

## **How do general economic conditions affect household economic expectations?**

### **Analysis for Spain 1990-2012**

Cristina Vilaplana Prieto  
Universidad de Murcia

#### **Abstract:**

The aim of this paper is to shed further light on the determinants of Spanish individuals' expectations with respect to household finances and general economic situation. A unique dataset using 23 Eurobarometer surveys for the period 1990-2012 is used to estimate a bivariate probit ordered model considering the potential endogeneity of expectations for economic situation in the equation of expectations for personal financial situation. The bivariate ordered model is tested against a more refined version which includes mixed effects for the transmission process from general economic prospects to household financial expectations. Results reveal that the imposition of a conditional mean estimator for the effect of general economic expectations over household financial expectations is excessively simplistic and whitewashes a large heterogeneity component. The estimation of a bivariate probit model with mixed effects captures specific nuances in the interaction between both variables. Additionally, we appreciate that families tend to believe that their personal financial situation is going to be better than forthcoming general economic conditions and that general economic expectations are more sensitive to changes in economic growth rather than to contractions of the labor market.

**Keywords:** expectations, financial situation, economic situation, ordered probit

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#### **Corresponding author:**

Cristina Vilaplana Prieto  
Address: Dpto. Fundamentos de Análisis Económico  
Facultad de Economía y Empresa  
Universida de Murcia  
Campus de Espinardo, s/n  
30100 Murcia  
Phone: 868 88 78 72  
Email: [cvilaplana@um.es](mailto:cvilaplana@um.es)

## **1. Introduction**

Future economic expectations affect forward looking-decisions such as consumer purchases (Carroll and Dunn, 1997; Curtin 2007), consumer behavior (Hermann, 2009), confidence in financial institutions (Valev, 2009) or even migration flows (Bertoli et al., 2013). Beliefs about the future can be interpreted as an indicator of consumer confidence and also reflect how consumers perceive economy's health. In the last decades, there has been a growing research focused on the analysis of characteristics of optimistic vs. pessimistic individuals, as well, as the consequences of optimistic vs. pessimistic behaviors. It is important to analyze the fundamentals of individual's expectations given their subsequent influence over sensible or irrational economic choices. Several studies have concluded that even after controlling by demographics and health status, more optimistic individuals work more hours, anticipate longer work careers (Gervais and Goldstein (2007) and tend to save a higher fraction of their wealth in individual stocks (Barber and Odean, 2000). In fact, some authors have confirmed that optimism has a significant effect over firm performance (Bitler et al., 2004), and that optimistic managers are a key success factor in manager-shareholder conflicts (Hackbarth, 2004). However, if a current of extreme optimism push them forward to take suboptimal decisions and avoid precautionary measures, they face a problem of overoptimism or overconfidence (Wenstein, 1980).

Expectations concerning household's financial situations play a central role in economic models. From the point of view of individual agents, the investment in human capital is going to be conditioned by the perspectives of obtaining a higher return (income) in the future. From the point of view of policy makers, individual expectations' are useful for predicting macroeconomic variables such as inflation, household saving and growth (Mankiw et al., 2003; Souleles, 2004).

Within this context, the aims of this paper are the following. First, analyze the extent to which expectations for personal financial situation are determined by individual concerns about general economy. Second, evaluate the effect of individual characteristics on the process of expectation formation. Third, examine how individuals internalize the evolution of macroeconomic variables.

This paper differs from other studies on expectations in two ways. On one hand, given the nature of the data used. Several studies have modelled individuals' expectations using panel data. Das and van Soest (1997, 1999) used the Dutch Socio-economic Panel, Souleles (2004) employed the Michigan Index of Consumer Sentiment, and more recently, Brown and Taylor (2006) and Mitchell and Weale (2007) relied on the British Household Panel Survey. The advantage of using panel data is that for each individual we know if his expectations for the next year were confirmed or not, and consequently, we can measure the expectational error. Unfortunately, we do not have similar panel data for Spanish consumers and have been obliged to rely on cross-sectional surveys for the period 1990-2012 (23 years).

On the other hand, we have used a bivariate ordered probit model to test the relationship between the degree of concern with respect to general economy and personal financial situation. In this setting, individual prospects regarding his personal situation are simultaneously determined along with their opinions for future economic situation, and also expectations for general economy are an endogenous variable in the equation of expectations for personal financial situation.

Nevertheless, the introduction of national economic prospects as an endogenous variable in the generation process of expectations concerning household financial situation is not enough, because even if we consider similar agents with respect their observable characteristics, there may be a large variability in their economic outlooks. To verify this possibility we test the standard version of the bivariate probit model against a more refined one, named “bivariate probit model with mixed effects”. This model estimates the effect of general economic expectations over household economic expectations not just as a parameter, but as a distribution. The estimation of the bivariate probit model with mixed effects confirms that the effect of general economic expectations is not appropriately modelled by a conditional mean estimator. The degree of heterogeneity of this effect is more intense for women, the cohort aged 35-44 years, retired people and non-qualified workers.

The rest of the paper is structured in five sections. Section 2 explains the econometric model and the relationship between both types of expectations analyzed. Section 3 describes the data used and the explanatory variables. Afterwards, in section 4, we present the estimation results, and finally, we conclude with a discussion of the economic implications.

## **2. Econometric model**

For estimating the relationship between expectations for the economy and personal financial situation we will use a bivariate ordered probit model with an endogenous variable (Greene and Hensher, 2010). To solve an endogeneity problem, the use of instrumental variables has been the mainstream in applied econometrics. However, when we use categorical variables and one of them is potentially endogenous, more sophisticated techniques are required (Angrist, 2001).

We consider two latent variables  $EE_i^*$  and  $EH_i^*$  denoting the “*expectations regarding the situation of the economy in the next year*” and the “*expectations regarding household financial situation in the next year*”. We concentrate on expectations for household finances because, in comparison with disposable income, the overall financial position has a higher impact over consumption behavior (Souleles, 2004).

The simultaneous analysis of expectations concerning general economic outcomes and private financial situation obliges us to consider the interactions between them. Both variables are driven by observable individual characteristics and by other unobserved factors (i.e., motivation, labor satisfaction) may generate a two-way communication between both types of expectations. For

example, government announcement of GDP increase will plausibly improve expectations of economic growth, induce workers to believe that the period of salary freeze is drawing to a close and increase optimistic expectations for household finance. However, it could be argued that household expectations determine general economic expectations. If an unemployed individual finds a new job, the amelioration of his personal situation can be interpreted as a sign of job creation and economic recovery. These expectations can be represented by the following equations system:

$$EE_i^* = X'_{1i}\beta_1 + \varepsilon_{1i} \quad (1)$$

$$EH_i^* = \alpha EE_i^* + X'_{2i}\beta_2 + \varepsilon_{2i} \quad (2)$$

where  $X'_{1i}$  and  $X'_{2i}$  are vectors of observable characteristics,  $\beta_1$  and  $\beta_2$  vectors of parameters and  $\varepsilon_{1i}$  and  $\varepsilon_{2i}$  are two error terms, that we assume are distributed according to a bivariate normal distribution, with zero mean, unitary variance and correlation coefficient  $\rho$ :

$$\begin{pmatrix} \varepsilon_{1i} \\ \varepsilon_{2i} \end{pmatrix} \sim N \left( \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right) \quad (3)$$

and such that  $E[X'_{1i}, \varepsilon_{1i}] = 0$  and  $E[X'_{2i}, \varepsilon_{2i}] = 0$ . Thus, if  $\rho$  is equal to zero, then  $EE_i^*$  is not endogenously determined and both equations can be estimated separately.

The scalar  $\alpha$  represents the effect of  $EE_i^*$  over  $EH_i^*$ , and its interpretation should not be confused with that of the correlation coefficient. On one hand, the error terms ( $\varepsilon_{1i}$  and  $\varepsilon_{2i}$ ) refer to characteristics that are unobservable for us, and a significant correlation ( $\rho$ ) between them indicates that the exogeneity assumption of  $EE_i^*$  in  $EH_i^*$  cannot be accepted. On the other hand, the coefficient  $\alpha$  measures the effect of  $EE_i^*$  over  $EH_i^*$  and it may influence the value of  $\rho$ , by reducing the amount of unobservables in the error term.

However, we do not observe neither  $EE_i^*$  nor  $EH_i^*$ , but instead two categorical ordered variables ( $EE_i$  and  $EH_i$ ). The variable  $EE_i$  is given by the answers to the question: "In your opinion, do you think that the general economic situation for the next 12 months is going to be: (3) better, (2) the same; (1) worse", whereas the variable  $EH_i$  is given by the answers to the question "In your opinion, do you think that your household financial situation for the next 12 months is going to be: (3) better, (2) the same; (1) worse". The observed variables are related to the underlying latent variables:

$$EE_i = \begin{cases} 1 & \text{if } EE_i^* < \omega_1 \\ 2 & \text{if } \omega_1 < EE_i^* < \omega_2 \\ 3 & \text{if } \omega_2 < EE_i^* \end{cases} \quad (4)$$

$$EH_i = \begin{cases} 1 & \text{if } EH_i^* < \tau_1 \\ 2 & \text{if } \tau_1 < EH_i^* < \tau_2 \\ 3 & \text{if } \tau_2 < EH_i^* \end{cases} \quad (5)$$

where  $\omega_1 < \omega_2$  and  $\tau_1 < \tau_2$ . Although the estimated cut-off points ( $\omega_1, \omega_2, \tau_1, \tau_2$ ) are considered as nuisance parameters, Dayking and Moffat (2002) have given an interesting interpretation. The cut-off points are expected to be more widely spread in two circumstances: (i) if respondents are not keen

to expressing strong views for the dependent variables and (ii) when the statement is not clearly understood by the respondents. For our two dependent variables ( $EE_i$  and  $EH_i$ ), the underlying questions and the alternatives offered are clearly written (in the Spanish questionnaire). Thus, it can be inferred that if cut-off points are far apart is because people are prone to report indifference for the selected outcomes.

Two bivariate probit models are going to be estimated. In the first model, the effect of EE over EH is going to be treated as a constant and a standard bivariate probit model will be estimated. In the second alternative, named bivariate probit model with mixed effects, we introduce heterogeneity in the parameter  $\alpha$  and assume that it can be modelled as a normal distribution with mean  $\mu_\alpha$  and standard deviation  $\sigma_\alpha$ . Assuming that rationality admits multiple points of view, individuals are free to adapt the mechanism of expectations transmission from EE to EH. Therefore, the connection between EE and EH is driven by a particular  $\alpha_i$  for each individual  $i$ . The choice of a normal distribution is based on the assumption that most of individual's expectations will be concentrated around the mean, and only few of them will exhibit very optimistic or pessimistic beliefs. The model can be estimated using full information maximum likelihood. Assuming that  $\varepsilon_{1i}$  and  $\varepsilon_{2i}$  are normally distributed, full information maximum method is efficient and the parameters of the model are obtained maximizing the following log-likelihood function:

$$\ln L = \sum_{i=1}^N \sum_{j=1}^2 \sum_{k=1}^2 I(EE_i = j, EH_i = k) \ln \Pr[EE_i = j, EH_i = k] \quad (7)$$

Although both equations are globally convex and the likelihood function is non-linear the identification of the model might be feeble. In this case, it is recommended to include identification restrictions, and at least one variable included in  $X'_{1i}$  has to be excluded in  $X'_{2i}$  (Filer and Honig, 2005; Sajaia, 2008). Regarding computational issues, the estimation of the first model is performed using Sajaia (2008), whereas for the second one, the routine proposed by Buscha and Conte (2010) has been adapted to this particular model.

### **3. Data and descriptive statistics**

We have relied on data from the Special Eurobarometer Surveys for the period 1990-2012. The European Commission performs a great variety of surveys regarding red-hot issues, and periodically includes questions concerning individuals' expectations<sup>1</sup>. This implies that we do not have panel data, but different cross sections. The process for obtaining the final database is quite burdensome and implies several steps. First, the 23 surveys from the Leibniz Institute for Social Services have been

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<sup>1</sup> The European Commission performs a monthly survey to measure firms and consumer's expectations in European countries. The advantage of this survey is that we can observe changes in expectations month-by-month and not year-by-year as in the Eurobarometer. However, the Eurobarometer provides information for the last 23 years (1990-2012) whereas the microdata of the Business and Consumer Surveys are only available since January, 2002. [http://ec.europa.eu/economy\\_finance/db\\_indicators/surveys/index\\_en.htm](http://ec.europa.eu/economy_finance/db_indicators/surveys/index_en.htm)

downloaded and the sub-sample corresponding to Spain has been selected. Afterwards we have looked for a set of variables included in all surveys, labeled it with the same names, and finally, joined together the 23 sub-samples in a single database. We are not aware of any other study that has performed a similar process, and thus, we consider that our database provides an exceptional opportunity for exploring the expectations of Spaniards.

To guarantee that the interval lapsed between all surveys is almost constant, we have used those corresponding to the fourth term of each year. Information of the signature corresponding to each Eurobarometer, the moment of data collection and the number of observations for the Spanish subsample are shown in Table 1. Total sample amounts to 23,096 observations with an average of 1,000 per year.

Figure 1 shows the differences between household and general economic expectations,  $EH_j - EE_j$ ,  $j = \{\text{better, worse}\}$ , in comparison with real GDP growth rate. Regarding optimistic expectations, EH have been higher than EE for 15 of the 23 years of our sample. By contrast, it is remarkable that pessimistic household expectations have always been lower than EE. Consequently, families tend to believe that their personal financial situation is going to be better than forthcoming general economic conditions.

Household expectations and real GDP growth rate show episodic disconnection: (1) between 1998-1999 and 2009-2011, the difference  $EH_{\text{better}} - EE_{\text{better}}$  was positive but real GDP growth rate was positive and increasing in the first case, but negative and decreasing in the second one; (2) in 2012, GDP decreased by -1.4%,  $EH_{\text{worse}} - EE_{\text{worse}}$  was negative (-0.28), although  $EH_{\text{better}} - EE_{\text{better}}$  was positive (+0.02).

Figure 2 shows the difference between optimistic and pessimistic expectations, that is,  $EH_{\text{better}} - EH_{\text{worse}}$  and  $EE_{\text{better}} - EE_{\text{worse}}$ , compared with real GDP growth rate. We highlight three interesting facts: (1) For all years, the difference between optimistic and pessimistic household expectations was higher as compared to the difference between optimistic and pessimistic beliefs for general economic situation; (2) Between 2005 and 2007, optimism was the mainstream concerning personal financial expectations, but pessimistic expectations with respect to general economic situation might be anticipating the end of a phase of economic boost; (3) The biggest imbalance between EH and EE corresponds to the years preceding the biggest decrease of GDP growth rate (1992 and 2009). It follows that individuals anticipate quite well situations of economic crisis, but do not consider with the same severity degree their personal financial situation.

The standard deviation of self-reported expectations confirms more intense fluctuations of EE as compared to EH (std. dev( $EE$ )=0.753; std. dev ( $EH$ )=0.623)<sup>2</sup>. As pointed by other authors (Dominitz and Manski, 2004; Curtin, 2010), this result casts doubts about the degree of accurateness of individual economic expectations. This discussion will be picked up later on, in the light of the estimated coefficients of the bivariate probit model.

### Explanatory variables

The matrices of explanatory variables  $X'_{1i}$  and  $X'_{2i}$  of our bivariate ordered probit model have been chosen according to previous literature (Das and van Soest, 1997, 1999; Ludvigson, 2004; Mitchell and Weale, 2007). Selection of explanatory variables has been constrained to the availability of the same variables in all waves of the survey. We include respondent's age and sex, marital status, relation with economic activity (working, unemployed, retired, houseworking and studying), professional occupation (self-employed, white-collar, qualified worker and not qualified worker) and size of municipality (village, small city and big town).

Additionally, three macroeconomic variables are included as explanatory variables in both equations: real GDP growth rate, unemployment rate and unemployment benefits (in real terms). Table 2 shows the mean, maximum and minimum values for each macroeconomic indicator as well as the year for which the maximum/minimum value is attained.

To a certain extent, these variables may gather the effect of public and private information (Curtin, 2003). On one side, macroeconomic variables reflect "public information", that is, the official announcements of economic information. Mass media have become a force in modern societies, and the diffusion of economic information accelerates the process of expectations updating (Carroll, 2003; Curtin, 2003). On the other hand, certain socio-demographic characteristics may smooth the path for the acquisition of private information, such as, personal experiences at work (being unemployed, fear of being fired or obliged to accept pre-retirement), social networks (proxied by marital status and size of municipality) or level of education (which can be proxied by professional situation, i.e, white collar vs. non-qualified worker).

We recognize certain limitations of the explanatory variables: (1) self-reported social status, Autonomous Community or being main breadwinner are not available for all waves and have been discarded in the final estimation, (2) for unemployed individuals, information concerning unemployment benefits and unemployment spells is not reported.

For the selection of the instrumental variables, we have to take into account that they should help to explain EE, but at the same time, they should be uncorrelated with unobservable characteristics

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<sup>2</sup> Souleles (2004) observed the same result for American data and Jankewicz (2012) for almost all countries of EU-27.

affecting EH. Taking this criteria into mind, in the specification of the EE equation we have included three instrumental variables; (1) “year of presidential election” denotes a binary variable that takes the value 1 if presidential elections took place during that year; (2) “left-wing government” is a binary variable that takes the value 1 if there was a left-wing government during that year or most part of the year; (3) “trade balance” which denotes the difference between exports and imports of goods. The selection of these instruments is based on the assumption that they influence expectations regarding the future evolution of the country, but they are not presumed to affect perspectives for household financial situation. (More information of these variables is provided in Table 3).

#### **4. Results**

Estimated results from the bivariate probit model with and without mixed effects are shown in Table 3. Additionally, the bivariate probit model has been estimated for different subsamples according to gender, age, relation with economic activity and professional occupation (see Tables 3 to 6).

##### Validation of the model

First of all, and given that we cannot compute  $R^2$  statistics of goodness of fit, we turn to the comparison of the log-likelihoods. The estimated log-likelihood is -34,699.39 for the bivariate ordered model without mixed effects and -32,249,815 for the model with mixed effects. The increase in the likelihood function suggests that the introduction of heterogeneity for the parameter  $\alpha_i$  leads to a considerable improvement of the explanatory power of the model.

The correlation coefficient ( $\rho$ ) of the bivariate probit model with and without mixed effects is significant and positive indicating that the estimation of an independent ordered probit model would have led to biased results and that unobservable characteristics that increase EE are positively correlated with unobservable variables that improve EH. In addition, the correlation coefficient is considerably smaller in the model with mixed effects (0.107 vs. 0.636), suggesting that the estimation of the underlying distribution of  $\alpha_i$  captures a large proportion of unobserved heterogeneity.

Comparing both models, it is clear that the average effect of EE over EH is quite similar (0.941 in the model without effects vs. 0.956 with mixed effects). However, the estimated  $\sigma_\alpha = 0.577$  is statistically significant at 1%, suggesting that the estimation of a standard bivariate ordered probit model is an excessively simplistic approach, under which the beliefs transmission process from EE to EH is miss-calibrated.

The four cut-off points are significant in the bivariate probit model without mixed effects and in the bivariate probit model with mixed effects, for the whole sample and the different subsamples. With the exception of the “self-employed” subsample, the distance between  $\omega_1$  and  $\omega_2$  is larger than between  $\tau_1$  and  $\tau_2$ . Assuming that individuals understand the questions of the survey and the



answers offered, we can infer that respondents are more prone to report indifference with respect to EH as compared to EE.

#### Estimated coefficients from the bivariate probit model

The instrumental variables included in the EE equation are significant at 5% level. Expectations during a year of presidential elections tend to deteriorate for the whole sample regression (-0.148), with a minimum of -0.264 for white collars. However, we observe a positive sign for the subsamples of male (+0.008), age 25-34 years (+0.209), self-employed (+0.073) and non-qualified workers (+0.008). The effect of left-wing government over EE is negative and significant (-0.150) with a minimum of -0.499 for the retired subsample. Nevertheless, we appreciate a positive sign for the cohort 25-34 years (0.136), self-employed (0.315) and qualified workers (0.131).

Macroeconomic variables included in the model are significant and with the expected sign in the estimation for the whole sample: an increase of GDP growth rate or an increase of unemployment subsidies raises optimistic expectations (EE and EH), whereas an increase of unemployment rate generates the opposite effect. However, certain particularities are appreciated when regressions for the different subsamples are analyzed in detail: (1) Increase of unemployment benefits decreases EH for the subsample of workers, white collars, qualified workers, retired and the cohort 35-44 years. (2) An increase in unemployment rate increases EH for the unemployed, retired and white collar workers, but it decreases EE for the self-employed. (3) The effect of unemployment rate over EH is different by gender: negative for women, but positive for men<sup>3</sup>.

Variables related to marital status have less explanatory power than others related to age or economic activity. Nevertheless, it is worth to mention that in comparison with the omitted category (widow), singles have better EE and better EH, and married people aged +65 years are more optimistic regarding EH.

As compared to people living in big towns, those who live in rural environments or small cities exhibit worse EE and EH, and specially, women and the youngest cohort show more pessimistic beliefs. Living in a village deteriorates EH for houseworking and the cohort 35-44 years, but does not affect their expectations for general economy.

Figures 3 to 7 represent the effect of EE over EH depending on age, gender, relation with economic activity and professional occupation. Female experience a larger positive effect of EE over EH ( $\mu_{\alpha}$ : 1.154 vs. 0.788 for males) although this effect shows higher degree of heterogeneity for females as compared to for males ( $\sigma_{\alpha}$ : 1.959 vs. 1.704). The densities functions according to age reveal that the largest impact of EE over EH correspond to the cohort 45-54 years ( $\mu_{\alpha}$ : 1.264), while the smallest

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<sup>3</sup> Men tend to be more overconfident as compared to women (Odean, 1999).

one is observed in the cohort 55-64 years ( $\mu_{\alpha}$ : 0.222). The cohort 34-44 years shows the highest peakedness among all age intervals ( $\sigma_{\alpha}$ : 0.141).

The mean effect of EE is almost similar for workers, unemployed and students, but the degree of dispersion increases progressively from the former to the latter. Non-qualified workers exhibit the strongest belief that better economic conditions will improve their personal situation ( $\mu_{\alpha}$ : 2.107). At the other extreme, qualified workers are the least prone to interpret favorable economic expectations as a sign of personal financial improvement ( $\mu_{\alpha}$ : 0.677).

Although the effect of EE over EH is positive for most of the subsamples, we appreciate a negative effect in some circumstances. For example, for 17.52% of all respondents, 35.58% of students, 35.70% of qualified works and 24-56% of white collar both expectations run in opposite directions. For qualified workers and white-collar workers, this result can be related to the counter-cyclical skill premium (Kydland, 1995). According to this theory, skilled workers' wage increases by less unskilled workers in a phase of economic expansion, but also decreases by less during economic downturns.

#### Predicted probabilities

Predicted probabilities from the bivariate probit model with mixed effects are shown in Table 7. Results for the whole sample indicate that individuals have more pessimistic beliefs for EE than for EH (EH(worse)-EH(better)=-0.15). There is a higher belief that household financial situation will remain the same as compared to general economic stability beliefs (0.585 vs. 0.436). Students are the most optimistic category, with the highest belief for EE(better) and the lowest for EE(worse). Regarding household financial situation, the cohort aged 65 and more show the least degree of confidence for EH(better)=0.118, as opposed to white-collar workers who attach the lowest probability to EH(worse)=0.091.

Unemployed individuals exhibit several interesting features: (1) They attain the maximum distance between EH(better) and EE(better); (2) By contrast, the probability of EH(worse) is much lower than the probability of EE (worse), (0.201 vs. 0.331); (3) The probability of EH(better) is higher for unemployed than for workers (0.385 vs. 0.336).

#### Simulation exercises

Three different scenarios have been considered as simulation exercises: (1) increase of real GDP growth rate by 2 pp., (2) increase of unemployment rate by 2 pp. and (3) increase of unemployment benefits by 5%. Results are shown in Table 8.

An increase of real GDP, raises EE(better) by 25.68% for the whole sample with a maximum of 49.67% for unemployed, and EH(better) increase by 16.94%. We appreciate that the increase in EH is always higher than that of EE, with the exception of "self-employed" and "non-qualified workers".

The simulated results of an increase in unemployment rate reveal surprising effects, because EE(worse) increase by 3.93%, but EH(worse) remain almost the same. Therefore, general economic expectations are more sensitive to changes in economic growth rather than to contractions of the labor market, and household expectations seems partially isolated from the effects of unemployment (as a macroeconomic variable). Higher unemployment rate, increases EH(worse) for houseworking (3.23%), the cohort 45-54 years (4.56%), non-qualified workers (5.40%), self-employed (5.55%) and students (12.48%). But paradoxically, higher unemployment rate decreases EH(worse) for unemployed (1.57%) and retired (6.42%).

An increase of unemployment benefits is interpreted as a sign of economic boost, increasing favorable prospects for both expectations: EE(better) by 7.68% and EH(better) by 0.98%. Only two categories contradict previous result. On one hand, higher unemployment benefits deteriorate expectations from the group of self-employed (-2.35%), which is reasonably justified given that they are not entitled to this kind of benefits. On the other hand, white-collar workers seem more skeptical and their household financial expectations worsen by 13.18%. Lastly, students and unemployed exhibit the maximum decrease in EE(worse), with -14.22% and -15.52%, respectively<sup>4</sup>.

## **5. Conclusions**

The departure point of this paper is the analysis of individual expectations, both at the macro level (general economic situation) and at the micro level (their own financial situation). Policymakers usually base their decisions taking into account the results of simulations developed with complicated macroeconomic models. Without belittling these econometric tools, it is reasonable to explore how individuals perceive the situation of the world they are living in, and if it is going to improve or not in the short-term. Due to the absence of panel data or a pre-defined survey for Spain, we have built our database using 23 surveys for the Eurobarometer covering the period 1990-2012. We have estimated and validated a bivariate probit model with mixed effects in which expectations for general economy are an endogenous variable in the equation of expectations for personal financial situation. Our model reveals that the imposition of a conditional mean estimator for the effect of general economic expectations over household financial expectations is excessively simplistic and whitewashes a large heterogeneity component. The estimation of a bivariate probit model with mixed effects captures specific nuances in the interaction between both variables.

With respect to the intriguing question that titles this paper, although Spaniards show more pessimistic expectations for general economic situation, the most interesting result is that most of them do not believe that their household financial situation is going to change for the worse. We

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<sup>4</sup> Altman and Feldstein (2006) raise cautionary flags about the potential risks of providing excessive liquidity to the unemployed.

have ascertained that EE and EH follow divergent trends for some individuals, that is, they forecast that their personal economic situation is going to improve in a context of more pessimistic general economic conditions. Although this behavior may seem irrational and lead to systematically mistaken decisions, two plausible explanations can be found in finance literature.

First, Akerlof and Dickens (2008) and Steele et al. (1993) use the term “distorted beliefs” or “cognitive dissonance” to characterize those agents who choose those beliefs that minimize their discomfort degree with respect to the future. In our model, unemployment rate is negative and significant in the EE equation, but the estimated coefficient (in absolute value) for self-employed, white collar and non-qualified workers is 9, 3 and 10 times larger than the corresponding coefficient for the unemployed (although they should be more concerned about labor market situation). Second, Daniel et al. (1998) and Carrillo and Mariotti (2000) explain overconfidence as a situation in which individuals ignore contradictory information to their prior beliefs, but incorporate other confirmatory information. In this sense, the estimated coefficients for GDP growth rate and unemployment rate in the EE equation are higher (in absolute value) than the corresponding in the EH equation.

Our model highlights that unemployed self-reported beliefs about personal financial situation tend to be more optimistic as compared to self-reported beliefs for general economy. This profile of expectations fits well with “optimistic bias” defined as a tendency to consider that the probability of suffering an adverse event is lower than that of their peers (Weinstein and Klein, 1996; Moore and Healy, 2008), but also with “dispositional optimism” according to which optimism refers to generalized positive expectations for the future (Scheier and Carver, 1985). The fundamentals of this optimism are plausibly explained by Brunnermeier and Parker (2005) who argues that the anticipation of future outcomes, increases their current utility (or happiness).

To decide which theory is more suitable, it is necessary to dig into other characteristics of the unemployed (job search efforts, unemployment spells and previous relation with economic activity) which are not available in this survey. Nevertheless, we can advance that the effect of optimism over future behavior is undetermined. Optimistic individuals may be more prone to develop coping habits than enable them to ameliorate stressful events (Moore and Healy, 2008), but also over-optimistic expectations may reduce unemployed efforts’ for searching work or to improve their capacities, and thus, exacerbate the deaccumulation of human capital (Böckerman, 2004; Brunnermeier and Parker, 2005)

Policy makers should become aware that although individuals are aware of general economic situation, they manifest an increasing tendency to unattach general economic context with respect to their personal financial situation. It could be possible to wake up people from lassitude if decision

makers give meaning to economic measures and if these become amenable to individuals and households.

## References

- Akerlof, G., Dickens, W. (1982). The economic consequences of cognitive dissonance. *Am Econ Rev* 72(3), 307-319.
- Altman, D., Feldstein, M. (2006). Unemployment insurance savings accounts. In "Tax policy and the economy"; ed. Poterba, J., vol. 21, 35-61. Cambridge: MIT Press.
- Angrist, J. (2001). Estimation of limited dependent variable models with dummy endogenous regressors: simple strategies for empirical practice. *J Bus Econ Stat* 19(1), 2-28.
- Barber, B., Odean T., 2000. Trading is hazardous to your wealth: the common stock investment performance of individual investors. *J Finance* 55, 773-806.
- Bertoli, S., Brücker H., Fernández-Huertas, J.F. (2013). The European crisis and migration to Germany: expectations and the diversion of migration flows. Documento de Trabajo de FEDEA 2013-03.
- Bitler, M., Moskowitz, T., Vissin-Jorgensen, A., 2004. Testing agency theory with entrepreneur effort and wealth. *J Finance* 60, 539-576.
- Böckerman, P. (2004). Perception of job instability in Europe. *Social Indicators Research* 67(3), 283-314.
- Brown, S, Taylor, K (2006). Financial expectations, consumption and saving: a microeconomic analysis. *Rev Fin Stud* 27(3), 313-338.
- Brunnermeier, M., Parker J. (2005). Optimal expectations. *Am Econ Rev* 95(4), 1092-1118.
- Buscha, F., Conte, A. (2010). The impact of truancy on educational attainment: a bivariate ordered probit estimator with mixed effects. JENA Economic Research Papers N0. 062.
- Carroll, C. (2003). Macroeconomic expectations of households and professional forecasters. *Quart J Econ* 118, 269-298.
- Carrillo, J. Mariotti, T. (2000). Strategic ignorance as a self-disciplining device. *Rev Econ Stud* 67(3), 529-544.
- Carroll, C., Dunn W. (1997). Unemployment expectations, jumping (S,s) triggers and household balance sheets. *NBER Macroeconomic Annual* 12, 165-230.
- Curtin, R. (2003). Unemployment expectations: the impact of private information on income uncertainty. *Rev Income Wealth* 49, 539-554.
- Curtin, R. (2007). Consumer sentiment surveys: worldwide review and assessment. *J Bus Cycle Meas Anal* 3(1), 7-42.
- Curtin, R. (2010). The impact of economic crisis on consumers' knowledge about economic statistics. 30<sup>th</sup> Ciret Conference. New York.
- Daniel, K., Hirshleifer, D., Subrahmanyam, A. (1998). Investor psychology and security market under overreactions. *J Financ* 53, 1938-1885.

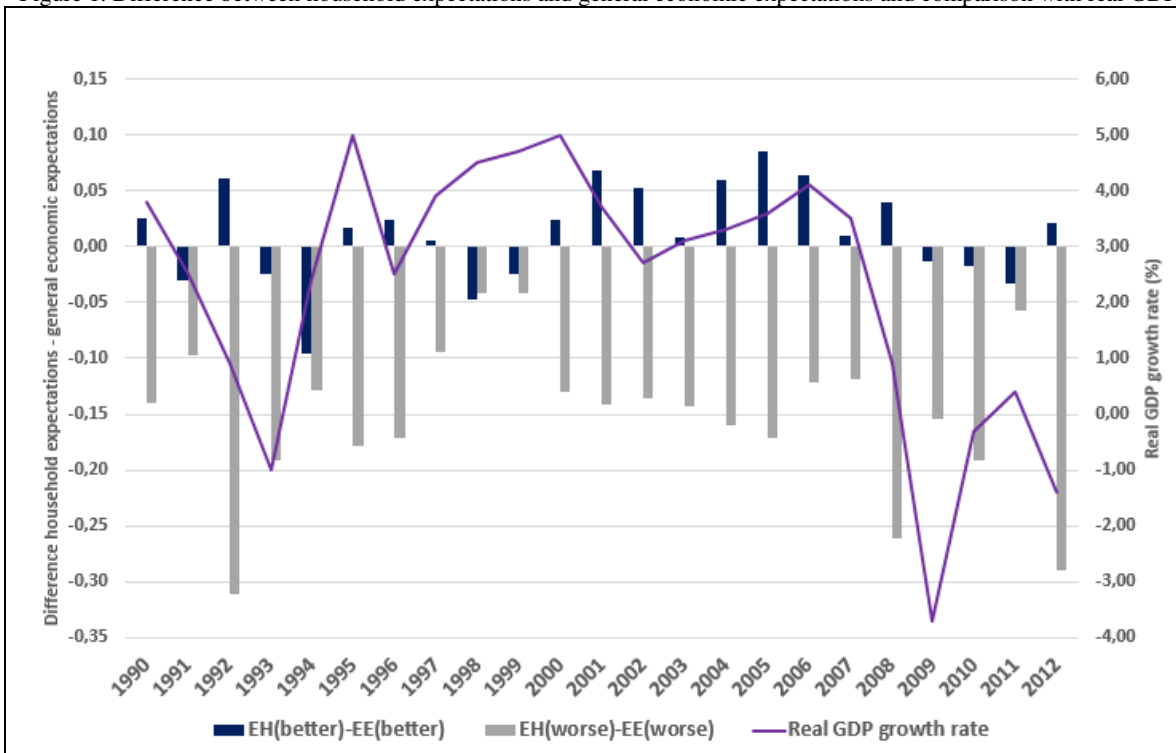
- Das, M., van Soest, A. (1997). Expected and realized income changes: evidence from the Dutch Socio-Economic Panel. *J Econ Behav Org* 32, 137-154.
- Das, M., van Soest, A. (1999). A panel data for subjective information on household income growth. *J Econ Behav Org* 40, 409-426.
- Daykin, A, Moffat, P. (2002). Analyzing ordered responses: a review of the ordered probit model. *Understanding Statistics* 1, 157-166.
- Dominitz, J., Manki, C. (2004). How should we measure consumer confidence? *J Econ Perspect* 18(2), 51-66.
- Filer, R., Honig, M. (2005). Endogenous pensions and retirement behavior. CESIFO Working Paper No. 1547.
- Gervais, S., Goldstein, I., (2007). The positive effects of biased self-perception in firms. *Rev Finan* 11, 453-496.
- Greene, W., Hensher, D. (2010). *Modelling ordered choices*. Cambridge University Press.
- Hackbarth, D. (2004). Managerial traits and capital structure decisions. *J Financ Quant Anal* 43, 843-881.
- Hermann, S. (2009). The crisis and costumer behavior: eight quick solutions. *J Customer Behav* 8(2), 177-186.
- Kydland, F. (1995). Business cycles and aggregate labor market fluctuations. Federal Reserve Bank of Cleveland. Working Paper No. 9312.
- Ludvigson, S. (2004). Consumer confidence and consumer spending. *J Econ Perspec* 18(2), 29-50.
- Mankiw, N.G, Ries, R., Wolers, J. (2003). Disagreement about inflation expectations. NBER Working Paper No. 9796.
- Mitchell, J., Weale, M. (2007). The rationality and reliability of expectations reported by British households: micro evidence from the British Household Panel Survey. Deutsche Bundesbank Research Centre. Discussion Paper Series 1: 19.
- Moore, D., Healy, P. (2008). The trouble with overconfidence. *Psychol Rev* 115(2), 502-517.
- Odean, T. (1999). Do investors trade too much? *Am Econ Rev* 89, 1279-1298.
- Sajaia, X. (2008). Maximum likelihood estimation of a bivariate ordered probit model: implementation and Monte Carlo simulations. *The Stata Journal* 3(2), 311-328.
- Souleles, N. (2004). Expectations, heterogeneous forecast errors and consumption: micro evidence from the Michigan Consumer Sentiment Surveys. *J Money Credit Bank* 36(1), 39-72.
- Steele, C., Spencer, S., Lynch, M. (1993). Self-image resilience and dissonance: the role of affirmational resources. *J Per Soc Psychol* 64, 885-896.
- Valev, N. (2009). Once bitten, twice shy: the effect of a banking crisis on expectations of future crisis. The National Council for Eurasian and East European Research. Ref 822-14g.

Weinstein, N., Klein, W. (1996). Unrealistic optimism: present and future. *J Soc Clin Psycho* 15, 1-8.



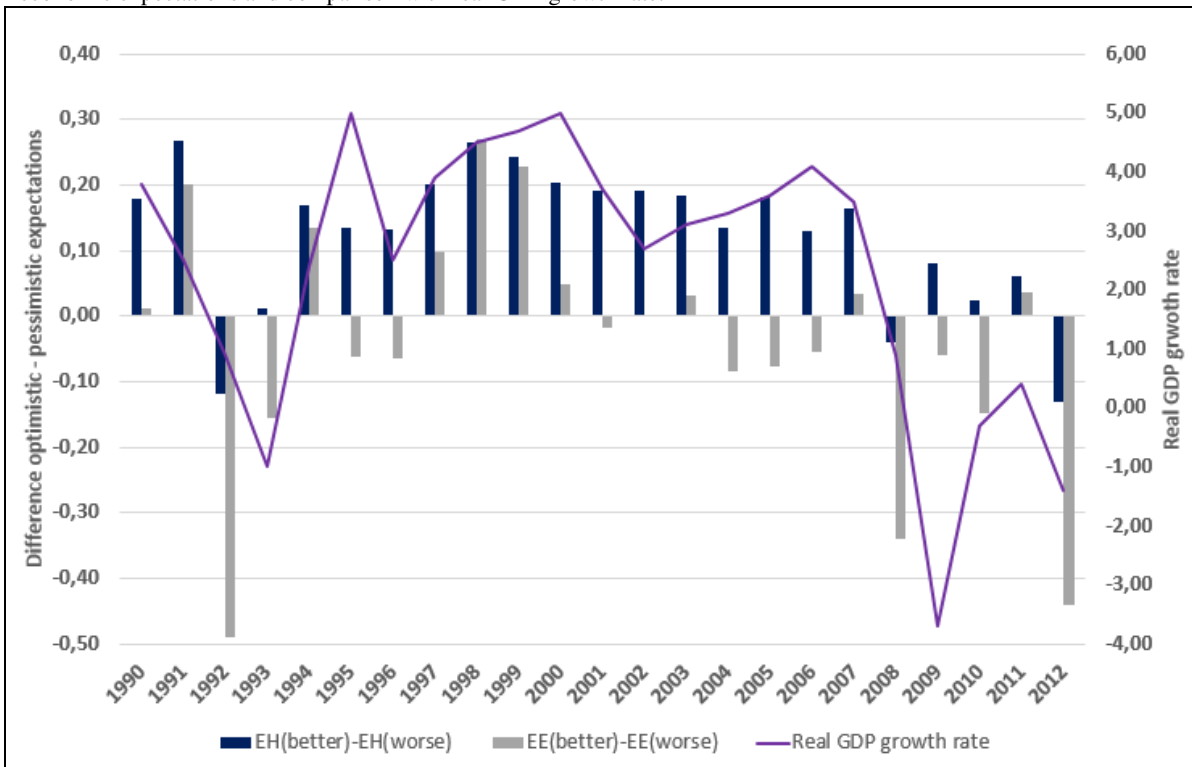
**Figures**

Figure 1. Difference between household expectations and general economic expectations and comparison with real GDP growth rate.



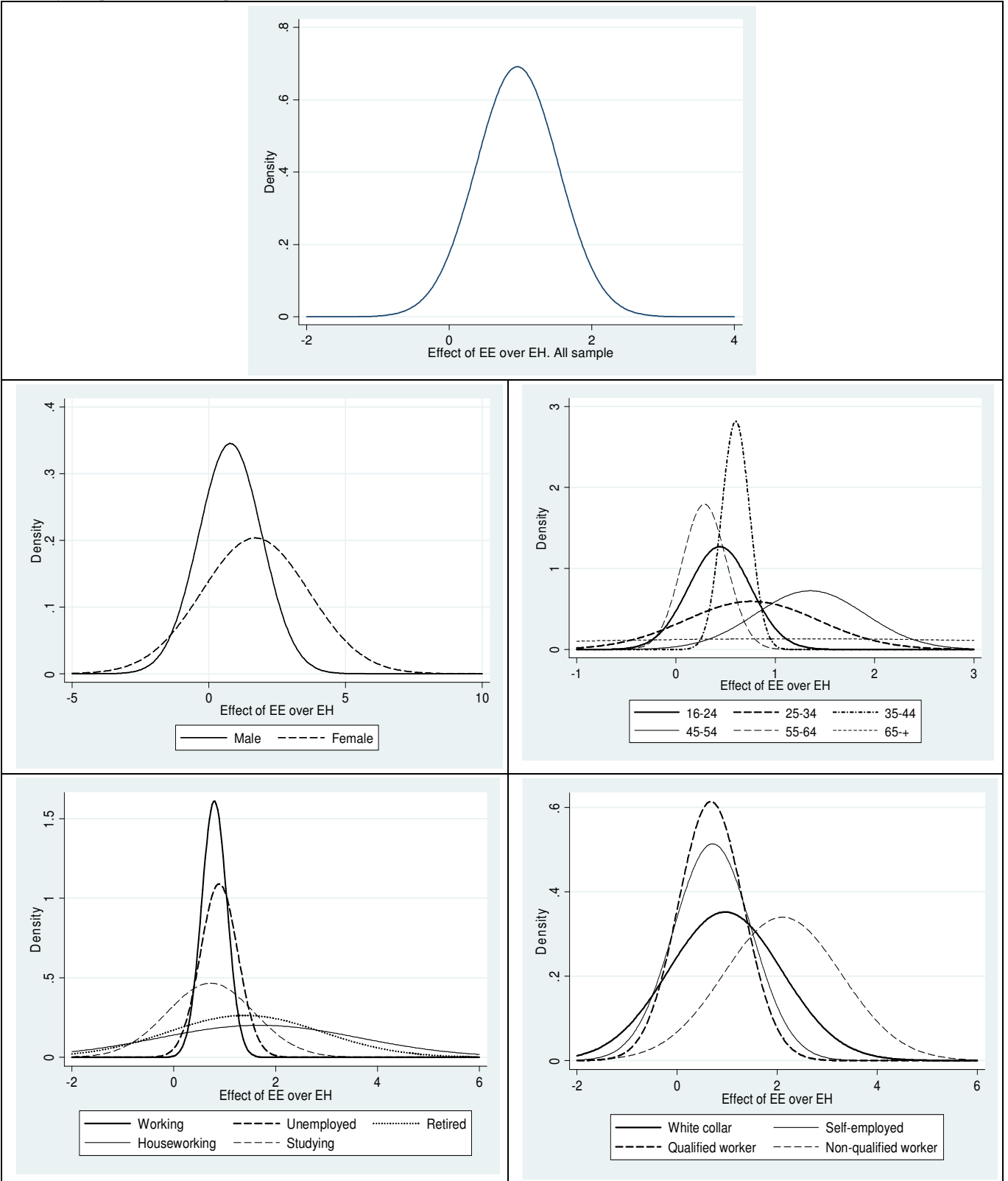
Source: Own work using information from Eurobarometers and National Accounting for Spain.

Figure 2. Difference between optimistic and pessimistic household expectations, difference between optimistic and pessimistic general economic expectations and comparison with real GDP growth rate.



Source: Own work using information from Eurobarometers and National Accounting for Spain.

Figures 3 to 7. Effect of general economic expectations over household expectations according to gender, age, relation with economic activity and professional occupation



## Tables

Table 1. Description of the Special Eurobarometer surveys used

Name of the survey	Date	N
EB 34.0	October-November 1990	1.000
EB 36	October-November 1991	1.000
EB 38.1	November 1992	1.021
EB 40	October-November 1993	1.000
EB 42	November-December 1994	1.006
EB 44.1	November-December 1995	1.000
EB 46	October-November 1996	1.000
EB 48	October-November 1997	1.000
EB 50	October-November 1998	1.000
EB 52	October-November 1999	1.000
EB 54.1	November-December 2000	1.000
EB 56.2	October-November 2001	1.000
EB 58.1	October-November 2002	1.000
EB 60.1	October-November 2003	1.000
EB 62	October-November 2004	1.023
EB 64.2	October-November 2005	1.015
EB 66.3	November-December 2006	1.000
EB 68.1	September-November 2007	1.000
EB 70.1	October-November 2008	1.000
EB 72.4	October-November 2009	1.020
EB 74.2	November-December 2010	1.001
EB 76.3	November 2011	1.004
EB 78	November 2012	1.006

Source: Own work using [http://ec.europa.eu/public\\_opinion/archives/eb\\_special\\_en.htm](http://ec.europa.eu/public_opinion/archives/eb_special_en.htm)

Table 2. Descriptive statistics for macroeconomic explanatory variables (the year for the maximum and minimum value of each variable is showed between parenthesis)

	Mean	Min.	Max.
1. Real GDP growth rate (1990-2012)	2.18%	-3.0% (2009)	5.3% (1999)
2. Unemployment rate (1990-2012)	16.56%	8.3% (2006)	26.0% (2012)
3. Unemployment benefits (constant prices 2005) In all regressions this variable is used in thousands of euros	523.82 €	368.14 € (2000)	762.32 € (2009)
4. Trade balance (millions of euros) In the regression this variable is used in billions of euros	-43,152	-100,015 (2007)	-14,282 (1993)
5. Year of presidential elections	1993, 1996, 2000, 2004, 2008, 2011		
6. Left-wing government	1990-1995, 2004-2011		

Source:

- (1): National Institute of Statistics (National Accounting)
- (2): National Institute of Statistics (Active Population Survey)
- (3): Ministry of Employment and Social Security (Bulletin of Labor Statistics)
- (4): Bank of Spain (Balance of Payments)

Table 3. Estimation of the bivariate ordered model with and without mixed effects

	Bivariate ordered probit without mixed effects			Bivariate ordered probit with mixed effects								
	Coef.	Std.dev	p-value	All sample			Male			Female		
				Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value
<b>Equation: EE</b>												
Male	0.033	0.019	0.084	0.023	0.018	0.204						
Age: 25-34	-0.050	0.035	0.150	-0.038	0.032	0.245	-0.076	0.049	0.120	-0.030	0.049	0.549
Age: 35-44	-0.148	0.039	0.000	-0.129	0.036	0.000	-0.143	0.055	0.010	-0.155	0.054	0.004
Age: 45-54	-0.191	0.040	0.000	-0.181	0.038	0.000	-0.232	0.058	0.000	-0.158	0.057	0.005
Age: 55-64	-0.188	0.042	0.000	-0.178	0.040	0.000	-0.254	0.062	0.000	-0.144	0.058	0.013
Age: 65+	-0.216	0.046	0.000	-0.196	0.045	0.000	-0.325	0.074	0.000	-0.153	0.061	0.012
Working	0.052	0.028	0.069	0.035	0.028	0.214	0.078	0.154	0.614	0.048	0.033	0.139
Unemployed	0.013	0.040	0.750	0.026	0.038	0.502	-0.018	0.160	0.912	0.076	0.053	0.151
Retired	0.069	0.033	0.038	0.061	0.033	0.066	0.124	0.154	0.419	0.107	0.044	0.015
Studying	0.090	0.045	0.048	0.067	0.043	0.125	0.089	0.162	0.583	0.117	0.060	0.051
Married	0.038	0.034	0.262	0.063	0.040	0.117	0.055	0.066	0.402	0.070	0.043	0.107
Single	0.023	0.040	0.569	0.094	0.043	0.031	0.032	0.072	0.651	0.051	0.051	0.324
Separated/divorced	-0.055	0.054	0.302	0.052	0.051	0.311	-0.016	0.093	0.862	-0.045	0.068	0.510
Lives in: village	-0.062	0.022	0.005	-0.071	0.010	0.000	-0.051	0.033	0.115	-0.070	0.031	0.022
Lives in: city	-0.041	0.022	0.059	-0.038	0.003	0.000	-0.026	0.032	0.414	-0.055	0.030	0.069
Real GDP growth rate	0.103	0.011	0.000	0.108	0.010	0.000	0.111	0.016	0.000	0.097	0.015	0.000
Unemployment rate	-0.018	0.007	0.012	-0.020	0.007	0.004	-0.017	0.001	0.000	-0.018	0.010	0.056
Unemployment benefits	2.112	0.450	0.000	2.485	0.280	0.000	2.443	0.510	0.000	2.558	0.112	0.000
Presidential election's year	-0.021	0.004	0.000	-0.148	0.035	0.000	0.008	0.001	0.000	-0.046	0.006	0.000
Left-wing government	-0.076	0.008	0.000	-0.150	0.061	0.013	-0.088	0.005	0.000	-0.216	0.079	0.006
Trade balance	0.003	0.000	0.028	0.003	0.000	0.000	0.003	0.000	0.000	0.003	0.000	0.007
<b>Equation: EH</b>												
EE	0.941	0.013	0.000									
Male	-0.018	0.020	0.360	0.000	0.024	0.994						
Age: 25-34	-0.026	0.036	0.469	0.164	0.041	0.000	-0.034	0.050	0.501	-0.024	0.051	0.637
Age: 35-44	-0.212	0.039	0.000	0.024	0.046	0.605	-0.194	0.057	0.001	-0.231	0.055	0.000
Age: 45-54	-0.356	0.041	0.000	-0.098	0.049	0.046	-0.338	0.059	0.000	-0.374	0.058	0.000
Age: 55-64	-0.462	0.043	0.000	-0.174	0.053	0.001	-0.478	0.063	0.000	-0.455	0.060	0.000
Age: 65+	-0.509	0.048	0.000	-0.223	0.060	0.000	-0.556	0.076	0.000	-0.481	0.063	0.000
Working	0.181	0.029	0.000	0.189	0.037	0.000	0.433	0.158	0.006	0.194	0.033	0.000
Unemployed	0.128	0.041	0.002	0.056	0.048	0.247	0.360	0.163	0.027	0.163	0.054	0.002
Retired	0.065	0.034	0.054	-0.107	0.047	0.023	0.353	0.157	0.025	0.071	0.046	0.119
Studying	0.040	0.046	0.384	0.059	0.056	0.293	0.271	0.166	0.101	0.078	0.062	0.207
Married	0.045	0.035	0.205	-0.072	0.049	0.144	-0.031	0.068	0.651	0.089	0.044	0.045
Single	0.085	0.041	0.039	0.129	0.054	0.017	0.042	0.074	0.571	0.086	0.053	0.102
Separated/divorced	0.066	0.055	0.229	-0.081	0.069	0.238	-0.004	0.095	0.967	0.101	0.070	0.146
Lives in: village	-0.068	0.023	0.003	-0.045	0.015	0.003	-0.066	0.033	0.047	-0.069	0.032	0.028
Lives in: city	-0.026	0.022	0.239	-0.021	0.008	0.003	-0.023	0.032	0.474	-0.030	0.031	0.344
Real GDP growth rate	0.071	0.011	0.000	0.024	0.014	0.090	0.052	0.017	0.002	0.086	0.015	0.000
Unemployment rate	-0.004	0.001	0.000	-0.010	0.005	0.055	0.005	0.001	0.000	-0.004	0.001	0.000
Unemployment benefits	0.282	0.025	0.000	0.332	0.0012	0.000	-0.079	0.001	0.0008	0.710	0.010	0.000
$\mu_\alpha$				0.956	0.110	0.000	0.788	0.294	0.007	1.704	0.171	0.000
$\sigma_\alpha$				0.577	0.048	0.000	1.154	0.082	0.000	1.959	0.153	0.000
$\omega_1$	0.455	0.186		0.467	0.151		0.535	0.195		0.289	0.229	
$\omega_2$	1.661	0.186		1.624	0.152		1.692	0.295		1.544	0.230	
$\tau_1$	-0.895	0.135		-1.043	0.045		-0.844	0.253		-0.707	0.184	
$\tau_2$	0.873	0.135		1.665	0.035		0.906	0.253		1.081	0.184	
$\rho$	0.636	0.006		0.107	0.018		0.631	0.009		0.642	0.009	
Log-likelihood	-34,699.39			-32,349.815			-15,406.114			-16,898.721		
LR test	$\chi^2(1) = 3,098.30$ P=0.0000			$\chi^2(1) = 5,259.54$ P=0.0000			$\chi^2(1) = 2,433.13$ P=0.0000			$\chi^2(1) = 2,837.33$ P=0.0000		
N	23,101			23,101			10,849			12,252		

Omitted variables: women, houseworking, age 16-24 years, widow, living in big town. Dummy year variables not shown due to space constraints. Estimations of the bivariate ordered probit model with mixed effects obtained after 200 iterations

**Employer:** farmer, fisherman, professional (lawyer, medical practitioner, accountant, architect), owner of a shop (craftsman, other self-employed person), business proprietors, owner (full/partner) of a company.

**White collar:** Employed professional (employed doctor, lawyer, accountant, architect) general management, director or top management, middle management, other management (department head, junior manager, teacher, technician).

**Qualified worker:** Employed position working mainly at a desk; employed position not at a desk, but in a service job (hospital, restaurant, police, fireman); employed position not at a desk, but travelling (salesman, driver); supervisor; skilled manual worker

**Not qualified worker:** unskilled manual worker, servant.



Table 4. Estimations from the bivariate ordered probit with mixed effects by age cohorts

	Age: 16-24			Age: 25-34			Age: 35-44			Age: 45-54			Age: 55-64			Age: 65+		
	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value
<b>EE</b>																		
Male	0.074	0.043	0.082	0.037	0.041	0.368	0.107	0.046	0.019	0.010	0.055	0.860	0.043	0.061	0.484	-0.103	0.050	0.041
Working	-0.199	0.139	0.154	0.092	0.069	0.182	0.060	0.061	0.332	0.068	0.065	0.292	-0.028	0.070	0.689	0.079	0.107	0.464
Unemployed	-0.264	0.149	0.075	-0.027	0.085	0.754	0.072	0.086	0.400	0.073	0.104	0.484	0.107	0.116	0.357	-0.140	0.339	0.680
Retired	-	-	-	-	-	-	-	-	-	-	-	-	-0.014	0.076	0.856	0.167	0.054	0.002
Studying	-0.203	0.139	0.144	0.137	0.103	0.181	0.594	0.439	0.176	1.378	0.478	0.004	-	-	-	-	-	-
Married	0.227	0.386	0.556	0.166	0.233	0.476	0.032	0.170	0.849	0.075	0.131	0.564	0.078	0.081	0.338	0.061	0.047	0.194
Single	0.252	0.381	0.508	0.146	0.233	0.532	0.020	0.176	0.911	0.035	0.145	0.812	0.064	0.107	0.551	0.035	0.086	0.681
Separated/divorced	-0.019	0.509	0.971	0.109	0.258	0.673	-0.083	0.183	0.652	0.017	0.150	0.909	-0.062	0.123	0.616	0.035	0.151	0.814
Lives in: village	-0.103	0.058	0.075	-0.040	0.052	0.435	-0.065	0.054	0.226	-0.086	0.060	0.149	-0.003	0.061	0.958	-0.051	0.050	0.307
Lives in: city	-0.108	0.054	0.046	0.008	0.050	0.868	-0.089	0.053	0.094	-0.031	0.058	0.594	0.023	0.060	0.702	-0.043	0.052	0.412
Real GDP growth rate	0.160	0.036	0.000	0.105	0.027	0.000	0.131	0.025	0.000	0.122	0.029	0.000	0.118	0.030	0.000	0.108	0.026	0.000
Unemployment rate	-0.048	0.019	0.011	-0.024	0.006	0.000	-0.001	0.000	0.000	-0.003	0.001	0.005	-0.022	0.010	0.055	-0.012	0.001	0.000
Unemployment benefits	4.452	0.231	0.000	2.465	0.390	0.000	2.816	0.118	0.000	2.626	0.478	0.000	2.662	0.654	0.000	2.045	0.113	0.001
Presidential election's year	-0.138	0.005	0.000	0.209	0.083	0.012	-0.199	0.081	0.014	-0.106	0.007	0.000	-0.028	0.007	0.000	-0.177	0.069	0.011
Left-wing government	-0.255	0.146	0.080	0.136	0.034	0.000	-0.242	0.042	0.000	-0.016	0.002	0.000	-0.182	0.025	0.000	-0.119	0.037	0.000
Trade balance	0.003	0.000	0.000	0.005	0.000	0.000	0.001	0.000	0.002	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000
<b>EH</b>																		
Male	-0.014	0.044	0.746	-0.021	0.042	0.615	0.007	0.046	0.882	0.003	0.056	0.954	0.000	0.063	0.999	-0.107	0.054	0.048
Working	0.050	0.141	0.725	0.170	0.070	0.015	0.201	0.062	0.001	0.174	0.065	0.008	0.099	0.072	0.168	0.196	0.114	0.085
Unemployed	-0.032	0.151	0.832	0.148	0.086	0.085	0.153	0.086	0.076	0.099	0.105	0.343	0.148	0.118	0.210	-0.089	0.356	0.802
Retired	0.035	0.544	0.949	-0.078	0.231	0.736	-0.132	0.155	0.396	0.019	0.111	0.864	0.021	0.078	0.785	0.159	0.058	0.006
Studying	-0.118	0.141	0.401	0.029	0.104	0.784	0.487	0.429	0.257	0.725	0.454	0.110	-	-	-	0.562	0.810	0.488
Married	-0.173	0.398	0.664	0.026	0.242	0.913	-0.017	0.171	0.921	0.023	0.131	0.858	0.061	0.083	0.464	0.089	0.050	0.078
Single	-0.115	0.393	0.769	0.068	0.242	0.777	0.002	0.177	0.991	0.125	0.146	0.391	0.084	0.111	0.448	0.108	0.093	0.247
Separated/divorced	-0.424	0.522	0.416	0.184	0.268	0.493	0.004	0.185	0.983	0.072	0.150	0.631	-0.044	0.126	0.724	0.120	0.156	0.440
Lives in: village	-0.019	0.059	0.751	-0.083	0.053	0.116	-0.120	0.055	0.028	-0.127	0.060	0.035	-0.046	0.064	0.468	0.006	0.054	0.914
Lives in: city	-0.028	0.055	0.618	-0.013	0.051	0.791	-0.016	0.054	0.763	-0.091	0.059	0.123	-0.006	0.062	0.919	-0.013	0.056	0.812
Real GDP growth rate	0.109	0.031	0.001	0.103	0.027	0.000	0.063	0.026	0.015	0.050	0.019	0.002	0.053	0.010	0.001	0.084	0.025	0.001
Unemployment rate	0.002	0.001	0.046	0.001	0.000	0.000	-0.004	0.001	0.000	-0.016	0.001	0.000	0.005	0.002	0.056	0.005	0.001	0.000
Unemployment benefits	0.866	0.040	0.000	0.391	0.034	0.000	-0.194	0.011	0.000	0.493	0.055	0.000	0.130	0.071	0.000	0.873	0.101	0.000
$\mu_\alpha$	0.418	0.149	0.000	0.763	0.381	0.045	0.602	0.261	0.021	1.353	0.281	0.000	0.286	0.036	0.000	1.187	0.217	0.000
$\sigma_\alpha$	0.314	0.074	0.000	0.671	0.095	0.000	0.141	0.012	0.000	0.549	0.105	0.000	0.222	0.089	0.012	2.982	1.116	0.008
$\omega_1$	0.829	0.162		0.732	0.512		1.026	0.460		1.264	0.516		0.582	0.532		0.532	0.382	
$\omega_2$	1.989	0.163		1.888	0.413		2.238	0.460		2.431	0.517		1.820	0.533		1.884	0.382	
$\tau_1$	-0.743	0.142		-0.616	0.107		-1.076	0.343		-0.738	0.164		-0.588	0.182		-0.145	0.324	
$\tau_2$	0.874	0.242		0.934	0.207		0.559	0.143		0.924	0.265		1.353	0.332		2.087	0.325	
$\rho$	0.103	0.017		0.118	0.015		0.135	0.015		0.186	0.015		0.176	0.016		0.145	0.015	
Log-likelihood	-5,218.7299			-6,320.7396			-5,655.4376			-4,548.0717			-4,269.553			-5,603.3783		
LR test	$\chi^2(1) = 726.46$ P=0.0000			$\chi^2(1) = 934.36$ P=0.0000			$\chi^2(1) = 909.03$ P=0.0000			$\chi^2(1) = 915.09$ P=0.0000			$\chi^2(1) = 819.99$ P=0.0000			$\chi^2(1) = 950.27$ P=0.0000		
N	3,779			4,342			3,859			3,158			3,150			4,492		

Omitted variables: women, houseworking, widow, living in big town. Estimations obtained after 200 iterations.

Table 5. Estimations from the bivariate ordered probit with mixed effects by relation with economic activity and professional occupation

	Working: all			Self-employed			Working: white-collar			Working: Qualified			Working: non-qualified			Unemployed		
	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value
<b>EE</b>																		
Male	0.072	0.026	0.006	0.062	0.061	0.311	0.118	0.079	0.137	0.049	0.035	0.159	0.129	0.086	0.131	-0.056	0.062	0.365
Age: 25-34	-0.044	0.047	0.345	-0.237	0.140	0.090	-0.370	0.204	0.069	0.001	0.059	0.986	-0.033	0.121	0.784	-0.088	0.085	0.302
Age: 35-44	-0.160	0.050	0.001	-0.348	0.143	0.015	-0.465	0.209	0.026	-0.121	0.064	0.059	-0.234	0.134	0.082	-0.073	0.096	0.449
Age: 45-54	-0.217	0.053	0.000	-0.438	0.146	0.003	-0.577	0.220	0.009	-0.155	0.069	0.025	-0.290	0.145	0.045	-0.122	0.113	0.282
Age: 55-64	-0.241	0.059	0.000	-0.529	0.151	0.000	-0.624	0.235	0.008	-0.140	0.080	0.079	-0.259	0.158	0.100	-0.032	0.126	0.800
Age: 65+*	-0.253	0.109	0.020	-0.447	0.220	0.042	-0.663	0.437	0.129	-0.350	0.172	0.042	-0.145	0.245	0.553	-0.590	0.353	0.095
Married	0.018	0.085	0.835	0.018	0.167	0.915	-0.138	0.331	0.677	0.007	0.127	0.957	0.034	0.186	0.856	-0.348	0.228	0.127
Single	-0.015	0.088	0.866	-0.022	0.179	0.904	-0.277	0.339	0.415	-0.007	0.130	0.955	-0.007	0.202	0.973	-0.294	0.233	0.207
Separated/divorced	-0.097	0.097	0.318	-0.131	0.202	0.516	-0.354	0.354	0.318	-0.124	0.143	0.385	0.149	0.229	0.515	-0.625	0.260	0.016
Lives in: village	-0.053	0.034	0.115	-0.097	0.077	0.206	-0.038	0.105	0.716	-0.064	0.045	0.159	0.108	0.102	0.291	-0.042	0.080	0.597
Lives in: city	-0.054	0.033	0.098	-0.003	0.076	0.970	-0.171	0.093	0.065	-0.070	0.043	0.102	0.034	0.101	0.737	0.149	0.081	0.064
Real GDP growth rate	0.113	0.017	0.000	0.056	0.006	0.000	0.112	0.060	0.061	0.125	0.022	0.000	0.139	0.055	0.012	0.202	0.039	0.000
Unemployment rate	-0.002	0.001	0.045	-0.037	0.013	0.000	0.012	0.003	0.000	0.002	0.001	0.045	-0.041	0.003	0.000	-0.004	0.001	0.007
Unemployment benefits	2.101	0.238	0.000	-0.810	0.198	0.000	2.257	0.112	0.000	1.197	0.031	0.000	3.002	0.134	0.000	4.461	0.189	0.000
Presidential election's year	-0.050	0.003	0.000	0.073	0.012	0.007	-0.264	0.009	0.000	-0.032	0.008	0.000	0.008	0.001	0.000	-0.007	0.001	0.000
Left-wing government	-0.095	0.009	0.000	0.315	0.084	0.000	-0.002	0.000	0.000	0.131	0.025	0.000	-0.001	0.000	0.000	-0.379	0.048	0.000
Trade balance	0.002	0.000	0.001	0.007	0.000	0.002	-0.005	0.000	0.000	0.002	0.000	0.000	0.002	0.000	0.005	-0.007	0.000	0.000
<b>EH</b>																		
Male	-0.002	0.027	0.929	0.039	0.062	0.524	-0.030	0.082	0.714	-0.032	0.036	0.362	0.046	0.088	0.602	-0.023	0.062	0.716
Age: 25-34	-0.031	0.048	0.515	-0.304	0.145	0.036	0.081	0.211	0.702	-0.037	0.060	0.531	0.016	0.125	0.898	0.012	0.086	0.893
Age: 35-44	-0.193	0.051	0.000	-0.492	0.148	0.001	-0.234	0.217	0.281	-0.147	0.065	0.024	-0.355	0.138	0.010	-0.154	0.097	0.112
Age: 45-54	-0.336	0.054	0.000	-0.668	0.151	0.000	-0.253	0.228	0.266	-0.336	0.070	0.000	-0.321	0.149	0.031	-0.291	0.113	0.010
Age: 55-64	-0.496	0.060	0.000	-0.931	0.157	0.000	-0.589	0.243	0.015	-0.399	0.081	0.000	-0.500	0.163	0.002	-0.331	0.125	0.008
Age: 65+*	-0.561	0.111	0.000	-1.013	0.225	0.000	-0.294	0.455	0.518	-0.506	0.174	0.004	-0.640	0.254	0.012	-0.650	0.344	0.059
Married	-0.023	0.086	0.786	-0.115	0.169	0.494	-0.305	0.345	0.376	-0.001	0.128	0.992	0.081	0.192	0.672	-0.305	0.229	0.184
Single	0.032	0.090	0.717	-0.090	0.182	0.621	-0.283	0.355	0.425	0.099	0.132	0.452	-0.061	0.209	0.771	-0.309	0.234	0.186
Separated/divorced	0.015	0.099	0.879	-0.113	0.204	0.578	-0.179	0.369	0.628	-0.024	0.144	0.867	0.284	0.236	0.230	-0.343	0.260	0.187
Lives in: village	-0.051	0.035	0.140	-0.155	0.078	0.048	0.067	0.109	0.539	-0.051	0.046	0.268	0.120	0.105	0.256	-0.118	0.080	0.142
Lives in: city	-0.037	0.033	0.264	-0.078	0.078	0.315	-0.023	0.096	0.808	-0.035	0.044	0.422	0.021	0.104	0.840	0.053	0.081	0.515
Real GDP growth rate	0.057	0.017	0.001	0.115	0.041	0.005	-0.051	0.005	0.000	0.039	0.021	0.065	0.184	0.054	0.001	0.137	0.038	0.000
Unemployment rate	-0.008	0.001	0.000	-0.018	0.004	0.000	0.013	0.004	0.000	-0.011	0.003	0.003	-0.017	0.002	0.000	0.006	0.001	0.000
Unemployment benefits	-0.114	0.010	0.000	1.127	0.111	0.000	-2.814	0.501	0.000	-0.637	0.041	0.000	2.748	0.571	0.000	0.874	0.091	0.000
$\mu_\alpha$	0.797	0.216	0.000	0.710	0.206	0.000	0.961	0.498	0.054	0.627	0.303	0.039	2.101	0.659	0.000	0.892	0.522	0.088
$\sigma_\alpha$	0.248	0.051	0.000	0.777	0.289	0.007	1.133	0.263	0.000	0.649	0.067	0.000	1.173	0.129	0.000	0.365	0.120	0.002
$\omega_1$	0.459	0.268		-1.862	0.770		0.392	0.919		0.776	0.395		0.227	0.773		1.941	0.648	
$\omega_2$	1.629	0.269		-0.728	0.169		1.590	0.320		1.964	0.396		1.415	0.574		2.964	0.549	
$\tau_1$	-1.361	0.219		-1.078	0.203		-3.420	0.528		-1.544	0.294		0.366	0.100		-0.408	0.101	
$\tau_2$	0.308	0.018		0.572	0.102		-1.569	0.522		0.111	0.033		2.100	0.503		0.770	0.121	
$\rho$	0.131	0.010		0.170	0.020		0.190	0.031		0.115	0.013		0.209	0.025		0.197	0.020	
Log-likelihood	-14,359.509			-2,849.8299			-1,638.3532			-8,208.4413			-1,542.3726			-2,720.3464		
LR test	$\chi^2(1) = 2,259.17$ P=0.0000			$\chi^2(1) = 519.87$ P=0.0000			$\chi^2(1) = 214.43$ P=0.0000			$\chi^2(1) = 1,204.65$ P=0.0000			$\chi^2(1) = 338.98$ P=0.0000			$\chi^2(1) = 542.20$ P=0.0000		
N	9,806			2,032			1,134			5,519			1,121			1,980		

Omitted variables: women, age:16-24, widow, living in big town. Estimations obtained after 200 iterations

Table 6. Estimations from the bivariate ordered probit with mixed effects by relation with economic activity

	Retired			Houseworking			Studying		
	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value	Coef.	Std.dev	p-value
<b>EE</b>									
Male	-0.050	0.047	0.292	-0.031	0.155	0.840	0.038	0.050	0.451
Age: 25-34	-	-	-	-0.328	0.145	0.023	-0.005	0.082	0.952
Age: 35-44	-	-	-	-0.462	0.142	0.001	0.334	0.446	0.454
Age: 45-54	-	-	-	-0.472	0.140	0.001	0.951	0.474	0.045
Age: 55-64	-0.964	0.552	0.081	-0.388	0.139	0.005	-	-	-
Age: 65+	-0.936	0.552	0.090	-0.460	0.138	0.001	-	-	-
Married	0.068	0.053	0.198	0.077	0.070	0.273	0.490	0.371	0.186
Single	0.059	0.081	0.463	-0.029	0.122	0.813	0.618	0.351	0.078
Separated/divorced	0.014	0.116	0.905	0.412	0.180	0.022	1.347	0.673	0.045
Lives in: village	-0.027	0.052	0.602	-0.081	0.051	0.111	-0.107	0.069	0.124
Lives in: city	0.004	0.053	0.940	-0.077	0.052	0.140	-0.132	0.064	0.038
Real GDP growth rate	0.120	0.028	0.000	0.105	0.029	0.000	0.145	0.047	0.002
Unemployment rate	-0.030	0.016	0.055	-0.015	0.002	0.000	-0.065	0.022	0.004
Unemployment benefits	2.887	0.181	0.000	2.159	0.210	0.002	4.668	0.131	0.000
Presidential election's year	-0.228	0.075	0.002	-0.010	0.003	0.005	-0.155	0.017	0.000
Left-wing government	-0.499	0.136	0.000	-0.055	0.011	0.000	-0.275	0.014	0.000
Trade balance	0.001	0.000	0.000	0.001	0.000	0.005	0.004	0.000	0.000
<b>EH</b>									
Male	-0.025	0.050	0.626	-0.308	0.161	0.056	-0.027	0.052	0.609
Age: 25-34	-	-	-	-0.190	0.147	0.197	-0.019	0.084	0.818
Age: 35-44	-	-	-	-0.431	0.144	0.003	0.195	0.436	0.655
Age: 45-54	-	-	-	-0.573	0.142	0.000	0.492	0.471	0.296
Age: 55-64	-0.796	0.555	0.151	-0.605	0.141	0.000	-	-	-
Age: 65+	-0.837	0.554	0.131	-0.686	0.141	0.000	-	-	-
Married	0.034	0.056	0.543	0.173	0.073	0.018	-0.035	0.372	0.926
Single	0.086	0.086	0.316	0.062	0.128	0.629	0.131	0.351	0.709
Separated/divorced	0.060	0.120	0.614	0.323	0.185	0.081	-0.146	0.624	0.815
Lives in: village	0.004	0.055	0.945	-0.105	0.053	0.049	-0.108	0.071	0.132
Lives in: city	0.014	0.056	0.803	-0.014	0.054	0.795	-0.094	0.066	0.150
Real GDP growth rate	0.048	0.025	0.061	0.058	0.025	0.020	0.130	0.041	0.001
Unemployment rate	0.022	0.010	0.027	-0.011	0.001	0.000	-0.034	0.014	0.016
Unemployment benefits	-0.237	0.051	0.000	1.167	0.077	0.000	1.652	0.345	0.000
$\mu_\alpha$	1.401	0.265	0.000	1.681	0.566	0.003			
$\sigma_\alpha$	1.513	0.115	0.000	1.977	0.245	0.000			
$\omega_1$	-0.702	0.189		0.096	0.041		0.976	0.273	
$\omega_2$	0.558	0.119		1.474	0.141		2.178	0.433	
$\tau_1$	-1.387	0.231		-0.894	0.208		-0.854	0.134	
$\tau_2$	0.729	0.221		1.094	0.209		0.932	0.226	
$\rho$	0.152	0.015		0.142	0.015		0.196	0.020	
Log-likelihood	-5,407.5164			-5,855.8282			-3,625.9476		
LR test	$\chi^2(1) = 935.08$ P=0.0000			$\chi^2(1) = 999.78$ P=0.0000			$\chi^2(1) = 497.50$ P=0.0000		
N	4,137			4,485			2,691		

Omitted variables: women, age:16-24, widow, living in big town. Estimations obtained after 200 iterations



Table 7. Predicted probabilities from the bivariate ordered model with mixed effects

	Predicted prob. EE			Predicted prob. EH			EE <sub>better</sub> -	EH <sub>better</sub> -	EH <sub>better</sub> -	EH <sub>worse</sub> -
	Worse	Same	Better	Worse	Same	Better	EE <sub>worse</sub>	EH <sub>worse</sub>	EE <sub>better</sub>	EE <sub>worse</sub>
All	0.297	0.436	0.268	0.138	0.585	0.277	-0.029	0.139	0.010	-0.159
Male	0.293	0.418	0.289	0.133	0.578	0.289	-0.004	0.156	0.000	-0.160
Female	0.300	0.452	0.249	0.142	0.591	0.266	-0.051	0.124	0.018	-0.158
Age: 16-24	0.256	0.418	0.326	0.103	0.513	0.384	0.070	0.281	0.058	-0.153
Age: 25-34	0.280	0.416	0.305	0.108	0.499	0.393	0.025	0.285	0.089	-0.172
Age: 35-44	0.305	0.436	0.259	0.136	0.551	0.313	-0.046	0.177	0.054	-0.169
Age: 45-54	0.329	0.418	0.253	0.169	0.573	0.258	-0.076	0.088	0.005	-0.160
Age: 55-64	0.315	0.443	0.242	0.160	0.656	0.184	-0.072	0.023	-0.059	-0.154
Age: 65-+	0.309	0.480	0.211	0.158	0.723	0.118	-0.099	-0.040	-0.092	-0.151
Working	0.295	0.420	0.285	0.121	0.543	0.336	-0.010	0.215	0.051	-0.174
Self-employed	0.317	0.403	0.280	0.134	0.540	0.326	-0.037	0.192	0.047	-0.183
White-collar	0.255	0.421	0.324	0.091	0.548	0.362	0.068	0.271	0.038	-0.165
Qualified worker	0.296	0.424	0.280	0.121	0.540	0.339	-0.017	0.217	0.059	-0.175
Non qualified worker	0.289	0.431	0.280	0.124	0.559	0.316	-0.009	0.192	0.036	-0.165
Unemployed	0.331	0.377	0.293	0.201	0.414	0.385	-0.038	0.185	0.093	-0.130
Retired	0.307	0.453	0.239	0.158	0.699	0.143	-0.068	-0.016	-0.097	-0.149
Houseworking	0.308	0.483	0.209	0.158	0.659	0.183	-0.099	0.025	-0.026	-0.150
Studying	0.240	0.431	0.328	0.090	0.564	0.346	0.088	0.256	0.018	-0.150
Maximum	Unem.	House	Stud	Unem.	65-+	25-34	Stud	25-34	Unem.	Unem.
Minimum	Stud.	Unem.	House	White	Unem.	65-+	House	65-+	Retired	Self-

Table 8. Simulation of the effect over expectations as a consequence of a change in macroeconomic conditions

	Effect of an increase of real GDP growth rate: 2 pp.		Effect of an increase of unemployment rate: 2 pp.		Effect of an increase of unemployment benefits: 5%			
	Pr[EE <sub>better</sub> ]	Pr[EH <sub>better</sub> ]	Pr[EE <sub>worse</sub> ]	Pr[EH <sub>worse</sub> ]	Pr[EE <sub>better</sub> ]	Pr[EH <sub>better</sub> ]	Pr[EE <sub>worse</sub> ]	Pr[EH <sub>worse</sub> ]
All	25.68%	16.94%	3.93%	-0.05%	7.68%	0.98%	-7.15%	-1.35%
Male	26.29%	12.11%	3.71%	-1.53%	7.57%	-0.23%	-7.39%	0.33%
Female	25.34%	21.16%	4.07%	1.11%	7.84%	2.13%	-7.00%	-2.83%
Age: 16-24	35.82%	21.48%	11.70%	-0.67%	12.28%	2.12%	-13.18%	-3.82%
Age: 25-34	24.12%	20.07%	5.54%	-0.17%	6.95%	0.96%	-7.24%	-1.75%
Age: 35-44	33.75%	14.24%	0.20%	1.39%	8.99%	-0.55%	-7.97%	0.82%
Age: 45-54	31.37%	12.56%	0.59%	4.56%	8.37%	1.55%	-7.15%	-1.90%
Age: 55-64	31.21%	15.69%	4.73%	-1.34%	8.49%	0.46%	-7.26%	-0.51%
Age: 65-+	30.72%	30.11%	2.63%	-1.55%	7.09%	3.71%	-5.82%	-3.41%
Working	26.98%	12.23%	0.47%	1.35%	6.13%	-0.30%	-5.97%	0.49%
Self-employed	13.03%	25.03%	7.82%	5.55%	-2.35%	4.39%	2.24%	-6.48%
White-collar	24.24%	-9.58%	-2.73%	-1.12%	6.07%	-6.77%	-6.82%	13.18%
Qualified worker	30.11%	8.16%	-0.53%	0.41%	5.75%	-1.66%	-5.56%	2.74%
Non qual. worker	34.35%	41.73%	9.39%	5.40%	9.11%	7.55%	-8.67%	-11.10%
Unemployed	49.67%	26.79%	0.95%	-1.57%	15.59%	2.39%	-13.52%	-3.36%
Retired	32.31%	15.45%	6.72%	-6.42%	9.57%	-0.94%	-8.19%	0.95%
Houseworking	29.67%	16.94%	3.38%	3.23%	7.24%	4.11%	-6.03%	-4.46%
Studying	32.15%	28.16%	16.78%	12.48%	12.83%	4.38%	-14.22%	-7.43%
Maximum	Unem.	Non-qual	Stud.	Stud.	Unemp.	Non-qual	Self-emp.	White
Minimum	Self-emp.	White	White	Retired	Self.	White	Stud.	Non-qual