FEDEA
Fundación de Estudios de Economía Aplicada

Unemployment duration and workers' wage aspirations in Spain

by
Namkee Ahn*
J. Ignacio García-Pérez**

DOCUMENTO DE TRABAJO 99-20

N.I.F. G-78044393

November, 1999

* FEDEA
** Universitat Pompeu Fabra

IMPRESO EN PAPEL RECICLADO Y ECOLÓGICO

JORGE JUAN, 46; 28001 MADRID. ADMON Y DOCUMENTACION: TEL. 4359020. INVESTIGACION: TEL. 4360401. FAX. 5779575

Unemployment duration and workers' wage aspirations in Spain

Namkee Ahn
FEDEA

J. Ignacio Garcia-Perez*
U. Pompeu Fabra

October, 1999

Abstract

Keywords: Reservation wage, unemployment duration, unobserved heterogeneity.

JEL classification: C41, J64.

*We want to thank Manuel Arellano, Samuel Bentolila and Pedro Mira for all their comments and suggestions, and Luis Toharia for providing us with the data set. Comments from seminar participants at CEMFI are also acknowledged. Of course, the usual disclaimer applies.

Abstract

This paper examines unemployed workers' declared willingness to accept a job with a wage lower than the one warranted by their qualification. We analyze which personal and economic characteristics determine this willingness and how it changes as unemployment spells lengthen. Moreover, we also study the influence of this willingness on unemployment duration. The main results are: (i) Young workers, those less educated and those living in regions with high unemployment rates show a more positive attitude towards accepting lower wages while the college educated and married women with a working husband show substantially more negative attitudes; (ii) The exhaustion of unemployment benefits indeed shows significant positive effects in the transition probability of the attitude from negative to positive.This effect is even larger when unobserved heterogeneity is controlled for; (iii) Regarding the effects of this attitude on the exit probability from unemployment, we find that the expressed willingness to work for lower wages is not only reflecting the worker's reservation wage but also some unobserved heterogeneity; (iv) The negative duration dependence of the exit probability from unemployment is substantially reduced when unobserved heterogeneity is controlled for.

1 Introduction

According to the standard job search theory, longer unemployment duration entails an increasing probability of accepting job offers. We may expect this fact to pull the unemployment rate down. But this theoretical prediction is suspected in a country like Spain, where the unemployment rate has been exceptionally high for a prolonged period, 20% on average in the past 10 years. The persistence of high unemployment in Spain has drawn much attention among policy makers and economists. Some studies have emphasized insufficient job creation from the labor demand side resulting in high structural unemployment (Bentolila and Blanchard, 1990), and others have pointed to the lack of worker mobility or other aspects on the labor supply side (Blanchard *et al.*, 1995 or Ahn, de la Rica and Ugidos, 1999). We examine another aspect of labor supply, unemployed workers' willingness to accept a job offer with a wage inferior to the one adequate to their qualification (hereafter willingness to work for a reduced wage) and its relationship with their unemployment duration in Spain.

In Ahn *et al.* (1999) it is shown that the willingness to *move* for work is not sensitive to workers' unemployment duration, suggesting the lack of worker mobility as one of the underlying causes of Spanish unemployment. In this paper we examine the worker's flexibility in terms of the reservation wage. We highlight how unemployed workers' willingness to work for a reduced wage changes with the duration of unemployment and also how this duration is affected by such willingness.

The standard job search theory provides us with the relationship between unemployment duration and the worker's attitude toward accepting or rejecting job offers. According to this model, the willingness to work for a reduced wage should increase with the duration of unemployment, given

other things constant along the unemployment spell, since reservation wages decrease with unemployment duration.[1]

We analyze the unemployed workers' responses to a question included in the Spanish Labor Force Survey, "Are you willing to accept a job with a wage inferior to the one adequate for your qualification?" The willingness to work for a reduced wage can be considered as a reduced-form variable reflecting one's reservation wage.

In order to study this variable, we will examine which personal and economic characteristics affect the willingness and how it evolves along the unemployment spell. We will also examine the influence of this attitude on the worker's probability of leaving unemployment. The exit probability from unemployment is directly affected by the worker's reservation wage. As the studied question is related to reservation wages, the effect of this attitude on unemployment duration may be important. However, there exist some unobserved variables (income, skills, ...) which can affect both reservation wages and unemployment duration. Therefore, in order to control for the possible endogeneity of the willingness due to the presence of unobserved heterogeneity, we estimate jointly two processes: one for the exit probability from unemployment and the other for the willingness.

Main findings are that young, less educated and those living in regions of high unemployment are more willing to accept a reduced wage and that the willingness increases with unemployment duration. In the analysis of attitude changes, we find that the exhaustion of unemployment benefits increases the probability of changing attitude from negative to positive.

Regarding the effect of declared willingness on the probability of leaving unemployment, we obtain that it is positive if we treat the willingness as

[1] See, among others, Mortensen (1986) or Van den Berg (1990) for the basic theoretical prediction.

exogenous, but once we control for the possible endogeneity of this willingness in the presence of unobserved heterogeneity, the effect becomes negative: those with positive attitude have lower probabilities of leaving unemployment than others. In fact, the estimation results suggest that this variable is related to not only reservation wages but also some unobserved characteristics which are provoking both a lower probability of exiting from unemployment and lower willingness to work for lower wages. One interesting result of our study is that once we control for the presence of unobserved heterogeneity, the negative duration dependence in the probability of leaving unemployment is substantially reduced which is consistent with theoretical prediction but in contrast with the findings in other previous studies (See, for example, Bover, Arellano and Bentolila, 1997).

We organize the paper as follows. Firstly, we present the main theoretical predictions which are relevant to the willingness to work for a reduced wage. Secondly, we describe the data used in our analysis and in the third section we present the empirical results. In this section, we start by analyzing the determinants of the willingness, and we highlight its relationship with unemployment duration. We also estimate a model for the time it takes until initially unwilling workers become willing to work for a reduced wage. Finally, we estimate a model for the duration of unemployment as a function, among other variables, of the expressed willingness. The last section presents the main conclusions of the paper.

2 Theoretical background

First of all, it is important to describe clearly our variable of analysis. The question we analyze is, when translated literally, "Are you willing to accept a job offer with a wage inferior to the one adequate for your qualification?"

The answer to this question may be interpreted as a reduced-form variable related to the reservation wage. However, the interpretation of the question is not clear. What is the adequate wage for one's qualification? Formally, we may write this willingness using the reservation wage, $w_R(t)$, and the adequate wage for qualification, w^a. The answer to the above question will be *yes* if $w_R(t) < w^a$, and *no* otherwise.

In order to understand this question better we can use a standard non-stationary search model.[2] This model deals with the optimal stopping decision an unemployed worker has to take when searching for a job. It assumes that unemployed workers will accept any offer if its associated wage is equal to or higher than their reservation wage. If the environment in which the worker is searching is non-stationary, in the sense that some of the parameters which describe the environment are changing over time, reservation wages will also change over time. For example, if income or job offer frequency decreases with unemployment duration, her reservation wage will decrease as well (see Van den Berg, 1990 or Garcia-Perez, 1998). Therefore, these models provide us with one theoretical relationship between the duration of unemployment and reservation wages: given other things equal, the probability of observing $w_R(t) < w^a$ increases with unemployment duration because the reservation wage decreases. However, there is another element that affects the unemployed worker's willingness. What is the perceived adequate wage for her qualification, w^a? It seems reasonable to assume that this is related with the average wage received by the workers with similar characteristics. If this average offered wage were not affected by unemployment duration, we should expect a greater willingness to work for a reduced wage over unemployment duration. However, some factors, such as skill depreciation during unemploy-

[2]See Mortensen (1986) or Devine and Kiefer (1991) for extensive surveys of the literature.

ment, could make workers adjust downward their w^a as their unemployment spells lengthen. Final effects will depend on the magnitude of each of these factors.

Reservation wages depend on the unemployed worker's liquidity constraints and her expectations about future job offers, as well as search costs. Liquidity constraints depend on unemployment benefits and savings or accumulated assets (empirical evidence is shown in Stancanelli, 1999). The bigger the latter are the less likely is the worker to accept a job offer with a reduced wage. Those with greater family responsibilities are more likely to have lower reservation wages. The composition of the household and each household member's situation, such as the presence of young children and the numbers of working or unemployed members, are also likely to be relevant factors. Also relevant are individual preferences for work, which are not observed but may be captured by certain individual characteristics such as age, education and place of residence.

The reservation wage is also likely to be affected by the extent of human capital lost during unemployment spells. Those who face more rapid skill depreciation while unemployed will be more willing to accept a reduced wage offer. In this respect, occupation and educational level might be relevant variables. The current economic situation and expectations about future economic conditions are likely to affect one's willingness to accept a reduced wage. For example, during a recession, when offers arrive less frequently, job offers are more likely to be accepted than during a period of expansion.

Finally, the willingness to work for a reduced wage will also depend on how one's future career and wage prospects are affected by current wage levels or employment status. It is likely that a low current wage may affect future wage prospects negatively if it operates as a negative signal to employers. This

may be more serious among occupations of high skill and high education, thus making workers with these characteristics less willing to work for a reduced wage.

3 Data and variables

The data used in this study are taken from the Spanish Labor Force Survey *(EPA)* which is the main source of labor market information in Spain. This survey is undertaken each quarter on about 60,000 households (about 200,000 individuals). One-sixth of the sample is replaced by new households each quarter. Therefore a household, once chosen, is interviewed up to six times over an interval of about 18 months.

In the first part of analysis where we examine the determinants of the willingness to work for a reduced wage, we use pooled cross-section data over the 17 quarters between 1992:1 and 1996:1. In the second and third part of analysis where we examine the relationship between the willingness and unemployment duration, we construct individual longitudinal data from the EPA's rotating panel from 1992:1 to 1997:2. The individuals interviewed for the first time in the first quarter of 1992 had their last interview in the second quarter of 1993 and similarly, the last cohort of our sample was interviewed from the first quarter of 1996 to the second quarter of 1997.

We restrict our sample to those workers whose unemployment duration at the time of the first interview is shorter than four months, mainly in order to reduce the potential unobserved heterogeneity bias that could be contained in the different unemployment duration observed at the start of interviews.

The dependent variable in the first part of our study is taken from the answer to the question studied which can be *yes*, *no* and *don't know*. In our sample about 70% of responses were affirmative, 20% negative and 10% in-

decisive. A first look at the responses over time suggests that the willingness to work for a reduced wage is counter-cyclical: during recessions unemployed workers are more willing to accept lower wages than during periods of expansion.[3]

The dependent variable for the second part of the study is the duration, in quarters, until initially unwilling workers become willing to work for a reduced wage. That is, we estimate the hazard rate of changing the attitude from negative to positive.

However, note that this is not a proper duration. At the individual level this duration is not random but totally known once we know how each individual's reservation wage evolves over time. Therefore, we have to think of this variable as showing the aggregate behavior of a sample of workers. That is, what the *change-of-attitude hazard rate* shows is the proportion of unemployed workers whose reservation wages are falling from above to below the mean offered wage in a given period among those who continue having reservation wages above the mean in the beginning of the period.[4] It is important to take into account that this variable is censored for those workers who leave unemployment without changing their attitude. That is, we observe a complete duration spell only if the individual changes to a positive attitude before exiting from unemployment.

Finally, we study the effects of the expressed willingness to work for lower wages on unemployment duration. Since it is very likely that the willingness is endogenous with respect to the probability of finding a job, because both variables depend on reservation wages, we will estimate jointly a process for

[3] According to the EPA, in 1992, when the unemployment rate was 17%, about 60% of the unemployed were willing to work for lower wages. In 1995, with a 25% unemployment rate, this proportion was over 75%.

[4] We wish to thank Pedro Mira for suggesting this interpretation of the hazard rate.

each variable.

4 Empirical results

4.1 Determinants of the willingness to work for lower wages

In an empirical and reduced-form context, the willingness to work for a reduced wage can be specified as a latent variable representing the difference between the reservation wage and the adequate wage for the worker's qualification, $w_R - w^a$, and can be considered as a function of some explanatory variables. However, what we really observe is a discrete outcome y, where, in our case, $y = 1$ if an individual is willing to work for a reduced wage and $y = 0$ otherwise. Assuming the extreme value distribution of the error term in the specification of this variable, we can estimate a *logit* model on it. Table 1 presents the results of this estimation.

(Table 1)

In this table we have the sample mean of each explanatory variable, estimated odds ratios and asymptotic $t-$ratios of parameter estimates. The model is estimated separately for the male and female samples to capture possible differential effects of explanatory variables by gender. The odds ratios are interpreted as the relative probability corresponding to a unit increase in each covariate. We now discuss some important results.

Family Characteristics: We have included a variable representing whether the individual is the head of household, and also the head's employment status for non-heads. It does not show any significant effect among males, while a wife whose husband is working is less willing to work for lower wages than other females. This suggests that wives with an employed husband would

have higher reservation wages than those with an unemployed or inactive husband. Other household characteristics as the household size, its structure with respect to the number of working, unemployed or inactive members or the number of children of different ages in the family show no appreciable effects.

Age and Education Level: As expected, young people (aged 16-19) are more willing to work for lower wages and those aged 45 or more are much less willing to accept a reduced wage. This downward inflexibility of reservation wages among old workers might reflect greater economic wealth or smaller human capital loss due to a shorter remaining working life.

The effect of education is very significant. The more educated are much less willing to work for lower wages. This may reflect the labor demand situation, that is, it is harder to find a job for low-educated workers, and that signaling effects (a lower current wage as lower ability) are larger in the job market for more educated workers.

Unemployment Benefits: Theory predicts lower willingness among those receiving benefits than among non-receivers. However, although unemployment benefits show some negative effects on the willingness to work for lower wages, the effect is not very significant. This leads us to suspect the existence of unobserved characteristics, such as experience, skill or sector, which may be correlated with benefit receipt.

Local Labor Market Conditions: As expected, the local unemployment rate affects positively workers' willingness to work for lower wages. Those living in a location with higher unemployment are more willing to work for lower wages. However, the local vacancy rate and real wages do not show any significant effects.

In summary, the results show that some individual characteristics, such

as age and education, affect significantly the workers' willingness to accept a reduced wage offer. On the other hand, unemployment benefits reduce only marginally the willingness. This somewhat unexpected result may be due to unobserved heterogeneity which cannot be controlled in cross-sectional data. In the next section we will use longitudinal data to control for such heterogeneity.

4.2 Effects of unemployment duration on the willingness to work for a reduced wage

In Spain, where the proportion of long-term unemployed has been above or close to 50% during the past decade, one of the most interesting factors we can consider in examining the willingness to work for lower wages is the duration of unemployment spells. Lengthening unemployment may affect both the reservation wage, w_R, and the perceived adequate wage for her qualification, w^a. As a worker stays unemployed longer, she is more likely to have exhausted unemployment benefits as well as other income sources. This is likely to lower the reservation wage, and therefore to increase the willingness to accept a reduced wage. On the other hand, perceived adequate wage, w^a, could also be adjusted downward as the unemployment spell lengthens. Hence, it is not clear how the duration of unemployment affects the willingness to work for lower wages. However, we may expect the effect on reservation wages to be greater than the other effect, therefore leading to a greater willingness to work for lower wages the longer the duration of unemployment.

Now, using a longitudinal data set, we control for unobserved individual effects and therefore we can examine the correct effect of unemployment duration on the willingness to work for lower wages. In the Spanish Labor Force Survey individuals are interviewed six times (every three months over

a period of one and a half years), allowing us to examine unemployed workers' willingness as their unemployment duration lengthens. For example, for those who are unemployed for two consecutive quarters, we can examine the variation of the willingness as their unemployment duration increases by three months. For the group of people who are unemployed over the entire interview period (six quarters), we can examine how the willingness changes as the duration of unemployment increases by about 15 months (time elapsed between the first and the sixth interview).

Table 2 shows how the willingness to work for lower wages changes as the duration of unemployment increases. All individuals in the sample were unemployed for up to 3 months at the time of their first interview. We divide the sample into subgroups, each of them in a different column, according to the period when individuals become employed or go out of the labor force, including a group of workers who stay unemployed over the entire time period of six interviews.

(Table 2)

One conclusion which can be drawn from Table 2 is that the willingness seems to increase with unemployment duration. However, the increase is very modest. For example, an increase by three months in the spell's duration raises the proportion willing to work for lower wages only by 2 percentage points. The largest increase is observed among those who are unemployed during all 6 quarters interviewed (last column of Table 2). The proportion of workers willing to work for lower wages increases from 64 percent to 80 percent over a 15 months interval, a quarterly increase by about 3 percentage points. This relatively small sensitivity of workers' willingness to work for lower wages with respect to unemployment duration is matched by equally insensitive willingness to *move* for work as found in Ahn *et at.* (1999). We

can think of a few reasons for this lack of worker flexibility.

First, one might think that the responses to the question as posed in the survey could be completely random.[5] In this case, individuals' responses would not depend on the duration of unemployment nor on their past responses. The second hypothesis is that the lack of variation with unemployment duration might take place because the individuals' attitude is very rigid. Maybe the attitude just does not change for whatever reason. People might maintain the same attitude regardless of their unemployment duration. In this case, the conditional probability of showing a positive or negative attitude at period $t+1$ would be, respectively, zero or one depending completely on the attitude shown in period t.

Both hypotheses are clearly rejected by the transition matrix shown in Table 3. In fact, it appears that there is a strong persistence in attitudes over time. This persistence is particularly strong among those with a positive attitude: those who show a positive attitude in one period are very likely to show the same attitude in subsequent periods. However, it seems that the attitude for those with a negative attitude is not totally fixed. In our sample about 20 percent of the unemployed workers with a negative attitude changed it to positive over a period of three months. These patterns are consistent with a theoretical prediction that the worker's reservation wages are likely to decrease with the duration of unemployment. Next section examines the factors which affect the probability of changing attitude from negative to positive.

[5] It should be kept in mind that in order to collect information on every household member the interviewer asks questions about all household members to those adults who happen to be at home at the time of the interview. This means that the information about willingness for some individuals in the survey may be based on other household members' opinion.

(Table 3)

4.3 Duration until the worker is willing to work for lower wages

One can think of many factors that can contribute to changing individuals' attitude over time. As discussed earlier, with lengthening unemployment duration people might run out of economic resources, which makes them more willing to work for lower wages. On the other hand, as unemployment spells become longer, people somehow find ways to live without a formal job. For example, if the probability of operating in the underground economy increases with unemployment duration, job offers with lower wages become less attractive (Ahn and de la Rica, 1997), and if these workers are likely to classify themselves as unemployed in the survey, this could lead to an increase in the proportion of negative attitudes as the duration of unemployment increases. It is also possible that the preferences for work or leisure change as one spends more time unemployed. Unfortunately, in our data set we do not have much information about changes in individuals' economic situation or in their preferences.

One variable that is available for our analysis is individual status regarding unemployment benefits each quarter. We observe whether or not unemployed workers received unemployment benefits at the time of each interview. Therefore, between two consecutive quarters we can compare three types of unemployed workers: those who continue to receive unemployment benefits, those who exhaust them, and finally those who do not receive them in either of the two quarters. The exhaustion of unemployment benefits is likely to lead to a sudden (although anticipated) drop in financial resources,

and is likely to increase individuals' willingness to work for lower wages.[6] Comparing the attitude of those who exhaust their unemployment benefits at some point between two periods with those who continue receiving them, we can examine the importance of economic means in workers' willingness to work for lower wages. A univariate comparison of the proportions changing their attitude from negative to positive between two consecutive quarters by the unemployment benefit status shows virtually no difference (23% among those who receive benefits in both quarters and 24% among those who exhaust them between the two quarters). This result warrants a multivariate analysis. It is very likely that there exists heterogeneity among workers which can affect the attitude.

We analyze the relationship between this willingness and unemployment duration by means of duration analysis. We estimate the hazard rate that initially unwilling workers become willing to accept lower wages. The sample contains those workers who begin their unemployment spells unwilling to accept a job with lower wages and consists of two types of observations: completed and censored spells. Those who have a completed spell are the unemployed workers who change their answer from negative to affirmative during the subsequent unemployed periods observed in the survey, while the censored observations are those who have not changed their attitude from negative to positive during the observed unemployment spell. The sample characteristics are presented in Table 4. There is a high percentage of censoring, which is due to four different reasons: finding a job (33.2%) or going out of the labor force (26.3%) while having a negative attitude, changing it from negative to indecision (10.2%) or no response to the question

[6] Many studies have found a significantly higher job-finding probability after the exhaustion of unemployment benefits. See, for example, Meyer (1990) for the US and Ahn and Ugidos (1995) for Spain, or Atkinson and Micklewright (1991) for a survey.

(10.2%).

(Table 4)

The method of estimation is based on discrete or grouped duration models (see Lancaster, 1990). The reasons for using discrete-time techniques are not only that the data are observed in discrete intervals, namely in quarters, but also that these techniques are much more flexible for estimating the time-dependence of the hazard rate (see Meyer, 1990). We estimate the hazard rate for the duration, T_R, time until initially unwilling unemployed workers become willing to work for lower wages. The hazard rate, as explained in Garcia-Perez (1997) or Bover, Arellano and Bentolila (1997), is written as the following conditional probability:

$$h_R(t, b(t), y(t)) = \Pr\left(T_R = t \mid T_R \geq t, b(t), y(t)\right)$$

where, $b(t)$ is the binary indicator of whether the individual still has unemployment benefits in period t or not, and $y(t)$ is a vector of, possibly, time-varying variables.

We assume the normal distribution, $\Phi(\cdot)$, and parameterize the hazard as follows:

$$h_R(t, b(t), y(t)) = \Phi\left[\gamma_0(t) + \gamma_1(t)b(t) + \gamma_2(t)y(t)\right]$$

where the $\gamma_i(t)$ are time-varying parameters. Once the likelihood function is accordingly written, one can estimate the model using maximum likelihood techniques.[7]

We first estimate the model without controlling for unobserved heterogeneity, whose results are shown in Appendix A, The strong negative dura-

[7] A discrete duration hazard rate can be seen as a sequence of binary choice equations (with cross-equation restrictions) defined on the surviving population at each duration. See Jenkins (1995) for a very clear explanation of these techniques.

tion dependence of this hazard rate in spite of the inclusion of many variables which are supposed to capture individual heterogeneity, suggests the presence of some heterogeneity that we do not observe. Some important unobserved variables are family income and the duration of unemployment benefit entitlement. In the presence of unobserved heterogeneity the negative duration dependence is likely to be overestimated and, furthermore, estimated parameters could be biased. An additional bias may arise due to the endogeneity of the benefit receipt in the case that some common unobserved factors affect both the hazard rate and the unemployment benefit status. Some unobserved variables such as family income (in determining non-contributory unemployment benefits) and benefit entitlement duration (in determining contributory unemployment benefits) are important determinants of the receipt of unemployment benefits. These problems require an adequate consideration of unobserved heterogeneity and the endogeneity of unemployment benefit status.[8]

Here, in order to control for the presence of unobserved heterogeneity, we follow the mixture technique developed by Heckman and Singer (1984), defining a variable η which is a discrete random variable with a finite support, in particular with two mass points. The unemployment benefits indicator is fully endogenous because it depends also on this variable η. Moreover, we specify the determination of benefit receipt as dependent not only on the unobserved heterogeneity variable η, but also on other explanatory variables. The benefit indicator, $b(t,\eta)$, is estimated jointly with the hazard rate, $h_R(t, b(t,\eta), y(t), \eta)$, which depends on the unobserved heterogeneity as well. Thus, we also have to estimate the probability of belonging to one group, Pr, and the value of this mass point, η_1. The value of the other mass point

[8] See again Bover *et al.* (1997) for an explanation of these facts and of the estimation technique used here.

is assumed such as $E(\eta) = 0$, for the identification of the model.

In Table 5, we have the estimation results of this hazard rate. We can see that the effect of unobserved heterogeneity is not very significant. There seem to be two different groups of workers, although the difference between them is not large. We also observe that it shows a strong negative duration dependence which is estimated here with dummy variables ($Dur2$, ...), one for each possible duration, the duration of one quarter being absorbed in the constant term. For the mean values of all the explanatory variables, we obtain a predicted hazard which decreases by more than 10 percentage points through the five quarters studied.

(Table 5)

With respect to other explanatory variables, we find a large effect of *education*: better educated workers are less likely to change their attitude from negative to positive. However, the interaction of this variable with duration is positive and significant, thus provoking the effect to change over time: those with a high education are more willing to accept lower wages when they are in unemployment for more than 9 months (see Figure 1).

The effect of *age* is similar to that of education but less strong and significant: although in the first quarter younger workers have a lower probability of changing attitude, afterwards they are more likely than older workers.

The only household characteristic which shows a significant effect is whether the spouse works or not: those whose spouse is working have a much lower probability of changing attitude and this result does not change by *gender*, which contrasts with the result of the previous analysis with the pooled cross-section data. In fact, women show only a marginally higher probability of changing attitude.

One important variable in this study is whether the worker receives unem-

ployment benefits or not. Although in the cross-section study it did not have a significant effect, now, once we take into account the longitudinal character of the data base, a significant negative effect emerges: those individuals with unemployment benefits are much less likely to change their attitude from negative to positive (see Figure 2).

Finally, we also obtain a higher probability of attitude change from negative to positive in periods of recession or in regions where the unemployment rate is higher.

In summary, the results give some support to the hypotheses derived from the standard job search theory, in particular, the negative effects of unemployment benefits and the economic situation, and the positive effects of the local unemployment rate. The strong negative duration dependence suggests that those who begin their unemployment spells with a negative attitude are increasingly less likely to change their attitude over their unemployment spells. This result suggests that reservation wages decrease more rapidly at the beginning of the spell than later. However, we must be cautious with this conclusion because of two reasons. First of all, the theoretical counterpart of the question studied is not only reservation wages but also the perceived adequate wage for the worker's qualification. Secondly, the interpretation of the estimated hazard rate is not clearly related with the unconditional distribution of reservation wages among workers.

4.4 Effects of the willingness to work for lower wages on unemployment duration

Once the dynamics of the expressed willingness to work for lower wages and its evolution along the spells of unemployment have been analyzed, we turn to the reverse causation. If this willingness is related to reservation wages,

there must be some influence of this variable on unemployment duration. Given other things (including offer frequency) equal, the workers who are more willing to work for lower wages are likly to leave unemployment earlier. In this section we highlight the relation between the willingness and the exit probability from unemployment for a sample of Spanish unemployed workers.

The theory about this hazard rate and the reduced-form techniques used to estimate it are both well known. Job search theory tells us that this hazard is the instantaneous probability of receiving an offer times the probability of this offer being acceptable, that is, offered wage being larger than the reservation wage. There are many estimations of this hazard for the Spanish economy.[9] But in this paper we have a new variable which is related to reservation wages: the expressed willingness to work for lower wages. If the willingness to work for lower wages is negatively related with reservation wages, we should expect higher exit probability among those with a positive attitude than others. However, since the willingness also depends on the frequency of offers one receives (more offers, less willing to work for a reduced wage), we cannot obtain a clear prediction for the influence of this variable on the hazard of leaving unemployment. We also have to remember the presence of unobserved characteristics (income, skills, ...) which can complicate the estimation of the relation between the worker's probability of leaving unemployment and the willingness. To take this into account, we will estimate jointly the hazard of leaving unemployment and the willingness indicator, and at the same time we consider in both equations the presence of unobserved heterogeneity

Hence, we estimate these two conditional probabilities:

[9]Some examples are Ahn and Ugidos (1995), Bover, Arellano and Bentolila (1997), Cebrián *et al.* (1996) or Garcia-Perez (1997).

$$\begin{aligned} h_u(t,\upsilon) &= \Pr\left(T_u = t \mid T_u \geq t, b(t), x(t), r(t,\upsilon), \upsilon\right) \\ &= \Phi\left[\varphi_0(t) + \varphi_1(t)b(t) + \varphi_2(t)x(t) + \varphi_3(t)r(t,\upsilon) + \upsilon\right] \end{aligned}$$

$$\begin{aligned} r(t,\upsilon) &= \Pr\left(T_r = t \mid T_r \geq t, b(t), z(t), \upsilon\right) \\ &= \Phi\left[\beta_0(t) + \beta_1(t)b(t) + \beta_2(t)x(t) + \psi\upsilon\right] \end{aligned}$$

That is, the hazard of leaving unemployment, $h_u(t,\upsilon)$, will depend not only on unemployment duration, T_u, observed heterogeneity, $b(t)$ and $x(t)$, and the willingness indicator, $r(t,\upsilon)$,but also on unobserved heterogeneity. The effect of unobserved heterogeneity is captured directly through the additive term on the hazard rate, υ, and also indirectly, through the willingness indicator, $r(t,\upsilon)$. As before, the unobserved heterogeneity variable is modeled with a distribution function with two mass points, υ_1 and υ_2, with Pr being the probability of having $\upsilon = \upsilon_1$. The model is estimated under the assumption that $E(\upsilon) = 0$, which is needed for its identification. We estimate another parameter ψ which allows the effect of unobserved heterogeneity to be different between the hazard rate and the willingness indicator. Finally, the $\varphi_i(t)$ and $\beta_i(t)$ are time-varying parameters to be estimated.

We use a sample of Spanish workers who have been unemployed in some period between 1992 and 1997. The main characteristics of the estimation sample are in Table 6. We also show Kaplan-Meier estimates in Table 7. The unemployment duration is measured in quarters since we have only quarterly information on the willingness. In Table 7 we can see that the hazard rate is decreasing with unemployment duration. It is larger for individuals without unemployment benefits and for those who are willing to accept lower wages.

Hence, the previous idea regarding the influence of the willingness on the hazard rate is supported by these descriptive comparisons.

(Table 6, 7)

Now we turn to the multivariate estimation results shown in Table 8. We can observe how the effect of many of the explanatory variables are more or less the same as in the case where we estimate separately the duration of unemployment and a process for the willingness indicator (these results are shown in Appendix B). The estimated hazard is decreasing with unemployment duration and it is higher for workers without unemployment benefits, but this negative effect is reduced as time passes. We also find larger hazard rates for males and for periods of expansion. However, we find some unexpected results. For example, it seems that highly educated workers have lower probabilities of leaving unemployment and that those living in regions with more unemployment have a higher hazard rate. The effect of the willingness indicator changes from positive when considered as exogenous to negative when it is considered endogenous, but it is not significant in both cases. This result suggests that even after considering endogenous willingness there remain unobserved characteristics which are leading to a negative estimated effect of the willingness on the probability of leaving unemployment. Furhter exploration of this problem is warranted in future studies. (Table 8)

The other interesting result is that, once we control for unobserved heterogeneity and endogeneity of the willingness indicator, we obtain a huge reduction in the duration dependence in the hazard rate. This result confirms the theoretical suspicion that the negative duration dependence is overestimated when unobserved heterogeneity is not controlled for in the estimation of the unemployment hazard rate. Of course this result needs further analysis, but we think it is a signal that this type of variables reflecting subjective atti-

tudes may be a good proxy for the type of unobserved heterogeneity which may be present in unemployed workers' samples. Thus, taking into account of this heterogeneity and controlling properly for their effects, we can obtain estimations where the hazard rate does not decrease so rapidly as has been estimated before.

5 Conclusions

This paper examined unemployed workers' expressed willingness to accept a job with a wage lower than the one adequate for their qualification, and its relationship with the duration of unemployment in Spain.

According to job search models, reservation wages decrease as the worker's unemployment spell lengthens. Therefore, one should observe unemployed workers to be more willing to accept lower wages as their spells become longer.

First, we analyzed which personal and economic characteristics determine the willingness to work for a reduced wage using pooled cross-section data. The main results are that young workers, those less educated and those living in regions with high unemployment rates show a more positive attitude towards accepting lower wages while the college educated and married women with a working husband show substantially more negative attitudes. Surprisingly, unemployment benefits have no effects. These results suggest the presence of important unobserved factors which warrants the analysis of longitudinal data in order to control for individual heterogeneity.

In the second part, we studied the duration until one changes her attitude from negative to positive by using a discrete-time duration model. The main results are that the hazard for this variable shows a strong negative duration dependence, which indicates that, conditional on remaining unemployed, the

probability of changing the attitude decreases with unemployment duration. On the other hand, the exhaustion of unemployment benefits indeed shows significant positive effects in the transition probability of the attitude from negative to positive. This effect is even larger when unobserved heterogeneity is controlled for.

Regarding the effects of this attitude on the exit probability from unemployment, we find that the expressed willingness to work for lower wages has no significant effects on the exit probability from unemployment. This result suggests that even after controlling for the endogenous willingness there remain unobserved characteristics which are positively correlated with the willingness but affect negatively the probability of leaving unemployment. Furhter exploration of this problem is warranted in future studies. Another interesting result is that negative duration dependence in the hazard rate of leaving unemployment is indeed reduced once the effect of the unobserved heterogeneity is correctly taken into account.

References

[1] Ahn N. and S. de la Rica (1997), "The Underground Economy in Spain: an Alternative to Unemployment?", *Applied Economics*, 29, 733-743.

[2] Ahn N., S. de la Rica, and A. Ugidos (1999), "Willingness to Move for Work and Unemployment Duration in Spain", *Economica* 66, 335-357.

[3] Ahn N. and A. Ugidos (1995), "Duration of Unemployment in Spain: Relative Effects of Unemployment Benefit and Family Characteristics", *Oxford Bulletin of Economics and Statistics*, 57(2), 249-264.

[4] Atkinson A.B. and J. Micklewright (1991), "Unemployment Compensation and Labor Market Transitions: A Critical Review.", *Journal of Economic Literature*, 29, 1679-1727.

[5] Bentolila S. and O. Blanchard (1990), "Spanish Unemployment.", *Economic Policy*, 10, 233-281.

[6] Blanchard, O. *et al.* (1990), *Spanish Unemployment: Is There a Solution?*, Center for Economic Policy Research.

[7] Bover, O., M. Arellano and S. Bentolila (1997), "Unemployment Duration, Benefit Duration and the Business Cycle", CEMFI Working Paper 9717.

[8] Cebrián, I., C. García, J. Muro, L. Toharia and E. Villagómez (1996), "Protección Social y Acceso al Empleo. Un Estudio de los Perceptores de Prestaciones por Desempleo", Colección de Estudios del CES, N°34.

[9] Devine T.J. and N.M. Kiefer (1991), *Empirical Labor Economics: The Search Approach*, Oxford University Press: New York.

[10] Garcia-Perez, J. I. (1997), "Las Tasas de Salida del Empleo y el Desempleo en España (1978-1993)", *Investigaciones Económicas,* XXI(1), 29-53.

[11] Garcia-Perez, J. I. (1998), "Non-stationary Job Search with Firing: a Structural Estimation", CEMFI Working Paper 9802.

[12] Heckman, J. and B. Singer (1984), "A Method for Minimizing the Impact of Distributional Assumptions in Econometric Models for Duration Data", *Econometrica*, 52, 271-320.

[13] Jenkins, S. (1995), "Easy Estimation Methods for Discrete-Time Duration Models", *Oxford Bulletin of Economics and Statistics*, 57 120-138.

[14] Lancaster, T.(1990), *The Econometric Analysis of Transition Data*, Cambridge University Press, Cambridge.

[15] Meyer B.D. (1990), "Unemployment Insurance and Unemployment Spells", *Econometrica*, 58, 757-783.

[16] Mortensen, D. (1986), "Job Search and Labor Market Analysis", in: Ashenfelter, O. C. and Layard, R., (eds.), *Handbook of Labor Economics*, North-Holland, Amsterdam (Vol. II), 849-919.

[17] Stancanelli, E. (1999), "Do the rich stay unemployed longer? An empirical study for the UK", *Oxford Bulletin of Economics and Statistics*, 61, 295-314.

[18] Van den Berg, G. J. (1990), "Nonstationarity in Job Search Theory", *Review of Economic Studies,* 57, 255-277.

Table 1
Logit Regression for Willingness Attitude (Yes=1; No=0)
(Data: Pooled Cross-Section EPA 1992:I-1996:I)

Variable	Males (N=5,023)		Females (N=3,233)	
	Mean	Odds Ratio	Mean	Odds Ratio
Spouse, head works			0.26	0.61 (2.42)
Spouse, head unemp.			0.09	1.08 (0.31)
Spouse, head inactive			0.03	0.94 (0.21)
Child, head works	0.23	0.97 (0.16)	0.28	1.07 (0.26)
Child, head unemp.	0.06	0.73 (1.50)	0.05	0.98 (0.06)
Child, head inactive	0.22	1.29 (1.76)	0.18	1.15 (0.56)
Others	0.06	1.06 (0.30)	0.04	0.73 (1.01)
Age 16-19	0.13	1.30 (1.74)	0.17	1.43 (2.03)
Age 20-24	0.22	0.96 (0.35)	0.26	1.01 (0.04)
Age 25-29	0.22	1.01 (0.13)	0.22	1.00 (0.03)
Age 45+	0.15	0.58 (3.83)	0.08	0.64 (2.11)
No Education	0.12	1.35 (2.18)	0.09	1.21 (1.00)
Primary Education	0.37	1.03 (0.38)	0.22	1.22 (1.56)
Vocational Education	0.11	0.92 (0.67)	0.16	0.75 (2.27)
Jr. College Education	0.02	0.48 (3.31)	0.06	0.37 (5.73)
University Education	0.03	0.27 (6.76)	0.06	0.53 (3.36)
Receiving Unempl. Benefits	0.36	0.83 (1.46)	0.23	0.81 (1.48)
Only Registered	0.53	1.08 (0.67)	0.61	1.06 (0.48)
Household Size	4.41	1.08 (1.36)	4.28	0.96 (0.62)
# workers	0.77	1.00 (0.00)	0.99	1.19 (1.73)
# unemployed	1.57	1.09 (1.04)	1.49	1.22 (1.77)
# inactive	1.23	0.87 (1.76)	0.91	0.99 (0.10)
Children 0-6 years	0.15	0.85 (1.53)	0.18	1.12 (0.89)
Children 7-15	0.32	0.92 (1.10)	0.34	1.06 (0.55)
Children 16-21	0.22	0.97 (0.38)	0.18	1.10 (0.89)
Log Unemp. Rate	2.95	1.57 (3.19)	2.90	1.52 (2.56)
Log Vacancy Rate	3.60	1.08 (0.45)	3.56	1.29 (1.26)
Log Real Wage	6.73	1.57 (0.85)	6.73	1.00 (0.00)
MODEL CHI-SQUARE		312.53		196.63

Notes: Unsigned asymptotic t-statistics in parentheses. Also included (but not reported) are region and year dummies. The reference category is a head of household with secondary education and aged 30 to 45.

Table 2
Workers Willing to Work for a reduced wage by Unemployment Duration (Longitudinal EPA 1992:I-1996:I)

Answer in the ith Interview	Number of Quarters Unemployed (starting from the 1^{st} interview)					
	1	2	3	4	5	6
1^{st}	75.4	69.9	67.7	66.4	62.1	63.9
2^{nd}		69.6	70.2	68.4	63.6	67.1
3^{rd}			71.7	68.7	65.2	68.5
4^{th}				72.3	70.7	68.8
5^{th}					70.9	71.6
6^{th}						79.6
Average	75.4	69.8	68.9	69.9	66.5	69.9
Observations	3,084	1,801	1,299	699	472	1,706

Table 3
Transition Matrix Over Three Months Intervals
(Data: Longitudinal EPA 1992:I - 1996:I.)

Attitude in the First Interview	Attitude in the Second Interview	
	Positive	Negative
Positive	1,758 (94%)	108 (6%)
Negative	121 (21%)	459 (79%)

Table 4
Main Characteristics of the Sample for the Change-of-attitude Duration Analysis (percentages in brackets)

	Completed Spells		Censored Spells	
Duration (quarters)				
1	272		771	
2	66		309	
3	37		172	
4	14		86	
5	8		238	
Age 16-19	55	(13.85)	187	(11.86)
Age 20-24	90	(22.67)	383	(24.31)
Age 25-29	71	(17.88)	277	(17.64)
Age 30-45	109	(27.45)	459	(29.12)
Age 45+	72	(18.13)	269	(17.06)
No Education	98	(24.68)	427	(27.10)
Primary Education	182	(45.84)	672	(42.64)
Vocational Education	74	(18.64)	265	(16.88)
Jr. College Education	23	(5.79)	109	(6.98)
University Education	20	(5.04)	101	(6.43)
Male	234	(58.94)	967	(61.36)
Spouse working	40	(10.07)	212	(13.45)
Spouse unemployed	113	(28.46)	406	(25.76)
Spouse inactive	244	(61.46)	958	(60.78)
With benefits	147	(37.02)	588	(37.31)
TOTAL	397		1,576	

Table 5
Estimation of the Change-of-attitude Hazard Rate with Endogenous Unemployment Benefits
(controlling for unobserved heterogeneity)

Hazard Estimation

Parameter	Coefficient	t-ratio
Constant	-1.253	8.16
Dur 2	-0.503	5.33
Dur 3	-0.687	4.77
Dur 4	-1.083	4.91
Dur 5	-1.345	4.89
High Education	-0.352	2.09
Duration×High Education	0.142	1.79
Young	-0.223	1.87
Duration×Young	0.098	1.63
Spouse Working	-0.330	1.78
Duration×Spouse Work.	0.126	1.42
Male	-0.127	1.08
Duration×Male	0.069	1.18
Benefits	-0.318	2.05
$\triangle$GDP	-0.030	1.64
Regional Unempl. Rate	0.014	3.10
Second Quarter	-0.014	0.16
Third Quarter	0.194	2.36
Fourth Quarter	0.025	0.30
Unobserved Heterogeneity coeficients:		
Pr	0.742	1.70
η_1	0.217	0.91
η_2	-0.626	

Table 5 (Cont.)
Estimation of the Change-of-attitude Hazard Rate with Endogenous Unemployment Benefits
(controlling for unobserved heterogeneity)

Process for Benefits Receipt

Parameter	Coefficient	t-ratio
Constant	-1.589	7.37
Dur 2	1.271	12.64
Dur 3	1.458	10.32
Dur 4	1.455	8.40
Dur 5	0.977	5.68
Low Education	0.129	1.79
Young	-0.132	1.61
With experience	1.550	8.45
Male	0.240	2.93
$\triangle$GDP	0.036	1.26
$\triangle$ Regional Unempl. Rate	0.028	1.37
# unemployed	-0.055	1.23
Children 0-6 years	-0.147	2.47
Household Size	0.032	1.53
Spouse	-0.286	2.58
Son	-0.633	6.18
Other relative	-0.489	3.30

Note : Log-likelihood = -2,732.55, Number of observations = 4,050.

Table 6
Main Characteristics of the Sample for the Unemployment Duration Analysis (percentages in brackets)

	Completed Spells		Censored Spells	
Quarters				
1	2,091		1,001	
2	1,178		491	
3	852		355	
4	432		185	
5	281		2,089	
Age < 30	2,859	(13.85)	2,326	(56.44)
Age 30-45	1,352	(22.67)	1,272	(30.87)
Age 45+	623	(17.88)	523	(12.69)
No Education	1,489	(30.80)	1,058	(25.67)
Primary Education	2,283	(47.23)	1,791	(43.46)
Vocational Education	684	(14.15)	752	(18.25)
Jr. College Education	237	(4.90)	313	(7.59)
University Education	141	(2.92)	207	(5.02)
Males	3,377	(68.86)	2,325	(56.42)
Spouse working	723	(14.96)	555	(13.46)
Spouse unemployed	928	(19.20)	1,075	(26.08)
Spouse inactive	3,183	(65.85)	2,491	(60.45)
With benefits	2,083	(43.09)	1,750	(42.46)
Willing to accept	3,201	(66.22)	2,830	(68.67)
TOTAL	4,834		4,121	

Table 7
Kaplan-Meier Hazard Rates for the Duration in Unemployment
(percentages)

Quarter	Sample	With Unempl. Benefits	Without Unempl. Benefits	Willing to accept	Not willing to accept
1	23.35	18.86	26.71	23.55	23.07
2	20.09	18.53	21.22	20.82	18.66
3	20.31	20.01	20.49	21.32	17.96
4	14.46	15.16	14.10	15.05	12.95
5	11.85	12.48	11.57	12.55	9.89

Table 8
Estimation of the Unemployment Hazard Rate with Endogenous Willingness Indicator
(controlling for unobserved heterogeneity)

Hazard Estimation

Parameter	Coefficient	t-ratio
Constant	-1.354	3.44
Dur 2	-0.051	1.48
Dur 3	0.035	0.64
Dur 4	-0.121	1.47
Dur 5	-0.194	1.74
Without Studies	0.216	4.63
Incompleted Primary Education	0.195	4.52
Complete Primary Education	0.108	2.22
Benefits	-0.267	10.11
Willingness	-0.062	1.50
Male	0.402	12.89
$\triangle$GDP	0.028	2.38
Regional Unempl. Rate	0.004	2.03
$\triangle$Regional Unempl. Rate	-0.019	2.33
Second Quarter	0.034	1.18
Third Quarter	-0.007	0.22
Fourth Quarter	-0.100	3.40
Unobserved Heterogeneity coeficients:		
Pr	0.202	16.14
υ_1	-1.712	0.96
υ_2	0.434	
ψ	0.095	0.84

Table 8 (Cont.)
Estimation of the Unemployment Hazard Rate
with Endogenous Willingness Indicator
(controlling for unobserved heterogeneity)

Process for Willingnes Indicator

Parameter	Coefficient	t-ratio
Constant	-0.689	9.59
Dur 2	-0.981	30.10
Dur 3	-1.288	27.59
Dur 4	-1.391	22.63
Dur 5	-1.500	19.72
Benefits	-0.036	1.24
Without Studies	0.239	5.56
Incomplete Primary Education	0.161	4.06
Complete Primary Education	0.138	3.03
Age < 30	0.137	3.74
Age 30-45	0.144	3.67
$\triangle$GDP	0.048	7.01
Regional Unempl. Rate	0.022	12.02
# unemployed without benefits	0.047	2.73
Spouse unemployed	0.118	2.87
Second quarter	-0.033	1.04
Third quarter	-0.068	2.12
Fourth quarter	0.010	0.32
Spouse	-0.108	2.12

Note : Log-likelihood = -20,044.28, Number of observations = 24,369. The reference category is an unemployed worker with secondary or more studies.

Appendix A

Table A1
Estimation of the Change-of-attitude Hazard Rate
(not controlling for unobserved heterogeneity)

Parameter	Coefficient	t-ratio
Constant	-1.245	9.18
Dur 2	-0.494	5.67
Dur 3	-0.676	5.03
Dur 4	-1.061	5.29
Dur 5	-1.312	4.82
High Education	-0.335	2.07
Duration×High Education	0.139	1.87
Young	-0.179	1.66
Duration×Young	0.095	1.75
Spouse Working	-0.312	1.86
Duration×Spouse Work.	0.120	1.57
Male	-0.144	1.31
Duration×Male	0.069	1.25
Benefits	-0.161	2.69
△GDP	-0.028	1.71
Regional Unempl. Rate	0.013	3.25
Second Quarter	-0.014	0.18
Third Quarter	0.189	2.45
Fourth Quarter	0.023	0.29
Log-likelihood	-1,237.13	
No. of observations	4,050	

Note : *High Education* means secondary school or higher and *Young* means less than 30 years old.

Appendix B

Table B1
Estimation of the Unemployment Hazard Rate and the Willingness Indicator
(without controlling for unobserved heterogeneity)

Hazard Estimation

Parameter	Coefficient	t-ratio
Constant	-1.058	19.94
Dur 2	-0.116	4.83
Dur 3	-0.116	4.27
Dur 4	-0.341	10.52
Dur 5	-0.482	12.97
Without Studies	0.167	4.61
Incompleted Primary Education	0.159	4.67
Complete Primary Education	0.090	2.29
Benefits	-0.177	9.02
Willingness	0.030	1.48
Male	0.302	15.05
$\triangle$GDP	0.024	2.46
Regional Unempl. Rate	0.003	1.67
$\triangle$Regional Unempl. Rate	-0.013	1.95
Second Quarter	0.029	1.11
Third Quarter	-0.008	0.32
Fourth Quarter	-0.089	3.42

Note : Log-likelihood = -11,818.19, Number of observations = 24,369. The reference category is an unemployed worker with secondary or more studies.

Table B1 (Cont.)
Estimation of the Unemployment Hazard Rate and the Willingness Indicator
(without controlling for unobserved heterogeneity)

Process for Willingnes Indicator

Parameter	Coefficient	t-ratio
Constant	-0.682	9.53
Dur 2	-0.997	31.32
Dur 3	-1.320	29.44
Dur 4	-1.441	25.06
Dur 5	-1.563	22.18
Benefits	-0.036	1.27
Without Studies	0.238	5.53
Incomplete Primary Education	0.160	4.05
Complete Primary Education	0.137	3.02
Age < 30	0.140	3.84
Age 30-45	0.147	3.78
$\triangle$GDP	0.047	6.99
Regional Unempl. Rate	0.022	11.89
# unemployed without benefits	0.042	2.41
Spouse unemployed	0.123	2.91
Second quarter	-0.032	1.02
Third quarter	-0.067	2.10
Fourth quarter	0.010	0.32
Spouse	-0.116	2.26

Note : Log-likelihood = -8,255.80, Number of observations = 14,482. The reference category is an unemployed worker with secondary or more studies.

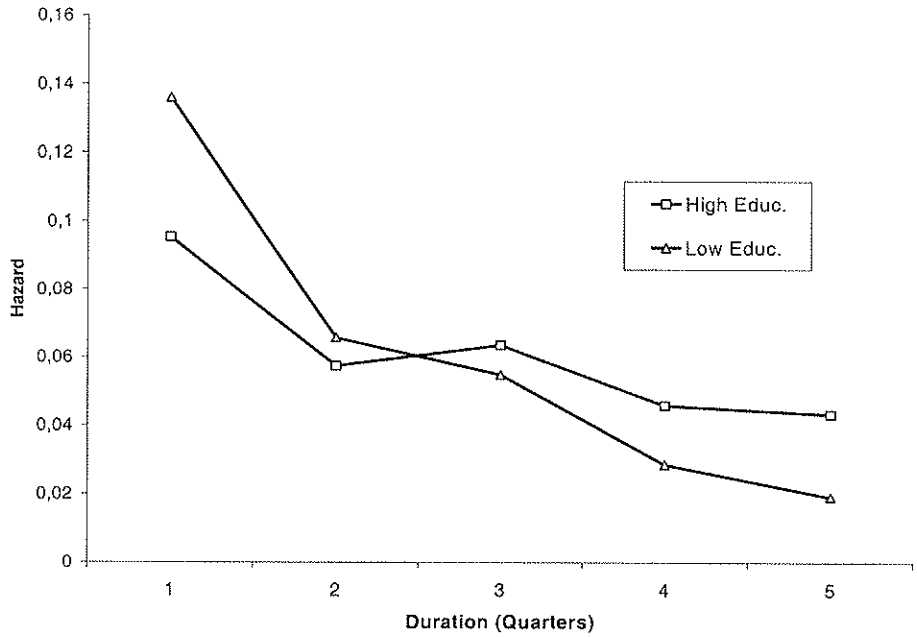
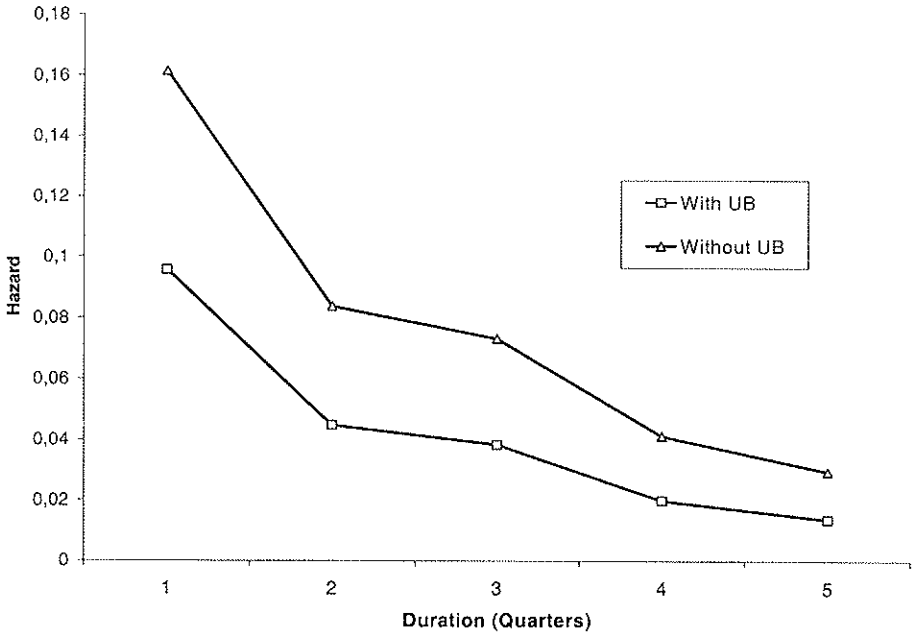


Figure 2: Predicted Hazard and Benefits



RELACION DE DOCUMENTOS DE FEDEA

COLECCION RESUMENES

98-01: "Negociación colectiva, rentabilidad bursátil y estructura de capital en España", **Alejandro Inurrieta.**

TEXTOS EXPRESS

99-02: "Economic implications of the demographic change in Spain: Call for research", **Namkee Ahn.**
99-01: "Efectos macroeconómicos de la finalización de las ayudas comunitarias", **Simón Sosvilla-Rivero y José A. Herce.**

DOCUMENTOS DE TRABAJO

99-20: "Unemployment duration and workers' wage aspirations in Spain", **Namkee Ahn y J. Ignacio García-Pérez.**
99-19: "El patrón inversor de los establecimientos industriales de la Comunidad de Madrid", **Ana Goicolea, Omar Licandro y Reyes Maroto.**
99-18: "Crecimiento óptimo, depreciación endógena y subutilización del capital", **Omar Licandro, Luis A. Puch y J. Ramón Ruiz Tamarit.**
99-17: "Panel data and tourism demand. The case of Tenerife", **F. J. Ledesma-Rodríguez, M. Navarro-Ibáñez y J. V. Pérez-Rodríguez.**
99-16: "Redistribution in the Spanish pension system: An approach to its life time effects", **Joan Gil y Guillem López-Casasnovas.**
99-15: "The plutocratic bias in the CPI: Evidence from Spain", **Javier Ruiz Castillo, Eduardo Ley y Mario Izquierdo.**
99-14: "Local responses to a global monetary policy: The regional structure of financial systems", **Juan J. de Lucio y Mario Izquierdo.**
99-13: "The importance of the embodied question revisited", **Raouf Boucekkine, Fernando del Río y Omar Licandro.**
99-12: "Convergencia en tasas de inflación en la Unión Europea", **Irene Olloqui y Simón Sosvilla-Rivero.**
99-11: "Provisión óptima de suelo urbano para usos no lucrativos. El valor de las zonas verdes". **Pere Riera.**
99-10: "Liberalización del mercado del suelo. Rigideces y competencia en el sistema urbanístico español", **Pere Riera.**
99-09: "A note on the changing relationship between fertility and female employment rates in developed countries", **Namkee Ahn y Pedro Mira.**
99-08: "The future of pension systems in Europe. A reappraisal", **Michele Boldrin, Juan José Dolado, Juan F. Jimeno y Franco Peracchi.**
99-07: "On the profitability of technical trading rules based on artifitial neural networks: Evidence from the Madrid stock market", **Fernando Fernández-Rodríguez, Christian González-Martel y Simón Sosvilla-Rivero.**
99-06: "Job bust, baby bust: The Spanish case", **Namkee Ahn y Pedro Mira.**
99-05: "Technical analysis in the Madrid stock exchange", **Fernando Fernández-Rodríguez, Simón Sosvilla-Rivero y Julián Andrada-Félix.**
99-04: "Convergencia en precios en las provincias españolas", **Irene Olloqui, Simón Sosvilla-Rivero, Javier Alonso.**
99-03: "Inversión y progreso técnico en el sector industrial de la Comunidad de Madrid", **Ana Goicolea, Omar Licandro y Reyes Maroto.**
99-02: "Reducing Spanish unemployment under the EMU", **Olivier J. Blanchard y Juan F. Jimeno.**