciones Económicas, S.A.
C/ Guardia Civil, 22 esc. 2 1º - 46020 Valencia (Spain)

DOI: http://dx.medra.org/10.12842/WPEC_201404

Wellbeing at work and the Great Recession: The effect of others' unemployment

Cristina Borra and Francisco Gómez-García*

Abstract

The recent recession has generated a tremendous increase in unemployment rates in Spain. In this paper we use a very rich repeated cross-section dataset on workers' job conditions, together with regional unemployment rates, to investigate whether peers' unemployment affects individuals' job satisfaction. We find that, once perceived job stability is controlled for, peers' unemployment shows a positive effect on individuals' wellbeing at work, larger and more precisely estimated for men and private-sector workers. The impact is highly non-linear and the largest effect is found for unemployment rates exceeding 10%. Interestingly, the results are robust to controlling for workforce selection.

Keywords: Job satisfaction, unemployment rate, relative position, job insecurity, Spain, Great Recession.

JEL classification numbers: I31, J28, E24.

Resumen

La recesión reciente ha generado un gran incremento de las tasas de desempleo en España. En este artículo se utiliza una fusión de cortes transversales sobre las condiciones de trabajo, lo que junto a las tasas de desempleo regionales nos permite investigar si el desempleo de los pares afecta a la satisfacción laboral de los individuos. Llegamos a que, una vez controlada la estabilidad en el empleo, el desempleo de los pares muestra un efecto positivo sobre la satisfacción laboral. Este efecto es mayor para los hombres y los trabajadores del sector privado. Además, el impacto es no lineal y el efecto mayor se encuentra para una tasa de desempleo mayor al 10%. Los resultados son robustos y no hay problemas de selección muestral.

Palabras clave: Satisfacción laboral, tasa de desempleo, posición relativa, inseguridad laboral, España, Gran Recesión.

Clasificación JEL: I31, J28, E24.

* C. Borra and F. Gómez-García (corresponding author: fgomez@us.es): University of Seville.

INTRODUCTION

This paper looks at the effect of peers' unemployment on individuals' job satisfaction. Since the seminal works of Hamermesh (1977), Freeman (1978), and Borjas (1979), economists have been increasingly interested in wellbeing at work, given its association with gains in productivity at an organizational and an individual level (Mangione and Quinn 1975, Oswald 1997, Pugno and Depredi 2009, Halkos and Bousinakis 2010, Bökerman and Ilmakunnas 2010, Phelps and Zoega 2013). The literature provides evidence for a strong relationship between wellbeing at work and specific socioeconomic characteristics, namely, gender, age, education, wages, working hours, trade unions status and establishment size (Theodossiou and Vasileiou 2007, García-Serrano 2011, Borra and Gómez 2012).

A related literature analyzes the effect of unemployment on subjective life satisfaction. Unemployment is widely considered to have a strong negative impact on individual wellbeing and losing a job is associated with a significant drop in not only income, but also social status, self-esteem, and other non-pecuniary effects (Clark and Oswald 1994, Winkelmann y Winkelmann 1998, Clark 2003, Blanchflower and Oswald 2004). Recently, evidence has gathered showing also a clear negative effect of general unemployment on subjective wellbeing among the employed in United Kingdom and Germany (Clark et al. 2010, Luechinger et al. 2010, Schwarz 2012). The most obvious channel for this effect is via the individual's perception of job insecurity: others' unemployment increases one's own risk of becoming unemployed. Increased unemployment may also induce other general negative externalities such as a higher crime rate, expectations of higher taxes to finance increased welfare spending, and increased income inequality (Luechinger et al. 2010).

On the other hand, individual welfare may be subject to social influences. Previous literature both from economists (Duesenberry 1949; Easterlin, 1974; Luttmer, 2005; D'Ambrosio and Frick 2012) and psychologists (Kahneman et al. 1999; Inglehart and Klingemann 2000) highlights that individuals' welfare depends heavily on their achievement in comparison to others' outcomes. In this context, a higher level of unemployment may positively affect individuals' wellbeing by lowering expectations: the employed feel better off when their relative standing increases (Eggers et al. 2006).

In this paper we try to isolate both the negative insecurity effect and the positive comparison effect of unemployment rates on subjective wellbeing at work in Spain during 2006-2010. We use individual level data from the Spanish Working Conditions Survey (Encuesta de Calidad de Vida en el Trabajo (ECVT)), a yearly survey carried out by the Spanish Ministry of Labour and Social Affairs containing information on individual job satisfaction, demographic and human capital characteristics of employees, employers' features, and pecuniary and non-pecuniary job characteristics, together with regional unemployment rates computed from the Spanish Labour Force Survey (Encuesta de Población Activa, EPA) for the same years. Our identification strategy uses time and cross-section variations in the data to estimate the effect of regional unemployment rates on job satisfaction. In order to distinguish insecurity and comparison effects we compare models including and excluding perceived job stability measures as additional controls.

Understanding unemployment and individual wellbeing in Spain during the recent recession is especially relevant. Spain has witnessed a surge in unemployment from slightly over 8% in 2006 to more than 20% in 2010, the highest in the European Union with the only exception of Greece. The increase has not been homogeneous,

though, with some regions experiencing moderate increases (from 7 to 14 % in the Basque Country) and others suffering from huge rises (from 12 to 28% in Andalusia). In addition, the recession is also having a large and damaging impact on the national debt (with risk premiums hitting historical records), on the banking sector (with some banks needing bailouts), and on the overall ability of the state to deal with these economic and political problems.

We find that, for those currently working, peers' unemployment shows both a negative insecurity effect and a positive comparison effect in Spain. In fact, once perceived job stability is controlled for, higher peers' unemployment rates are associated with higher job satisfaction. The impact is highly non-linear, with larger positive effects found for unemployment rates exceeding 10%. With the exception of Eggers et al. (2006), no previous work has obtained similar results. Using information from the British Household Panel Survey, Clark (2003) finds a clear negative effect of surrounding unemployment on life satisfaction of the employed. A similar result is reported by Powdthavee (2007) for South Africa. In Germany, with data from the German Socio-Economic Panel, Clark et al (2010) reveal a clear negative effect of others' unemployment on the general wellbeing of the employed, slightly lower for those with higher perceived insecurity, which are considered to be subject to the social norm of unemployment. Luechinger et al. (2010), with the same dataset, also show a negative effect of regional unemployment on the employed, but only significant for those who belong to the private sector. The only study obtaining a positive effect of higher unemployment rates on the wellbeing of the employed analyzes the tumultuous environment of post-Soviet Russia during the 1990s (Eggers et al. 2006).

We also investigate whether this positive effect is due to sample selection instead of individuals' relative standing. In an environment of very high unemployment, remaining workers may increasingly be selected from those who have greater motivation or better attitudes towards work, and higher job satisfaction may be just the consequence of a different workforce composition arising after the crisis. Using propensity score matching techniques to correct for sample selection, we rule out that our results are driven by selection effects in a significant way.

As far as we know, no previous study has examined the effect of peers' unemployment on subjective wellbeing at work in the context of the Great Recession using a survey of employees. For instance, the literature of the macroeconomics of happiness (Di Tella et al. 2001, 2003, Wolfers 2003) examines the effects of business cycle volatility on subjective well-being, but so far the recent recession has not been examined. We also add to existing literature by examining a Southern European country such as Spain. So far previous studies have focused primarily on Germany (Clark et al 2010, Luetchinger et al. 2010, Schwarz 2012), the United Kingdom (Clark 2003), South Africa (Powdthavee 2007) and Russia (Eggers et al. 2006). Compared to these studies we control for unobserved heterogeneity by including personality and psychological attitudes in the spirit of Ferrer-i-Carbonell and Frijters (2004) and Origo and Pagani (2009), and we focus on subjective wellbeing at work instead of life satisfaction, controlling for a vast array of working conditions that may have hardened during the recession. Moreover, we contribute to this literature by investigating potential nonlinearities and addressing the issue of sample selection through propensity score matching methods as in Kawaguchi et al. (2012) and Borra et al. (2013).

This paper is organized as follows. The next section presents the theoretical framework. Section 3 describes the dataset and the estimation procedure. Section 4 presents the results and their heterogeneity with respect to different variables. Section 5 explores sample selection issues and, finally, Section 6 concludes.

I. THEORETICAL FRAMEWORK

In contrast to a reductionist neoclassical approach, the theoretical model that supports our empirical strategy is based on the hypothesis that a job is more than the salary and number of hours of work. Other job characteristics are relevant to define the job post, such as the possibility of reconciling work and family, or on-the-job training. In this paper we add an additional hypothesis: does others' unemployment, as measured by regional unemployment rates, affect wellbeing at work? (Akerlof 1980, Clark 2003). As supported by previous literature, unemployment reduces individual welfare of those personally affected by it. However, high unemployment rates may also have non-negligible effects on people who are not personally affected by unemployment. For instance, using individual data from 12 European countries from 1975 to 1992, Di Tella et al. (2005) find that aggregate unemployment reduces subjective wellbeing, even after controlling for personal employment status.

The most obvious effect of general unemployment on those employed is through job insecurity: bad news for others increases my own unemployment risks, producing a clear negative effect on wellbeing. In addition, overall unemployment may also generate negative or positive externalities: a) negative, arising from empathy with unemployed workers, potentially higher crime rates, and increased income inequality, for instance (Clark 2003; Clark et al. 2010; Luechinger et al. 2010; Schwarz 2012; and Hudson and Barrett 2013); and b) positive, coming from relative achievement in

comparison to others' outcomes. This positive comparison effect, profusely evidenced with respect to income (Hamermesh 1977; Clark and Oswald 1996; Solnik and Hemenway 2005; Luttmer 2005), is most unusual with respect to unemployment in the empirical literature (Eggers et al. 2006). To distinguish between these externalities (positive and/or negative) and changes in the economic risks that arise when having a job becomes less common, we include perceived job stability as a specific argument of the utility function. In light of the above, we present a model in which the individual's utility depends on perceived job stability and the regional unemployment:

$$U(JS_i, UR_r, Z_i) \tag{1}$$

where $U(\cdot)$ represents utility derived from work, JS_i is individual i 's perceived job stability, UR_r is region r unemployment rate and Z_i is a vector of control variables such as gender, education, and job characteristics –including the wage rate– that may affect the individual's utility.

In the following we assume there is a relationship between current utility (U) and subjective wellbeing at work (WAW_i), defined as:

$$WAW_i = U(JS_i, UR_r, Z_i) + \varepsilon_i \tag{2}$$

where the error term captures individual heterogeneity, mainly due to attitudes and personality traits, and measurement error. As stated by Kahneman y Krueger (2006), subjective wellbeing at work can be inferred from individuals' satisfaction scores.

II. DATA, VARIABLES, AND EMPIRICAL STRATEGY

We use two sources of data in our analysis: (1) individual level data from the Spanish Working Conditions Survey (Encuesta de Calidad de Vida en el Trabajo (ECVT)) spanning from 2006 through 2010, and (2) data on regional unemployment rates

computed from the Spanish Labour Force Survey (Encuesta de Población Activa, EPA) for the same years.

The ECVT provides the most representative and frequent data on job satisfaction for the Spanish workforce. We use 40,000 individual records with information on demographic and human capital characteristics of employees, employers' features, and pecuniary and non-pecuniary job characteristics. We choose the 2006-2010 period in order to analyze the potential effect of unemployment during the Great Recession and because no later surveys are available and important methodological changes took place in 2006, rendering previous surveys not directly comparable to the ones we use.

The measure of overall job satisfaction is derived from the following question: "Indicate your level of satisfaction in your current job" It is measured on an ordinal 11-point Likert scale from "very badly" (0) to "excellently" (10). As a first approximation to our research question, Table 1 summarizes the dependent variable by survey year. Apparently the recession has not significantly altered the job satisfaction of those employed.

Regional unemployment rates are provided from the EPA directly by the Spanish Statistical Office (Instituto Nacional de Estadística, 2013). Table A.1 in the Appendix shows unemployment rates by region and year as in our benchmark definition of peer's unemployment.

A major advantage of the ECVT dataset is that it contains an extremely rich set of background variables, which allows the implementation of econometric methods to a very high standard. In particular the survey offers personal and demographic characteristics, human capital features, and other non-financial job characteristics -apart

from job security. Table A.2 in the appendix shows definitions and descriptive statistics of all variables used in the analyses, by survey year.

Table 1. Dependent variable

Satisfaction	2006	2007	2008	2009	2010	2006-2010
0	1.17	0.35	0.22	1.05	0.50	0.65
1	0.38	0.28	0.19	0.50	0.48	0.37
2	1.03	0.66	0.43	0.97	1.17	0.85
3	1.54	1.68	1.43	1.63	1.44	1.54
4	2.75	3.09	2.73	2.16	2.21	2.58
5	10.27	10.95	9.39	8.38	8.50	9.48
6	10.69	12.74	12.85	10.97	11.15	11.69
7	19.30	22.26	23.20	22.02	20.81	21.54
8	26.00	27.32	29.59	28.16	29.27	28.10
9	12.30	12.19	11.71	11.35	12.90	12.09
10	14.56	8.49	8.27	12.81	11.58	11.10
Total	100.00	100.00	100.00	100.00	100.00	100.00
Average	7.33	7.19	7.27	7.33	7.37	7.30

Notes:

This table shows the average level and the distribution of the 0-10 values of our dependent variable job satisfaction by survey year. The sample includes individuals aged 16-74 who are employed in the private or public sector, and not self-employed. Observations are weighted using the individual weights in the ECVT.

Source: ECVT 2006-2010.

Our purpose is to explore how increasing unemployment rates after the recession may have impacted individuals' wellbeing at work. With that aim in mind, we estimate the following equation in our benchmark analysis:

$$WAW_{irt} = \alpha + \beta_1 UR_r + X_i \gamma + \phi_r + \phi_t + \varepsilon_{irt} \quad (3)$$

where the dependent variable is the individual's i from region r overall job satisfaction in year t . The variable UR_r is a measure of the regional unemployment rate. We also control for a variety of individual level personal and job characteristics included in the vector X known to be correlated to subjective wellbeing, such as age, gender, marital status, educational attainment, job tenure, wages, contract type, firm size, accident risk,... We include these characteristics sequentially to assess how the estimated

coefficient changes as we include some variables that could be potentially considered endogenous, as is the case with contract type or job tenure. We also include regional ϕ_r and year φ_t fixed-effects to account for a variety of macroeconomic factors possibly correlated to individuals' welfare, such as differences in crime rates, the public provision of unemployment support, divorce rates,... Finally, standard errors are clustered at the regional level as suggested by Moulton (1990).

Absent any controls for perceived job stability, β_1 captures the combined insecurity plus externality effects. In order to distinguish both, we also estimate a model with an additional control for subjective job stability

$$WAW_{irt} = \alpha + \beta_2 UR_r + \delta JS_i + X_i \gamma + \phi_r + \varphi_t + \varepsilon_{irt} \quad (4)$$

where JS_i measures satisfaction with job stability in a 0-10 scale. In this second model the coefficient of the unemployment rate β_2 estimates now just the externality effect.

A priori, we would expect the combined externality plus job insecurity effect of β_1 in equation (3) to be negative or null, due to the relative weight of job security on wellbeing at work. The externality effect of β_2 in equation (4) should be larger than β_1 . It may even be positive if the positive comparison effect turns larger than the negative empathic/inequality effect in Spain. Moreover, the comparison effect can be as large as to turn both β_1 and β_2 into positive.

Our dependent variable is intrinsically ordered in nature. However, usual estimators like ordered probit or logit may not be flexible enough for our purposes. Van Praag and Ferrer-i-Carbonell (2006) show that the latent variable underlying an ordinal variable can be approximated by adequately re-scaling the variable. Therefore, we will use this approach termed Probit OLS and transform the variable into a pseudo-

continuous one as explained by Corneliben (2009) and use a traditional linear regression estimator.

III. RESULTS

Table 2 presents our baseline estimates for our sample of employees. The first specification includes no additional controls. The second specification adds in a range of variables indicating demographic and human capital characteristics of the individual, while the third specification controls for job characteristics, including the individual's monthly earnings. The fourth specification includes personality and psychological attitudes, which are very likely to capture time-invariant unobserved factors in the absence of panel data (Ferrer-i-Carbonell and Frijters 2004; Origo and Pagani 2009). The fifth specification adds up region and year fixed effects while the sixth specification also includes perceived job stability.

When comparing the estimated effect in specification (5), β_1 in equation (3), to that in specification (6), β_2 in equation (4), it becomes apparent that, after controlling for all demographic variables, job characteristics, personality traits, and regional and time variation, the general combined effects of unemployment are virtually inexistent. However, when obtaining the net effect, controlling also for perceived job stability, a clear positive impact emerges. Therefore in Spain the general externalities of unemployment on the employed are mainly positive and related to the comparison effect. According to our estimates (specification 6), an increase in the unemployment rate of 10 percentage points (for instance the change in Madrid's unemployment from 2006 to 2010, or the difference in the unemployment rate between Andalusia and Cataluña in 2010) increases wellbeing at work by 0.1 points in the 10 point scale. This effect is similar in magnitude to that found for working continuously instead of working

Table 2. The Effect of Regional Unemployment Rates on Subjective Wellbeing at Work.. 2006-2010.

	(1) Spec. 1	(2) Spec. 2	(3) Spec. 3	(4) Spec. 4	(5) Spec. 5 Eq. 3	(6) Spec. 6 Eq. 4
Regional Unemployment Rate	0.009** (0.003)	0.008*** (0.003)	0.009*** (0.002)	0.009*** (0.002)	0.008 (0.005)	0.010** (0.003)
Perceived Job Stability						0.155*** (0.003)
Demographic and Human Capital Vars.	No	Yes	Yes	Yes	Yes	Yes
Job Characteristics	No	No	Yes	Yes	Yes	Yes
Personality Traits	No	No	No	Yes	Yes	Yes
Region fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	No	No	No	Yes	Yes
Observations	32,290	32,209	32,290	32,290	32,290	32,290
R-squared	0.003	0.069	0.117	0.124	0.134	0.267

Notes:

This table shows the regression of perceived job satisfaction on the variables of interest. The sample includes only individuals aged 16-74 who are employed in the private or public sector, and not self-employed. Regressions include a constant term together with the control variables in Table A.2 in a sequential way. Observations are weighted using the individual weights in the ECVT. Standard errors in parentheses adjusted for clustering on the regional level. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: ECVT and EPA 2006-2010.

split-shifts (see Appendix A.3). It also implies a compensating variation of 6.5% (about 75€ per month). Only the study by Eggerts et al. (2006) for Russia finds such a clear positive effect. Using a measure of life satisfaction in a five point scale, they find that a ten percentage point increase in the unemployment rate would increase the mean happiness score by 0.2. Most other studies on the subject Powdthavee (2007), Schwarz (2012) y Hudson y Barrett (2013) find negative effects. Luechinger et al. (2010), using individual panel data for Germany and repeated cross-sectional data for the United States and 13 European countries, find that unemployment has a negative effect on the happiness of private sector employees but no negative effect on the happiness of public bureaucrats. They do not control for job instability in their analysis however. Using also German panel data Clark et al (2010) find null effects for employed women and employed men working in insecure jobs, after they control for job security.

In Table 2 perceived job stability is measured indirectly by means of the individual's satisfaction with job stability. An even more direct measure is offered in the 2010 survey where respondents are asked about the probability of keeping one's job in a 1 though 4 likert scale. Given the qualitative and quantitative importance of perceived job stability in our analysis, as a robustness check, we estimate the model on the 2010 sample including perceived probability of keeping one's job instead of satisfaction with job stability as a control. The results, shown in Table 3, are very similar to those offered in the sixth specification of Table 2. We also test the reliability of the baseline results to changes in the definition of our regional unemployment variable (Table A.4). For most of our alternative definitions of regional unemployment and sample selections, we obtain the previous result of a clear positive effect of unemployment on the employed after controlling for perceived job security.

Table 3. The Effect of Regional Unemployment Rates on Subjective Wellbeing at Work. 2010

	(1) Equation 3	(2) Equation 4
Regional Unemployment Rate	0.013*** (0.002)	0.015*** (0.001)
Probability of Keeping One's Job		0.122*** (0.011)
Demographic and Human Capital Vars.	Yes	Yes
Job Characteristics	Yes	Yes
Personality Traits	Yes	Yes
Region fixed effects	Yes	Yes
Year fixed effects	No	No
Observations	6497	6497
R-squared	0.162	0.175

Notes:

This table shows the regression of perceived job satisfaction on the variables of interest. The sample includes only individuals aged 16-74 who are employed in the private or public sector, and not self-employed. Regressions include a constant term together with the control variables in Table A.2. Observations are weighted using the individual weights in the ECVT. Standard errors in parentheses adjusted for clustering on the regional level. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: ECVT and EPA 2010.

Heterogenous effects of peers' unemployment on wellbeing at work

We consider different stratifications of the sample to investigate heterogeneity in the impact of regional unemployment on wellbeing at work. The analysis is presented in Table 4. For all sample selections we offer both the complete (β_1 in equation (3)) and the net (β_2 in equation (4)) effects. We first include self-employed individuals in the sample. We then stratify by gender the sample of employees. Finally we divide the sample into public and private sector employees.

The results are generally robust to changes in the population of interest. Apparently, when considering the self-employed (Columns 1 and 2), male workers (Columns 5 and 6), and those employed in the private sector (Columns 7 and 8), the positive comparison effect is as large as to outweigh the countervailing effect of

increased job insecurity and regional unemployment thus shows a significant positive effect in both specifications. As expected, however, the combined externality plus job insecurity effect of β_1 in equation (3) (Columns 1, 5, and 7) is smaller than the externality effect of β_2 in equation (4) (Columns 2, 6, and 8, respectively).

Our results in columns 7 and 9 of Table 4 relative to private and public sector employees can be directly compared to Luetchinger et al.'s (2010) estimates for Germany, given that they do not control for individual job insecurity. Like them, we do not find any significant effects of regional unemployment on wellbeing at work of public sector employees. Unlike them, however, we find a clear positive, not negative, effect of regional unemployment on private sector employees' wellbeing at work. According to our model and Luetchinger et al.'s (2010) own interpretation of their findings, in Germany, general unemployment affects private sector employees mainly through increased job insecurity, whereas we find that in Spain, the comparison component of the impact of unemployment is the main driver.

Non-linear effects of peers' unemployment on wellbeing at work

All in all, the results seem fairly robust and indicative of a positive externality of general unemployment on the employed in Spain, mainly related to the comparison effect. Unemployment figures in many regions in Spain are much larger than in regions of other developed countries, however. It is thus possible that the positive effect is not found throughout the whole unemployment distribution. Therefore, we investigate potential nonlinearities in the relationship between subjective wellbeing at work and regional unemployment by using of a piecewise linear spline specification in estimating Equation 4.

Table 4. Heterogeneity Analysis of the Effect of Regional Unemployment Rates on Subjective Wellbeing at Work. 2006-2010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Self-employ. Equation. 3	Self-employ. Equation. 4	Males Equat.. 3	Males Equat.. 4	Females Equation. 3	Females Equation. 4	Priv. sector Equation. 3	Priv. sector Equation. 4	Public sector Equation. 3	Public sector Equation. 4
Regional Unemployment Rate	0.007** (0.003)	0.008** (0.003)	0.011* (0.006)	0.012** (0.005)	0.004 (0.005)	0.008** (0.003)	0.012** (0.005)	0.015*** (0.003)	-0.005 (0.007)	-0.003 (0.007)
Perceived Job Stability		0.158*** (0.003)		0.157*** (0.004)		0.152*** (0.004)		0.167*** (0.004)		0.112*** (0.009)
Demograp. and Human Capital Vars.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Personality Traits	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39,798	39,798	18,011	18,011	14,279	14,279	24,184	24,184	8,106	8,106
R-squared	0.128	0.272	0.141	0.276	0.145	0.272	0.145	0.301	0.128	0.192

Notes:

This table shows the regression of perceived job satisfaction on the variables of interest. The sample includes only individuals aged 16-74 who are employed or self-employed in columns (1) and (2); males or females 16-74 employed in the private or public sector, and not self-employed in columns (3), (4), (5), and (6); individuals 16-74 employed in the private sector in columns (7) and (8); and individuals 16-74 employed in the public sector in columns (9) and (10). Regressions include a constant term together with the control variables in Table A.2. Observations are weighted using the individual weights in the ECVT. Standard errors in parentheses adjusted for clustering on the regional level. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: ECVT and EPA 2006-2010.

We explored different break points and finally found that there were actually a lower and an upper threshold, the former for regional unemployment levels below 6.6%, and the latter for figures larger than 10.4%.

Table 5. Linear Spline Estimates of the Effect of Regional Unemployment on Subjective Wellbeing at Work. 2006-2010.

	Equation 4
reg_unemp≤6.6	-0.059* (0.030)
6.6<reg_unemp≤10.4	0.011 (0.010)
reg_unemp>10.4	0.009** (0.003)
Perceived Job Stability	0.155*** (0.003)
Demographic and Human Capital Vars.	Yes
Job Characteristics	Yes
Personality Traits	Yes
Region fixed effects	Yes
Year fixed effects	Yes
Observations	32,290
R-squared	0.267

Notes:

The estimates represent the estimated effect of unemployment rates on perceived job satisfaction within the relevant intervals. The sample includes only individuals aged 16-74 who are employed in the private or public sector, and not self-employed. Regressions include a constant term together with the control variables in Table A.2. Observations are weighted using the individual weights in the ECVT. Standard errors in parentheses adjusted for clustering on the regional level. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: ECVT and EPA 2006-2010.

Table 5 shows the estimated coefficients of a piecewise linear spline with knots at 6.6 and 10.4% unemployment rates. The usual negative effect of peers' unemployment on the employed of Clark (2003) or Clark et al. (2010) is also present in Spain for unemployment levels lower than 6.6%, which is not surprising, given that the average unemployment rate in the United Kingdom is about 6.3% over the 2006-2010 period (OECD 2014). For unemployment levels between 6.6 and 10.4%, Table 5 reports an insignificant effect. This is coincident with Clark et al.'s (2010) finding for insecure workers. The estimated slope in Table 5 becomes significant and positive for

unemployment levels over 10.4%. This also agrees with previous evidence from Eggers et al. (2006), as the average regional unemployment rate in Russia is 10.7% over the considered period. If we take into consideration that the average regional unemployment in our sample is 12.8%, finding overall positive externalities of peers' unemployment in Spain comes as no surprise.

IV. RULING OUT WORKFORCE COMPOSITION EFFECTS

So far we have unveiled a clear positive comparison effect of surrounding unemployment on Spanish employees. However, there remains the possibility that, because of the tremendous impact of unemployment during the current recession, the estimated positive effect is due to sample selection and not a true comparison effect. Firms may choose to lay off unproductive, less motivated workers during recessions. If this is the case, then the estimated effect of unemployment rates on workers wellbeing is a by-product of workforce selection on the part of firms. Where unemployment is higher, increased selection of more able and optimistic workers is possible and these happier workers might also rate higher in their job satisfaction.

Controlling for sample selection may be difficult to achieve in the absence of panel data. Ideally we would like to restrict the sample to those who remained employed after the onset of the crisis (Askildsen et al. 2005). In the absence of such information in our dataset, we use propensity score methods to select the sample, in the spirit of Gregg et al. (2005) and Kawaguchi et al. (2012). We pair individuals from the 2006, 2007, 2008, and 2009 samples to similar individuals from the 2010 sample. This enables us to restrict the analysis sample only to those individuals who may have an analogous counterpart in the 2010 sample. Given the importance of attitudes and motivation for our research question, as a further identification strategy, we use individual information

on satisfaction with private life. Methodologically however merely including satisfaction with private life as an additional control when computing the propensity score may not achieve very satisfying results. As shown by Stuart and Rubin (2008) and Borra et al. (2013), matching quality may be greatly improved by combining Mahalanobis matching on the key covariates with propensity score matching. Given the influence of gender in previous analysis of individuals' wellbeing (Clark 1997; Kaiser 2005), we consider gender and satisfaction with private life as especially relevant factors in this respect. In particular we follow the subsequent matching protocol (Rubin and Thomas 2000; Lechner 2002): For each pair of samples, for instance the 2006 and 2010 samples, we first specify and estimate a binomial probit model of the probability of belonging to the 2006 sample (our treatment group), that is, we obtain the propensity score. Second, we apply Mahalanobis metric matching on the propensity score and the key considered covariates, satisfaction with personal life and gender, within relatively refined propensity score callipers. And then we restrict the 2006 sample to observations with 'similar' individuals in the 2010 sample, that is, we impose the common support condition. Once common support samples for the four years are identified, we can perform the analysis on this restricted sample of individuals who may have belonged to the 2010 sample of workers also during 2006, 2007, 2008 and 2009.

To test the sensitivity of the results with respect to the sample selection matching algorithm, we also perform the aforementioned Mahalanobis-propensity score method including tenure as an additional key covariate. This variable is used due to its especial significance in deciding lay-offs traditionally and during the recent recession in Spain (Bentolila et al. 2010). We assess matching quality for each of the matching procedures performed by comparing mean values of the variables used in the analysis for the

treatment and control groups after matching. We find very few significant differences in any of the 131 background variables used, in all of the matching procedures and sample years and thus conclude the relatively high quality of the matching (Available upon request).

Table 6 shows the estimated effect of regional unemployment on individual wellbeing at work for the different restricted samples obtained. The first two columns offer the baseline estimation of Table 2 for comparison purposes. Columns (3) and (4) restrict the sample based only on the estimated propensity score. The estimates in the fifth and sixth columns use Mahalanobis matching on life satisfaction and gender within the propensity score to restrict the sample, whereas the seventh and eighth columns include tenure in the previous method.

Estimates of both coefficient β_1 in equation (3) and coefficient β_2 in equation (4) are qualitatively and quantitatively similar regardless of sample selection criteria. It appears that the estimated positive effect of unemployment on the employed is a true comparison effect and not a reflection of changes in workforce composition. It is interesting to note that for the final two columns (7 and 8), when tenure is also included as a key covariate in the matching procedure, the estimated externality is actually larger. If the Spanish labour market relied heavily on tenure in deciding who remained in the job post after the onset of the crisis, as contended by Bentolila et al. (2010), those who were still employed felt increasingly fortunate as unemployment increased around them. The significant positive effect found in column (7) means that this positive comparison effect was even stronger than fears of losing one's job.

Table 6. The Effect of Regional Unemployment Rates on Subjective Wellbeing at Work Controlling for Sample Selection

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Baseline		Prop. Score		Mahal. on life satisfaction and gender within PS		Mahal. on life satisfaction gender & tenure within PS	
	Equation 3	Equation 4	Equation 3	Equation 4	Equation 3	Equation 4	Equation 3	Equation 4
Regional Unempl. Rate	0.008 (0.005)	0.010** (0.003)	0.008 (0.005)	0.010*** (0.003)	0.008 (0.005)	0.010** (0.004)	0.009* (0.005)	0.011*** (0.003)
Perceived Job Stability		0.155*** (0.003)		0.155*** (0.003)		0.155*** (0.003)		0.156*** (0.004)
Dem. and Human Cap Vars.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Personality Traits	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,290	32,290	31,745	31,745	30,156	30,156	28,931	28,931
R-squared	0.134	0.267	0.134	0.267	0.131	0.263	0.129	0.262

Notes

This table shows the regression of perceived job satisfaction on the variables of interest. In each pair of columns, the sample has been selected differently. In the first 2 columns, the sample includes only individuals aged 16-74 who are employed in the private or public sector, and not self-employed. The second and following columns include all individuals from the 2010 sample plus selected individuals from the 2006, 2007, 2008, and 2009 samples. Sample selection is based on the propensity score in columns 3 and 4, on Mahalanobis matching on satisfaction with private life and gender within propensity score calipers in columns 5 and 6 and on Mahalanobis matching on satisfaction with private life, gender and tenure in columns 7 and 8. Regressions include a constant term together with the control variables in Table A.2. Observations are weighted using the individual weights in the ECVT. Standard errors in parentheses adjusted for clustering on the regional level. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: ECVT and EPA 2006-2010.

We also used the restricted samples selected by the different matching procedures to explore heterogeneous results by gender (Table A.5) and non-linear effects (Table A.6). In none of the cases do the positive externalities disappear. On the contrary, unemployment effects on women's job satisfaction tend to increase when workforce composition is controlled for. Moreover, when considering spline effects and the possibility of different effects for different intervals of the unemployment distribution, the negative effect found for unemployment rates lower than 6.6% in Table 5 is no longer significant.

In summary, we find no evidence of positive externalities of peers' unemployment being driven by selection of the more able and motivated workers and we are confident that unemployment shows a true positive comparison effect on those employed in Spain.

V. CONCLUSIONS

This paper investigates the association between three key variables in the labour market: wellbeing at work, job stability, and unemployment rates. We underline the following results.

Our main finding is that, once perceived job stability is controlled for, general unemployment generates a positive effect on employees' wellbeing at work in Spain, larger and more precisely estimated for males and private-sector workers. This result is robust to using different regional unemployment measures, and, interestingly to controlling for workforce selection. According to our estimates, an increase in the unemployment rate of 10 percentage points increases wellbeing at work by 0.1 points in the 10 point scale. As far as we know, no previous study has examined the effect of peers' unemployment on subjective wellbeing at work in the context of the Great

Recession using a survey of employees. It should also be noted that such a positive impact is itself a novel finding, with the exception of Eggers et al. (2006).

Another interesting finding in our paper is the presence of nonlinearities in the relationship between peers' unemployment and wellbeing at work. The previously found negative effect of general unemployment on the employed is also present in Spain for unemployment levels below 6.6%. However, it becomes positive for levels of unemployment higher than 10.4%. This explains the uniqueness of our result, given that Spain's structural, massive unemployment stands as a distinctive feature when compared to neighbouring countries. The conclusion is that Spaniards' wellbeing does not respond differently to unemployment; but Spanish unemployment levels are different from those in other European countries.

In this regard, a potential extension of this paper may rest in testing whether such a strong positive comparison effect is found in other developed countries during the Great Recession or whether it has been specific to the countries most hard hit by the recession such as Greece, Portugal, and Ireland.

Appendix

Table A.1. Regional unemployment rates

	2006	2007	2008	2009	2010
Andalucía	12.68	12.76	17.83	25.35	27.97
Aragón	5.54	5.24	7.15	12.82	14.77
Asturias, Principado de	9.31	8.48	8.45	13.42	15.97
Balears, Illes	6.46	6.98	10.18	18.02	20.37
Canarias	11.68	10.44	17.36	26.19	28.70
Cantabria	6.56	5.90	7.17	11.99	13.87
Castilla y León	8.11	7.18	9.51	13.78	15.78
Castilla - La Mancha	8.81	7.61	11.59	18.81	20.99
Cataluña	6.60	6.55	9.00	16.25	17.75
Comunitat Valenciana	8.37	8.76	12.13	21.24	23.30
Extremadura	13.43	13.06	15.20	20.55	23.04
Galicia	8.48	7.64	8.73	12.59	15.40
Madrid, Comunidad de	6.37	6.30	8.69	14.03	16.08
Murcia, Región de	7.85	7.56	12.63	20.73	23.35
Navarra, Comunidad Foral de	5.30	4.76	6.72	10.89	11.85
País Vasco	6.97	6.12	6.45	11.04	10.55
Rioja, La	6.18	5.66	7.79	12.75	14.27

Source: EPA 2006-2010

Table A.2 Control variables

Variable	Measure	2006	2007	2008	2009	2010	2006-2010
Demographic and Human Capital Characteristics							
Age	years	41.97 (11.0)	41.71 (11.2)	42.08 (10.9)	41.81 (10.6)	42.84 (10.6)	42.09 (10.9)
Male	0/1	0.57 (0.5)	0.59 (0.5)	0.59 (0.5)	0.58 (0.5)	0.56 (0.5)	0.58 (0.5)
Inmigrant	0/1	0.06 (0.2)	0.11 (0.3)	0.09 (0.3)	0.11 (0.3)	0.10 (0.3)	0.09 (0.3)
Partner	0/1	0.67 (0.5)	0.66 (0.5)	0.67 (0.5)	0.68 (0.5)	0.69 (0.5)	0.67 (0.5)
Num children	No.	0.50 (0.8)	0.53 (0.8)	0.48 (0.8)	0.57 (0.8)	0.54 (0.8)	0.52 (0.8)
Secondary	0/1	0.19 (0.4)	0.20 (0.4)	0.21 (0.4)	0.23 (0.4)	0.21 (0.4)	0.21 (0.4)
Post secondary	0/1	0.32 (0.5)	0.32 (0.5)	0.33 (0.5)	0.33 (0.5)	0.38 (0.5)	0.34 (0.5)
University	0/1	0.25 (0.4)	0.23 (0.4)	0.26 (0.4)	0.25 (0.4)	0.26 (0.4)	0.25 (0.4)
Adequate studies	0/1	0.77 (0.4)	0.79 (0.4)	0.78 (0.4)	0.78 (0.4)	0.79 (0.4)	0.78 (0.4)
Overeducated	0/1	0.19 (0.4)	0.15 (0.4)	0.18 (0.4)	0.18 (0.4)	0.17 (0.4)	0.17 (0.4)
Nonrelated studies	0/1	0.02 (0.1)	0.03 (0.2)	0.02 (0.1)	0.02 (0.1)	0.02 (0.1)	0.02 (0.1)
Job Characteristics							
Tenure	years	10.97 (10.6)	10.50 (10.8)	10.84 (10.7)	10.69 (10.5)	11.43 (10.5)	10.89 (10.6)
Ln_wage	euros	7.03 (0.6)	7.03 (0.6)	7.09 (0.5)	7.06 (0.6)	7.05 (0.6)	7.05 (0.6)
Self employed	0/1	0.14 (0.4)	0.17 (0.4)	0.17 (0.4)	0.19 (0.4)	0.18 (0.4)	0.17 (0.4)
Public sector	0/1	0.21 (0.4)	0.19 (0.4)	0.20 (0.4)	0.22 (0.4)	0.20 (0.4)	0.20 (0.4)
Indefinite	0/1	0.63 (0.5)	0.61 (0.5)	0.65 (0.5)	0.63 (0.5)	0.62 (0.5)	0.63 (0.5)
Full time	0/1	0.87 (0.3)	0.87 (0.3)	0.88 (0.3)	0.86 (0.3)	0.86 (0.3)	0.87 (0.3)
With subordinates	0/1	0.30 (0.5)	0.19 (0.4)	0.25 (0.4)	0.23 (0.4)	0.22 (0.4)	0.24 (0.4)
Work in a team	0/1	0.78 (0.4)	0.74 (0.4)	0.72 (0.4)	0.78 (0.4)	0.70 (0.5)	0.74 (0.4)
Continous journey	0/1	0.54 (0.5)	0.51 (0.5)	0.52 (0.5)	0.53 (0.5)	0.54 (0.5)	0.53 (0.5)
Working hours	hours	40.31 (11.0)	40.47 (9.9)	40.20 (9.2)	39.78 (11.0)	39.66 (10.4)	40.08 (10.3)
Unusual shift	0/1	0.36 (0.5)	0.36 (0.5)	0.35 (0.5)	0.37 (0.5)	0.37 (0.5)	0.36 (0.5)
Union	0/1	0.20 (0.4)	0.17 (0.4)	0.19 (0.4)	0.18 (0.4)	0.18 (0.4)	0.18 (0.4)
Risky job	0/10	3.72 (3.2)	3.53 (3.3)	3.24 (3.2)	3.56 (3.1)	3.55 (3.2)	3.52 (3.2)
1-person firm	0/1	0.09 (0.3)	0.11 (0.3)	0.13 (0.3)	0.12 (0.3)	0.11 (0.3)	0.11 (0.3)
N. Workers 2-9	0/1	0.27 (0.4)	0.25 (0.4)	0.24 (0.4)	0.24 (0.4)	0.25 (0.4)	0.25 (0.4)
N. Workers 2-9	0/1	0.18 (0.4)	0.20 (0.4)	0.20 (0.4)	0.18 (0.4)	0.18 (0.4)	0.19 (0.4)
N. Workers 10-49	0/1	0.13 (0.3)	0.13 (0.3)	0.13 (0.3)	0.13 (0.3)	0.14 (0.3)	0.13 (0.3)
N. Workers 50-249	0/1	0.34 (0.5)	0.31 (0.5)	0.30 (0.5)	0.33 (0.5)	0.31 (0.5)	0.32 (0.5)

Table A.2 Control variables (cont.)

Variable	Measure	2006	2007	2008	2009	2010	2006-2010
Additional controls							
Ln_income	euros	7.44 (0.6)	7.42 (0.6)	7.43 (0.6)	7.47 (0.6)	7.41 (0.6)	7.43 (0.6)
Municipality <10,000	0/1	0.20 (0.4)	0.22 (0.4)	0.22 (0.4)	0.23 (0.4)	0.24 (0.4)	0.22 (0.4)
Municipality 10,000-50,000	0/1	0.27 (0.4)	0.27 (0.4)	0.27 (0.4)	0.26 (0.4)	0.27 (0.4)	0.27 (0.4)
Municipality 50,000-100,000	0/1	0.12 (0.3)	0.12 (0.3)	0.12 (0.3)	0.12 (0.3)	0.11 (0.3)	0.12 (0.3)
Municipality 100,000-500,000	0/1	0.33 (0.5)	0.32 (0.5)	0.31 (0.5)	0.31 (0.5)	0.30 (0.5)	0.31 (0.5)
Municipality 500,000-1,000,000	0/1	0.08 (0.3)	0.07 (0.3)	0.08 (0.3)	0.08 (0.3)	0.08 (0.3)	0.08 (0.3)
Personality and attitudinal variables							
Preferred job private sector	0/1	0.44 (0.5)	0.42 (0.5)	0.39 (0.5)	0.44 (0.5)	0.43 (0.5)	0.43 (0.5)
Preferred job employee	0/1	0.65 (0.5)	0.66 (0.5)	0.70 (0.5)	0.70 (0.5)	0.72 (0.4)	0.69 (0.5)
Preferred job small business	0/1	0.46 (0.5)	0.41 (0.5)	0.41 (0.5)	0.43 (0.5)	0.40 (0.5)	0.42 (0.5)
Job security satisfaction	0/10	7.34 (2.5)	7.30 (2.5)	7.30 (2.7)	7.21 (2.7)	7.22 (2.6)	7.27 (2.6)
Life satisfaction	0/10	7.58 (1.9)	7.54 (2.0)	7.55 (1.8)	7.36 (1.8)	7.44 (1.8)	7.49 (1.9)
Unemployment measures							
National unemploy.	percentage	8.51 (0.0)	8.26 (0.0)	11.34 (0.0)	18.01 (0.0)	20.06 (0.0)	13.29 (4.9)
Regional unemploy	percentage	7.92 (2.2)	7.71 (2.3)	10.48 (3.4)	16.93 (4.4)	18.83 (4.8)	12.43 (5.9)
Unemploy by gender	percentage	7.92 (3.3)	7.63 (3.1)	10.40 (3.8)	16.91 (4.5)	18.80 (5.0)	12.39 (6.1)
Unemploy. by age and gender	percentage	7.12 (4.2)	7.02 (4.1)	9.40 (5.2)	15.44 (7.0)	17.09 (7.3)	11.26 (7.1)
Unemploy. by educ. And gender	percentage	8.14 (4.0)	8.03 (4.0)	10.88 (5.3)	17.73 (7.1)	19.55 (7.6)	12.92 (7.6)

Table A.3 All estimated coefficients in Table 2.

Variables	(1) base	(2) hum	(3) job	(4) pers	(5) other	(6) estab
Reg_unemp	0.009** (0.003)	0.008*** (0.003)	0.009*** (0.002)	0.009*** (0.002)	0.008 (0.005)	0.010** (0.003)
Satis_job_stability						0.155*** (0.003)
Age		-0.030*** (0.005)	-0.032*** (0.004)	-0.034*** (0.004)	-0.032*** (0.004)	-0.021*** (0.002)
Age2		0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Male		-0.053*** (0.014)	-0.023 (0.014)	-0.017 (0.014)	-0.017 (0.013)	-0.022 (0.015)
Inmigrant		-0.093*** (0.029)	-0.034 (0.027)	-0.029 (0.025)	0.002 (0.022)	0.027 (0.022)
Partner		0.051** (0.018)	0.035* (0.018)	0.034* (0.018)	0.021 (0.014)	0.029** (0.011)
Nchildren		0.017* (0.008)	0.012 (0.008)	0.013 (0.008)	0.013* (0.007)	0.006 (0.005)
Secondary		0.040* (0.020)	-0.012 (0.025)	-0.008 (0.026)	-0.001 (0.026)	-0.018 (0.023)
Post_secondary		0.114*** (0.029)	-0.020 (0.029)	-0.022 (0.029)	-0.014 (0.027)	-0.030 (0.022)
University		0.212*** (0.020)	-0.075 (0.051)	-0.080 (0.051)	-0.071 (0.052)	-0.094* (0.049)
Adequate		0.123** (0.049)	0.128** (0.047)	0.127** (0.046)	0.121** (0.046)	0.124** (0.047)
Overeducated		-0.458*** (0.046)	-0.361*** (0.054)	-0.345*** (0.053)	-0.344*** (0.052)	-0.258*** (0.054)
Unrelated		-0.241*** (0.061)	-0.178** (0.074)	-0.161** (0.072)	-0.166** (0.072)	-0.134* (0.067)
Tenure			-0.006*** (0.001)	-0.006*** (0.001)	-0.006*** (0.001)	-0.008*** (0.001)
Ln_wage			0.197*** (0.033)	0.193*** (0.033)	0.193*** (0.036)	0.153*** (0.021)
Public_sector			0.117*** (0.021)	0.135*** (0.021)	0.120*** (0.021)	0.063** (0.024)
Indefinite			0.143*** (0.021)	0.137*** (0.021)	0.142*** (0.021)	-0.206*** (0.016)
Fulltime			0.062* (0.031)	0.062* (0.031)	0.056* (0.031)	0.031 (0.028)
Subordinates			0.095*** (0.013)	0.097*** (0.013)	0.081*** (0.013)	0.059*** (0.012)
Team			0.151*** (0.016)	0.155*** (0.016)	0.153*** (0.017)	0.095*** (0.017)
Continous job			-0.000 (0.017)	0.005 (0.018)	0.002 (0.016)	0.004 (0.014)
Working hours			-0.008*** (0.002)	-0.008*** (0.002)	-0.008*** (0.002)	-0.006*** (0.002)
Unusual shifts			-0.017 (0.022)	-0.013 (0.022)	-0.020 (0.019)	-0.007 (0.023)
Union			-0.068** (0.031)	-0.063** (0.030)	-0.068** (0.024)	-0.060*** (0.020)
Risky job			-0.035*** (0.002)	-0.034*** (0.002)	-0.035*** (0.002)	-0.024*** (0.002)
Preferred_public				0.089*** (0.011)	0.090*** (0.012)	0.070*** (0.011)
Preferred_employee				0.151*** (0.023)	0.153*** (0.020)	0.126*** (0.014)
Preferred_small				0.063*** (0.013)	0.054*** (0.014)	0.041** (0.014)
Ln_income					0.040* (0.020)	0.008 (0.012)
National_unemp					0.002 (0.004)	0.004 (0.003)
Constant	-0.129** (0.051)	0.328** (0.116)	-0.814** (0.286)	-0.875*** (0.269)	-1.122*** (0.249)	-1.714*** (0.184)
Observations	32,314	32,314	32,290	32,290	32,290	32,290
R-squared	0.003	0.069	0.117	0.124	0.134	0.267

Table A.4. Alternative Measures of Regional Unemployment

	(1) Tot. sample	(2) Tot. sample	(3) Males	(4) Males	(5) Females	(6) Females	(7) Tot. sample	(8) Tot. sample	(9) Tot. sample	(10) Tot. sample	(11) Males	(12) Males	(13) Females	(14) Females
	Eq.3	Eq.4	Eq.3	Eq.4	Eq.3	Eq.4	Eq.3	Eq.4	Eq.3	Eq.4	Eq.3	Eq.4	Eq.3	Eq.4
Unemp. Rate by Region and Gender	0.003 (0.004)	0.004 (0.003)	0.011* (0.005)	0.011** (0.004)	0.005 (0.005)	0.009** (0.004)								
Unemp. Rate by Region, Age, and Gender							-0.000 (0.003)	0.001 (0.002)						
Unemp. Rate by Region, Educ., and Gender									0.003 (0.002)	0.006*** (0.002)	0.006** (0.003)	0.009** (0.003)	0.004 (0.004)	0.006 (0.004)
Perceived Job Stability		0.155*** (0.003)		0.157*** (0.004)		0.152*** (0.004)		0.155*** (0.003)		0.155*** (0.003)		0.157*** (0.004)		0.152*** (0.004)
Demographic and Human Capital Vars.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Personality Traits	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,290	32,290	18,011	18,011	14,279	14,279	32,290	32,290	32,290	32,290	18,011	18,011	14,279	14,279
R-squared	0.134	0.267	0.141	0.276	0.145	0.272	0.134	0.267	0.134	0.267	0.141	0.276	0.145	0.272

Notes:
 This table shows the regression of perceived job satisfaction on the variables of interest. The sample includes only individuals aged 16-64 who are employed in the private or public sector, and not self-employed. Regressions include a constant term together with the control variables in Table A.2. Observations are weighted using the individual weights in the ECVT. Standard errors in parentheses adjusted for clustering on the regional level. * significant at 10% ** significant at 5%; *** significant at 1%.
 Source: ECVT and EPA 2006-2010.

Table A.5. The effect of regional unemployment rates on subjective wellbeing at work by gender, controlling for sample selection

	(1)	(2)	(3)	(4)
	Baseline	Prop. Sc.	Mahal. on life satisf. And gender within PS	Mahal. on life satisf- gender-tenure within PS
A. Males				
Regional Unemploy Rate	0.011** (0.004)	0.012*** (0.004)	0.010** (0.004)	0.011** (0.004)
Perceived Job Stability	0.157*** (0.004)	0.158*** (0.004)	0.158*** (0.005)	0.159*** (0.005)
Observations	18,011	17,729	16,958	16,331
R-squared	0.276	0.277	0.274	0.274
B. Females				
Regional Unemploy Rate	0.009** (0.004)	0.009** (0.004)	0.012** (0.005)	0.014*** (0.005)
Perceived Job Stability	0.152*** (0.004)	0.151*** (0.003)	0.150*** (0.003)	0.150*** (0.004)
Observations	14,279	14,016	13,198	12,600
R-squared	0.272	0.271	0.268	0.265
Dem and Hum Cap Vars.	Yes	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes	Yes
Personality Traits	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Notes:

This table shows the regression of perceived job satisfaction on the variables of interest. Panel A presents results for men; panel B, for women. In each pair of columns, the sample has been selected differently. In the first 2 columns, the sample includes only individuals aged 16-74 who are employed in the private or public sector, and not self-employed. The second and following columns include all individuals from the 2010 sample plus selected individuals from the 2006, 2007, 2008, and 2009 samples. Sample selection is based on the propensity score in columns 3 and 4, on Mahalanobis matching on satisfaction with private life and gender within propensity score calipers in columns 5 and 6 and on Mahalanobis matching on satisfaction with private life, gender and tenure in columns 7 and 8. Regressions include a constant term together with the control variables in Table A.2. Observations are weighted using the individual weights in the ECVT. Standard errors in parentheses adjusted for clustering on the regional level. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: ECVT and EPA 2006-2010.

Table A.6. Linear Spline Estimates of the Effect of Regional Unemployment on Subjective Wellbeing at Work. 2006-2010.

	(1) Baseline Equation 4	(2) Prop. Score Equation 4	(3) Mahal. on life satisfac. and gender within PS Equation 4	(4) Mahal. on life satisfac. gender & tenure within PS Equation 4
reg_unemp≤6.6	-0.059* (0.030)	-0.052 (0.030)	-0.053 (0.037)	-0.059 (0.040)
6.6<reg_unemp≤10.4	0.011 (0.010)	0.012 (0.011)	0.015 (0.011)	0.011 (0.012)
reg_unemp>10.4	0.009** (0.003)	0.009** (0.003)	0.010** (0.004)	0.010** (0.004)
Perceived Job Stability	0.155*** (0.003)	0.155*** (0.003)	0.155*** (0.003)	0.156*** (0.004)
Dem. and Human Cap Vars.	Yes	Yes	Yes	Yes
Job Characteristics	Yes	Yes	Yes	Yes
Personality Traits	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	32,290	31,745	30,156	28,931
R-squared	0.267	0.267	0.263	0.262

Notes:

The estimates represent the estimated effect of unemployment rates on perceived job satisfaction within the relevant intervals. In each pair of columns, the sample has been selected differently. In the first 2 columns, the sample includes only individuals aged 16-74 who are employed in the private or public sector, and not self-employed. The second and following columns include all individuals from the 2010 sample plus selected individuals from the 2006, 2007, 2008, and 2009 samples. Sample selection is based on the propensity score in columns 3 and 4, on Mahalanobis matching on satisfaction with private life and gender within propensity score calipers in columns 5 and 6 and on Mahalanobis matching on satisfaction with private life, gender and tenure in columns 7 and 8. Regressions include a constant term together with the control variables in Table A.2. Observations are weighted using the individual weights in the ECVT. Standard errors in parentheses adjusted for clustering on the regional level. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: ECVT and EPA 2006-2010.

REFERENCES

- AKERLOF, G. (1980). A Theory of Social Custom, of Which Unemployment May Be One Consequence. *Quarterly Journal of Economics* .94 (4), 749-775.
- ASKILDSEN, J.E., BRATBERG, E. and NILSEN, A. (2005). Unemployment, Labor Force Composition and Sickness Absence: A Panel Data Study. *Health Economics*. 14, 1087-1101.
- BENTOLILA, S., CAHUC, P. and DOLADO, J.J., LE BARBANCHON, T. (2010). Two-Tier Labor Markets in the Great Recession: France vs. Spain. IZA Discussion Papers 5340.
- BLANCHFLOWER, D. and OSWALD, A. (2004). Well-Being over Time in Britain and the USA. *Journal of Public Economics*. 87(7-8), 1359-1386.
- BÖCKERMAN, P. and ILMAKUNNAS, P. (2010). The Job Satisfaction-Productivity Nexus: A Study Using Matched Survey and Register Data. Munich Personal RePEc Archive (MPRA), 17, June.
- BORJAS, G.J. (1979). Job Satisfaction, Wages and Unions. *Journal of Human Resources*. 14, 21-40.
- BORRA, C. and GÓMEZ, F. (2012). Satisfacción Laboral y Salario: ¿Compensa la Renta Laboral las Condiciones no Monetarias del Trabajo?. *Revista de Economía Aplicada*. 60(XX), 25-51.
- BORRA, C., SEVILLA, A. and GERCHUNY, J. (2013). Calibrating Time-Use Estimates for the British Household Panel Survey. *Social Indicators Research*. 114, 1211-1224.
- CLARK, A., KNABE, A. and RÄTZEL, S. (2010). Boon or Bane? Others' Unemployment, Well-being and Job Insecurity. *Labour Economics*. 17, 52-61.
- CLARK, A.E. (1997). Job Satisfaction and Gender: Why are Women so Happy at Work?. *Labour Economics*. 4, 341-372
- CLARK, A.E. (2003). Unemployment as a Social Norm: Psychological Evidence from Panel Data. *Journal of Labor Economics*. 21, 323-351.
- CLARK, A.E. and OSWALD, A.J. (1994). Unhappiness and Unemployment. *The Economic Journal*. 104, 648-659.
- CLARK, A.E., and OSWALD, A.J. (1996). Satisfaction and Comparison Income. *Journal of Public Economics*. 61, 359-381.
- CORNELIBEN, T. (2009). The Interaction of Job Satisfaction, Job Search, and Job Changes. An Empirical Investigation with German Panel Data. *Journal of Happiness Studies*. 10(3), 367-384.
- DI TELLA, R., MACCULLOCH, R.J. and OSWALD, A.J. (2001). Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness. *American Economic Review*. 91(1), 335-341.

- DI TELLA, R., MACCULLOCH, R.J. and OSWALD, A.J. (2003). The Macroeconomics of Happiness. *The Review of Economics and Statistics*. 85(4), 809-827.
- DUESENBERY, J. (1949). *Income, Saving and the Theory of Consumer Behavior*. Cambridge, MA : Harvard University Press.
- EASTERLIN, R (1974). Does Economics Growth Improve the Human a Lot? Some Empirical Evidence. In P.A. Davis, M.W. Reder (eds.), *Nations and Households in Economic Growth*. New York: Academy Press.
- EGGERS, A., GADDY, C. and GRAHAN, C. (2006). Well-being and Unemployment in Russia in the 1990s: Can Society's Suffering Be Individuals' Solace?. *The Journal of Socio-Economics*. 35, 209-242.
- FERRER-I-CARBONELL, A. and FRIJTERS, P. (2004). How Important is Methodology for the Estimates of the Determinants of Happiness?. *The Economic Journal*. 114(497), 641-659.
- FREEMAN, R.B. (1978). Job Satisfaction as an Economic Variable. *American Economic Review, Papers and Proceedings*. 68, 135-141.
- GARCÍA-SERRANO, C. (2011). Does Size Matter? The Influence of Firm Size on Working Conditions, Job Satisfaction and Quit Intentions. *Scottish Journal of Political Economy*. 58(2), 221-247.
- GREGG, P., WASHBROOK, E., PROPPER, C. and BURGESS, S. (2005). The Effects of a Mother's Return to Work Decision on Child Development in the UK. *The Economic Journal*. 115, 48-80.
- HALKOS, G. and BOUSINAKIS, D. (2010). The Effect of Stress and Satisfaction on Productivity. *International Journal of Productivity and Performance Management*. 59(5), 415-431.
- HAMERMESH, D.S. (1977). Economic Aspects of Job Satisfaction. In: Ashenfelter, O., Oastes, W.E. (eds.): *Essays in Labour Market Analysis*, 53-72.
- HUDSON, E. and BARRETT, A. (2013). Peer Groups, Employment Status and Mental Well-being among Older Adults in Ireland. IZA DP N° 7586.
- INGLEHART, R. and KLINGEMANN, H.D. (2000). *Genes, Culture and Happiness*. Cambridge, MA: MIT Press.
- KAHNEMAN, D, DIENER, E. and SCHWARZ, N. (1999). *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation.
- KAHNEMAN, D. and KRUEGER, A.B. (2006). Developments in the Measurement of Subjective Well-Being. *Journal of Economic Perspectives*. 20(1), 3-24.
- KAISER, L. (2005). Gender-Job Satisfaction Differences across Europe: An Indicator for Labor Market Modernization. IZA DP N° 1876.
- Kawaguchi, D., Lee, J. and HAMERMESH, D.S. (2012). A Gift of Time. IZA DP N° 6700.

- LECHNER, M. (2002). Program heterogeneity and Propensity Score Matching: An Application to the Evaluation of Active Labor Market Policies. *Review of Economics and Statistics*. 84, 205-220.
- LOCKE, L.A. (1969). What is Job Satisfaction?. *Organizational Behavior and Human Performance*. 4, 309-336.
- LUECHINGER, S., MEIER, S. and STUTZER, A. (2010). Why Does Unemployment Hurt the Employed? Evidence from the Life Satisfaction Gap between the Public and the Private Sector. *Journal of Human Resources*. 45(4), 998-1045.
- LUTTMER, E. (2005). Neighbors as Negatives: Relative Earnings and Well-Being. *The Quarterly Journal of Economics*. 120(3), 963-1002.
- MANGIONE, T.W. and QUINN, R.P. (1975). Job Satisfaction, Counter-productive Behaviour and Drug Use at Work. *Journal of Applied Psychology*. 60, 114-116.
- MOULTON, B.R. (1990). An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units. *Review of Economics and Statistics*. 72 (2): 334-8.
- OECD <http://stats.oecd.org/>
- ORIGO, F. and PAGANI, L. (2009). Flexicurity and Job Satisfaction in Europe: The Importance of Perceived and Actual Job Stability for Well-Being at Work. *Labour Economics*. 16(5), 547-555
- OSWALD, A.J. (1997). Happiness and Economic Performance. *The Economic Journal*. 107, 1815-1831.
- PHELPS, E.S. and ZOEGA, G. (2013). Corporatism and Job Satisfaction”, *Journal of Comparative Economics*. 41(1), 35-47.
- POWDTHAVEE, N. (2007). Are there Geographical Variations in the Psychological Cost of Unemployment in South Africa. *Social Indicators Research*. 80, 629-652.
- PUGNO, M. and DEPREDI, S. (2009). Job Performance and Job Satisfaction: an Integrated Survey. Università Degli Studi Di Trento, Dipartimento di Economia, Discussion Paper N° 4.
- RUBIN, D.B. and THOMAS, N. (2000). Combining Propensity Score Matching with Additional Adjustments for Prognostic Covariates. *Journal of the American Statistical Association*. 95, 573-585.
- SALA, H. and TRIVÍN, P. (2014). Labour Market Dynamics in Spanish Regions: Evaluating Asymmetries in Troublesome Times. *SERIEs*. 5:197–221. DOI 10.1007/s13209-014-0106-x
- SCHWARZ, P. (2012). Neighborhood Effects of High Unemployment Rates: Welfare Implications among Different Social Groups. *The Journal of Socio Economics*. 41, 180-188.
- SOLNICK, S.J. and HEMENWAY, D. (2005). Are Positional Concerns Stronger in Some Domains than in Others. *American Economic Review*, may, 147-151.

- STUART, E.A. and RUBIN, D.B. (2008). Best Practices in Quasi-experimental designs: Matching Methods for Causal Inference. In J.W. Osborne (Ed.), *Best Practices in Quantitative Methods* (pp. 155-176), Thousand Oaks, CA, Sage Publications.
- THEODOSSIOU, I. and VASILEIOU, E. (2007). Making the Risk of Job Loss a Way of Life: Does it Affect Job Satisfaction?. *Research in Economics*. 61, 71-83.
- VAN PRAAG, B.M.S. and FERRER-I-CARBONELL, A. (2006). An Almost Integration-free Approach to Ordered Response Models. Tinbergen Institute Discussion Papers 06-047/3, Tinbergen Institute.
- WINKELMANN, L. and WINKELMANN, R. (1998). Why are the Unemployed so Unhappy? Evidence from Panel Data. *Economica*. 65, 1-15.
- WOLFERS, J. (2003). Is Business Cycle Volatility Costly? Evidence from Surveys of Subjective Well-being. *International Finance*. 6(1), 1-26.



Ivie

Guardia Civil, 22 - Esc. 2, 1º
46020 Valencia - Spain
Phone: +34 963 190 050
Fax: +34 963 190 055

Website: <http://www.ivie.es>
E-mail: publicaciones@ivie.es