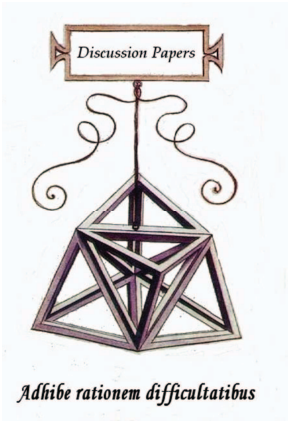
Discussion Papers
Collana di
E-papers del Dipartimento di Scienze Economiche – Università di Pisa



Lorenzo Corsini

On Wealth, Unemployment Benefits and Unemployment Duration: some Evidence from Italy

Discussion Paper n. 119

2011

Discussion Paper n. 119, presentato: **Settembre 2011**

Indirizzo dell'Autore:

Dipartimento di scienze economiche, via Ridolfi 10, 56100 PISA – Italy

tel. (39 +) 050 2216 220

fax: (39 +) 050 598040

Email: lcorsini@ec.unipi.it

On Wealth, Unemployment Benefits and Unemployment Duration: some Evidence from Italy

Lorenzo Corsini*
University of Pisa

Abstract

We analyse the role that wealth and unemployment benefits have on unemployment duration and try to tackle the different mechanisms through which they may interact. In particular, we investigated on whether liquidity constraints (which are influenced both by wealth and benefits) are affecting negatively search effort and thus unemployment duration and whether the benefits eligibility criteria, requiring active search could produce incentives to find a job. Using a sample of newly unemployed from Italy in 2007, we perform estimations of Cox hazard models and assess what variables are important in determining unemployment duration. Our analysis highlights three relevant features. 1) Benefits have a mixed effect on duration: initially they provide incentives to actively search and increase re-employment probability, as the eligibility criteria impose certain search requirements and benefits are associated to re-employment services and counseling. However, with time, the mitigation of liquidity constraints takes over and they increase duration. 2) Household wealth, reducing liquidity constraints, seems to increase duration. 3) We find interactions between benefits and wealth: individuals from richer households have less liquidity constraints and therefore the mitigating effect of benefits on liquidity constraints is less relevant and, in fact, we do not find evidence that, for these individuals, benefits increase unemployment duration.

Keywords: Unemployment Insurance; Household Wealth; Unemployment Duration; Duration Models.

JEL codes: J64, J65, D31

1 Introduction

Economics theory tells us that unemployment benefits affect unemployment duration and empirical evidence confirms, mildly, this assertion. In particular, job

*Lorenzo Corsini, Department of Economics, University of Pisa, Via C. Ridolfi, 10, 56124 Pisa, Italy. Tel: +39 0502216220; E-mail: lcorsini@ec.unipi.it.

search theory has analysed the relationship between unemployment duration and unemployment insurance (UI) schemes and, at a basic level, has suggested that benefits induce longer unemployment duration. This positive relationship is obtained through the reservation wages, which are increasing in the level of benefits, and through the search effort, which is decreasing in benefits (see Rogerson et al. 2005 for an analytical discussion of these effects). Clearly, higher reservation wages reduce the number of acceptable job offers while lower search effort reduces the rate of arrival of the offers: in the end both these effects increase the time spent in unemployment and explain the positive relationship between benefits and duration. In any case, search theory has gone even deeper and has acknowledged that UI schemes are, in reality, more complex than this. In fact, actual UI schemes introduce some eligibility criteria that are necessary to receive income support and they usually require to actively search for a job and to devise a plan (together with employment centres or similar institutions) which determines which steps are to be taken to search more effectively. Therefore, benefits schemes also give incentive to search more actively and more effectively for jobs and might also reduce[1] unemployment duration. Moreover, another common eligibility criterion is the necessity of having worked immediately before starting to receive the benefits: this provides further incentives to search and accept jobs so that, in the future, individuals are re-entitled to receive UI (for a theoretical discussion of the re-entitlement effect see Mortensen 1977, for evidence of its relevance see Ortega and Rioux 2010). Even from an empirical perspective, the relationship between benefits and unemployment duration appears to be not so clean cut: in a popular survey on this subject, Atkinson and Micklewright (1991) conclude that the evidence is mixed and, all things considered, benefits might affect positively unemployment duration but their effect is, at most, feeble.

Even if we focus only on the effects that link UI to longer unemployment duration, it should be understood that there are at least two different reasons that relate benefits to reservation wages and search effort: the first is a moral hazard argument, the second is a liquidity constraints argument. According to the first, unemployed workers are basically paid for being idle and only as long as they are idle (even if some eligibility criteria may force workers to actively search for

[1]Some empirical studies have focused on the effect of eligibility criteria on search effort and unemployment duration. Those studies are often based on field experiments and perform causality analyses distinguishing between treated/non treated groups, trying to assess whether the criteria imposed to be eligible for benefits affect or not search behaviour. The conclusions of these studies are mixed: Klepinger et al (2002) perform a causality analysis using data from Maryland UI work-search demonstration (a plan that randomly assigned benefits recipients to different search criteria) and show that stricter criteria improved search efforts and reduced unemployment duration. Somehow differently, Ashenfelter et al. (2005) exploit differences in the eligibility criteria of different American states (Connecticut, Massachusetts, Virginia and Tennessee) to conduct an experiment and find that stricter search criteria do not affect sensibly the access to benefits. Manning (2009) uses difference in differences estimations to capture the treatment effect on unemployment duration, using the change of unemployment benefits regulation that happened in UK in 1996: his results indicates that criteria affect the access to claims but stricter criteria discourage workers to effectively meet the search requirement and thus do not facilitate the transition to employment.

a job). Thus, workers may prefer to postpone their search and refuse job offers to obtain the maximum they can from this system (see Kruger and Meyer 2002 and Gruber 2007 for a deeper discussion of this aspect). The second argument is instead related to liquidity constraints and to the fact that unemployed workers are largely constrained in their consumption. This prevents proper consumption smoothing and greatly reduces their utility: in these circumstances workers are eager to prevent the fall in consumption and are ready to accept any job offers they receive and to put great effort in search. It is clear that unemployment benefits mitigate liquidity constraints and allows workers to stay closer to their optimal consumption path without having to accept the very first job offer they receive (for analyses of the role of benefits in affecting consumption smoothing see Bloemen and Stancanelli 2005) : this increase unemployment duration. The distinction between moral hazard and liquidity constraint is particularly relevant: in fact if duration is increased because of the former, we move away from a social optimal situation (with unemployed workers basically acting as parasites) but if it is the latter argument that is relevant, then unemployment benefits increase social welfare allowing a better consumption smoothing. This argument also brings forth the consideration that wealth, and possibly household wealth, might strongly affect the degree of liquidity constraints and through it, unemployment duration. Thus, it is possible that unemployed individuals living in households of different wealth (and under different financial stress) may exhibit differences in terms of search effort and of reservation wage and a similar variety of pattern may exist also in the effect of unemployment benefits. This aspect has received some attention but has not been fully assessed yet and it will be the focus of this paper. Among previous works that explored this issue, Bloemen and Stancanelli (2001) estimate the effects of wealth on reservation wage and find it to be positive so that re-employment probability is negatively affected by wealth. Another analysis about the role of wealth on the transition from unemployment to employment is contained in Bloemen (2002) where a proxy variable for wealth is computed and its effect on the probability of obtaining a job is tested. However these analyses do not focus directly on the relationship between wealth and unemployment duration and do not investigate on possible interactions between benefits and wealth. While not directly focusing on wealth, Pellizzari (2006) highlights how the effect of unemployment benefits may be influenced by other concurrent welfare schemes, further indicating the relevance of liquidity constraints in unemployment duration. The role of wealth on benefits has been tackled more closely in the works by Chetty (2005 and 2008, with the latter being an extend version of the former): in them the author tries to use evidence from US to disentangle moral hazard and liquidity constraint effects that UI has on unemployed workers. To do that, cox hazard models are used to perform estimations for different groups of people, which differs but for the presence or absence of liquidity constrains. An estimation using data on lump sum severance payment only is also used: since no moral hazard effect can derive from this kind of payments, those data are used to explicitly focus on liquidity constraints: the conclusions seem to indicate that the liquidity constraint motive is more relevant than the moral hazard one. On a similar topic, Card,

Chetty and Weber (2007) use a regression discontinuity approach on Austrian data and try to evaluate the effect of lump sum benefits and of maximal potential duration of benefits on the search behaviour and unemployment duration, where the discontinuity stems from the eligibility criteria for the unemployment benefit scheme in Austria. Since the effect of severance payment and of maximum duration appears to be similar, they conclude that liquidity constraints motive is more relevant than the moral hazard one (which should actually be absent in the case of the severance payment).

Our paper tries to contribute on this line of research starting from the considerations on the role of liquidity constraints and moral hazard and extending them to include the role that households' wealth has in the determination of unemployment duration. In fact, household wealth is clearly related to the degree of liquidity constraints experienced by individuals. Therefore we believe that unemployed workers living in richer households should experience better financial condition and should feel less pressure to search for a job or to accept any offer they might receive: thus, all things being equal, wealthier unemployed should experience longer unemployment duration. The inclusion of wealth in the analysis produce also two other consequences: first, it allows investigating the effective role of liquidity constraints in determining duration and second, it might generate interaction with unemployment benefits. In fact for wealthier recipients, benefits should not be so important in mitigating the liquidity constraints and thus should produce less effect on duration. The existence of an interaction of wealth and benefits is particularly important when designing actual UI scheme and should be taken into account for policy indications.

Our investigation will focus on the Italian case, using data on employment, income and wealth for the year 2007 from the EU-SILC survey. To obtain a more homogenous group of observations, we focus only on workers that have just become unemployed so that the duration of unemployment before the period of observation is the same (being equal to zero) for all the individuals (for an example of work that use this same strategy see Petrongolo 2001). We perform a survival analysis for this kind of unemployed workers (where the non-survival condition is actually finding a job) and we use Cox hazard models to estimate the determinants of duration of unemployment, trying to disentangle the role of unemployment scheme and of household wealth and also searching for the presence of interactions between benefits and wealth and financial conditions. We use three main variables to assess the household wealth and financial condition: the payment of interests for mortgage, the amount of taxes on wealth (which is a proxy for actual wealth) and the self-assessed degree of economic problems within the household (which, in the database, is obtained from the answer to a question on whether the household was able to make ends meet). We end up having three variables which cover aspects that are different, but still essential, in determining the financial stress and household wealth: an accurate measure of financial pressure (mortgage to be repaid), a proxy for household actual wealth (tax on wealth) and the subjective perception of the economic problems. In truth, while taxes on wealth might not perfectly proxy wealth, they have, on the other side, a very useful property: in fact this variable is a

very good proxy of the "recorded" (and observable) wealth so that using it is particularly useful to formulate some policy indications.

The results we obtain are interesting both in regards to the effect of unemployment benefits and to the role of households' wealth. In particular, benefits appear to have a mixed effect on duration: at first they reduce it, something which is probably due to the search requirement they impose and to the employment services to which they are related. However, as time passes and after these immediate required are fulfilled, their effect reverts and benefits end up in reducing the probability of finding a job: this indicate that, with time, liquidity constraints and moral hazard effects takeover to the initial boost in the quantity and quality of the search effort.

Also wealth appears to be important in determining duration and we find that individuals living in richer households seem to experience longer unemployment duration: this highlights the importance of the liquidity constraints motive. We also detect sign of a complex interaction of wealth with benefits: in fact, individuals belonging to households of different wealth appear to react differently to unemployment benefits and in particular the effect of benefits is milder and in some case non-significant for individuals from households that are better off.

The work is organized as follows: in section two we give a brief description of the Italian unemployment insurance scheme, in section three we describe the data we use in the analysis, in section four we perform the empirical analysis and discuss possible interpretations of the results and in section five we conclude.

2 The Italian unemployment insurance scheme

According to the UI scheme (in the year 2007) unemployed workers in Italy are entitled to receive ordinary unemployment benefits that amounts to 50% of the average wage computed during the 3 months before losing the last job. Standard maximum duration is 6 months but workers receive lower benefits (40% of wage) during the 7th. Workers whose age is above fifty receive benefits also after the 7th month for a total maximum of 10 months (but during the tenth month the benefits are 30% of wage). Eligibility criteria dictate that to be entitled to benefits workers should: a) have not voluntarily left the last job, b) have hold a job during the last 2 years, c) have paid contributions to social security for at least 52 weeks during the last two years and d) have declared to the local employment centre the wiliness to work and have agreed with the employment centre a specific program to search for jobs.

There are two other Italian specific schemes that are worth to mention: Cassa Integrazione Guadagni (CIG) and mobility unemployment benefit. The CIG is given to temporary laid off workers or to workers that are forcedly working for reduced hours. This scheme is reserved to private sector employee in some selected industries (most of the industrial sectors are covered) and has to be agreed between firms and INPS (the Italian social security agency) that authorizes it in the case of unfavourable economic conditions. Workers at the

CIG receive 80% of gross wage for the work time lost. In any case, workers at the CIG retain their job contract (their contract is not terminated) and are not classified as unemployed: thus, even if they receive a form of income support, they do not enter our analysis.

Mobility unemployment benefits are given to workers previously on CIG whose firms have proceeded in collective dismissals or have gone bankrupt. In the former case, if the firm that has laid off the workers hire new employees, it is forced to hire workers currently on mobility unemployment benefits. These workers are therefore slightly more likely to obtain a new job with respect to other workers. The duration of these benefits is particularly long (from 12 to 48 months, depending on the sector and the geographical area) and they receive 80% of their gross wage. In any case the extent of this program is not particularly large with only 3% of unemployed workers receiving this kind of benefits in 2007 according to the Bank of Italy survey on household income and wealth (SHIW).

3 Data description

Our analysis relies on Italian data from the EU-SILC survey. In particular, we focus on the 2008 survey which contains detailed data on individuals and household in 2007. We use the survey to identify newly unemployed individuals and we perform our analysis on them. We define as newly unemployed a worker that is currently unemployed and that, in the previous months was in paid employment or self-employed. The survey contains the working status for each calendar month and therefore we are able to identify newly unemployed and to compute unemployment duration (in months) for those individuals that end up finding a job. Following EU-SILC survey classification we define unemployed an individual that has specifically declared unemployment to be his status and that has declared to not be currently in paid work nor in self-employment and that does not fall in the following categories: retired, student, military activity or other inactivity. According to EU-SILC classification, individuals on temporary lay off are considered employed if they receive at least 50% of their gross wage and thus, we do not consider unemployed the workers that are on the CIG scheme. In the computation of unemployment duration we also include workers that were still unemployed during December 2007, but their condition results censored as we do not know when and if they end up finding a job. The total number of newly unemployed workers in the survey is 555 with 232 of them finding a job by December 2007. Apart their working status, the survey contains detailed information about the demographic characteristics (age, gender, marital status, education, region of dwelling and so on) and on the economic characteristics both of the individual and of the household (income from unemployed benefits, past unemployment and some measures of the household wealth). The information on income from unemployed benefits takes the form of the total income from ordinary unemployment benefits, mobility benefits and severance payments: we divide this amount for the total months of unemploy-

ment in 2007 to obtain the average monthly benefits.[2]. As we mentioned above, our definition of unemployment does not include workers on CIG benefits (as they receive 80% of their wage): therefore the unemployment income for the individuals we are analysing do not contain any CIG benefit.

The EU-SILC survey also contains some information on household wealth and financial conditions that are useful in our analysis. In particular, as a proxy for the level of household wealth we use the amount of taxes on wealth per household equivalised component[3]. We also use the yearly interests on mortgage (if any) paid and, finally we use some qualitative information on the household economic situation that in the survey took the form of a question on whether the household was able to make ends meet[4] to which the individuals could give six different answers: "with great difficulty", "with difficulty", "with some difficulty", "fairly easily", "easily" and "very easily".

4 Empirical Analysis

In this part we perform an econometrical analysis of the employment duration and try to asses its key determinants. As we stated in previous section, we identified 555 individuals that during the year 2007 became unemployed: however our sample drops to 527 because some individuals had missing variables. In the analysis we use the sampling weights provided by the EU-SILC database. We chose to focus on unemployment entrants only to obtain a more homogenous group and to avoid stock sample bias (see Petrongolo 2001).

In particular, we perform a survival analysis, that is, we estimate the probability that an unemployed worker finds a job and how this probability changes through time, trying to assess how selected covariates affect the transition probability: this procedure is quite standard when dealing with unemployment duration (see Petrongolo 2001 and Pellizzari 2006 for some examples of analysis with similar empirical strategies). Basically, we want to estimate a function $h(t)$ that determines the probability that individuals move from unemployment to employment at time t, conditional to the fact that they were is still unemployed at time t: this is called the hazard function. We can define as $F(t)$ the probability of not being unemployed after t periods and as $S(t) = 1 - F(t)$ the probability of still being unemployed after t period (also known as survival function). Then if we further define $f(t) = F'(t)$ (that is, $f(t)$ is the probability to switch from employed to unemployed at exactly time t) we have:

[2]We also correct for the fact that maximum duration of benefits is seven months (ten for older workers) and benefits are therefore zero after that threshold: this implies that unemployment benefits is a time varying variable.

[3]We use the equivalasing scale provided by EU-SILC. This scale takes into account the age of households components giving higher weight to adults. A full description of the scale can be found in Eurostat (2007).

[4]The exact form of the question present in the EU-SILC questionaire is: "Concerning your household's total monthly or weekly income, with which degree of ease or difficulty is the household able to make ends meet?".

$$h(t) = \frac{f(t)}{S(t)}. \tag{1}$$

To perform our estimation we assume that $h(t)$ takes a specific form that depends on a set of parameters describing it and on a set of covariates that influence the probability of leaving unemployment: the hazard function takes then the form $h(t, \theta, x)$ where θ is a set of parameter to be estimated and x is a vector of explanatory variables. We also assume that the effect of the covariate is the same in each period, an assumption that gives the Proportional Hazard Model, which can be written as:

$$h(t) = h_0(t, \theta_0) \cdot \rho(x, \theta_x). \tag{2}$$

where $h_0(t, \theta_0)$ is known as the baseline hazard function, which only depends on time (and parameters) and where $\rho(x, \theta_x)$ determines the effects of the covariates (which are independent of time t). In the first step of our econometrical analysis we use equation (1) and (2) to obtain, through Cox semi-parametric model, an estimations of the parameters θ_x and this allows us to determine which parameters are relevant in explaining duration. The Cox estimation is semi-parametric in that we do not have to make any assumptions on the exact functional form of $h_0(t, \theta_0)$.

We start our analysis presenting the survival function (figure 1) and the hazard estimates (figure 2a) with the latter representing the conditional probability of finding a job after a given time in unemployment.

[FIGURE 1: Survival Estimate]

[FIGURE 2: Hazard Estimates]

The pattern represented in figure 2a is particularly interesting, as it shows that the conditional probability of finding a job appears to be stable during the initial period, but drastically falls later on: this seems to suggest, at least from a descriptive point of view, the emergence of long term unemployment. In truth, this conclusion is partly different if we examine the conditional probability of finding a job for individuals with and without unemployment benefits (figure 2b). The patterns in figure 2a are quite striking: workers on unemployment benefits have a higher, but declining, hazard rates while the rest of individuals display lower, but constant hazards. Therefore, while the probability of finding a job is initially higher for workers on benefits, this difference get smaller through time and eventually the sign of the effect reverts. This finding, though extremely interesting, creates a problem in the actual estimation of Cox proportional hazard model. In fact, one of the key assumption of this model is that the effect of the covariates is the same through time (that is, the two patterns in figure 2b should be more or less parallel) while figure 2b seems to indicate a vi-

olation of this assumption. To overcome this problem[5] we add another variable which is given by the interaction (product) of unemployment benefits and time: this takes in account the changing through time effect of benefits and solves the problem of non proportionality (see Box-Steffensmeier et al. 2003 for a detailed discussion of this strategy).

The key variables we use in our estimation are the amount of benefits[6], the interaction of benefits with time and the three variables that give account of household wealth and financial conditions: 1) the amount paid for the mortgage, 2) taxes paid on wealth (divided by the equivalised size of households) and 3) a qualitative variable that represents, according to the individuals, whether the household is "having problems in making ends meet". This latter variable takes the form of a dummy which is one if the household is experiencing great difficulty or difficulty in making ends meet. It should be noticed that the use of taxes on wealth as a proxy allows us also to verify to which extent wealth that is actually "recorded" (rather that the exact wealth of a household, something which in practice can be hardly observed) has an impact on unemployment and benefits. This is particular important from a policy point of view because any UI scheme that would include wealth among the eligibility criteria would necessarily relies on a similarly "recorded" variable. Clearly we also add several other control variables, though only age, education and region of origin[7] seem to be relevant, on the contrary other "standard" controls were not significant and, in particular, gender, marital status and household size did not have a statistically significant effect. Finally, to take into account some unobserved characteristics that could make individuals more likely to stay in unemployment we add a variable which measures months spent in unemployment in 2006[8].

Table 1, regression (i), presents the results for estimations of semi-parametric cox models: in this table, a coefficient that is statistically greater than 1 implies that the variable increases the probability (hazard) to find a job, while a coefficient lower than 1 implies the opposite effects. In particular, the coefficients tell us the ratio between the baseline hazard rate and the new hazard rate when the

[5]Apart from the graphical hints of the violation of the assumption of proportionality, we preliminarly performed the test proposed by Grambsch and Therneau (1994) on the residuals from an estimation of the Cox hazard model with all the covariates we are using: the test refused the assumption of proportionality related to (and only to) the unemployment benefits.

[6]As an alternative, we also tried to use replacement rates computed as the amount of monthly benefits divided by the monthly income from labour in previous year. When we tried to use this latter variable we obtained qualitatively identical results. In the end, we resort to not use the replacement rates in the results we present because the income from previous year is not an exact measure of the income immediatly before unemployment and thus we believe to be more correct to use the actual amount of benefits.

[7]In particular we use age and age squared to take into account non linear effect of age. Education enters the regression as a dummy which is one if individuals have at least upper secondary education (ISEC degree 3 or higher) and zero otherwise. The region of origin is expressed as a dummy which is one if individuals comes from south of Italy (which is the less developed part of the country) and zero otherwise. Different measures for education and place of origin were also tried, but these two were the most significant.

[8]Since our sample is made only of newly unemployed, the months spent in unemployment in 2006 necessarily belongs to another spell of unemployment and thus are not allready included in the actual unemployment duration.

new hazard rate is computed allowing for a one unit increase in the independent variable.

TABLE 1: Cox Estimations of Reemployment Probabilities

The results give clear indications: interestingly enough, unemployment benefits have an immediate positive effect on the probability of finding the job (that in the rest of the paper we will call a "direct" effect); apparently the requirement of actively searching and the employment services offered within the UI scheme are the driving forces behind this result. Consequentially, the effects related to liquidity constraints and moral hazard appear to be of second order. However, the interaction between time and benefits has a significant negative effect on transition probabilities: we interpret this an indication that the requirement on search and the re-employment counseling is restricted only on the very first period and is later neglected. Therefore, as time passes, the incentives in the quantity and quality of search disappear and liquidity constraints and moral hazard considerations prevail: thus, with time, the positive effect of benefits on the probability of finding a job becomes smaller and eventually turns into negative. This result is interesting especially if we consider that past studies on this issue usually found a (mild) negative effect of benefits on re-employment probabilities: while our result is not in open contrast with this trend, it better qualifies it, distinguishing between an "immediate" effect and a "time" effect of benefits.

In any case, we do find effects related to liquidity constraints as individuals with mortgage to be paid, coming from poorer households or facing problems in making ends meet have a higher probability to find a job. It should be noted that the variable describing wealth and the one indicating the presence of problems are mildly significant but this may be due to collinearity: the two variables are basically capturing similar aspects and in fact, even if we do not report the results, when we tried to remove one of the variable at time, the significance increase. We also obtain other, more standard, results: young and old individuals stay unemployed longer as well as individuals with lower education or living in the south of Italy. Finally, the variable indicating that workers had been previously unemployed is slightly above the 10% significance threshold so that, while possibly relevant in capturing unobserved characteristics, it has not a statistically relevant effect.

To test for the robustness of our results we also estimate the model in parametric form, assuming that $h_0(t, \theta_0)$ takes the form of a Weibull distribution: the results, described in regression (ii) in table 1, confirm qualitatively all the above findings. Finally, to further take into account possible unobserved heterogeneity we estimate a frailty model (regression (iii) in table 1) where we control for heterogeneity adding in the estimation of the hazard rate a random multiplicative factor which is inverse Gaussian distributed: even in this case the results are qualitatively the same and actually coefficients related to wealth are more significant.

Our findings on the role of wealth and financial constraints suggest that UI

scheme could work differently on individuals belonging to households of different wealth and different degree of economic conditions. Then, to explore this possibility, we estimate again the semi-parametric cox hazard model, allowing the baseline hazard function, the coefficient for benefits and the interaction of time and benefits to differ across some given groups of individuals. In particular, we first estimate a model where the groups are identified by the belonging or not to the fourth quartile of wealth distribution (which identifies richer individuals that should not experience consistent liquidity constraints). Then we estimate a similar model where the groups are identified by households having problems in making ends meet. We present the results in table 2 below.

TABLE 2: Semi-Parametric Cox Estimations of Reemployment Probabilities with Group-Specific Basaline Hazard and Coefficients

When we partition the individuals on the base of wealth (regression (i) in table 2) we observe that the initial effect is still positive for both groups: more in details, the coefficient is larger for richer individuals, possibly because the liquidity constraint effect is smaller for them, but the difference of the coefficients in the two groups is not significant so that we cannot be too certain of this. On the contrary, a clean cut difference between the two groups emerges in the effect of the interaction of benefits with time. In fact, for poorer individuals, this interaction has a negative effect on re-employment probabilities but it is not significant for the richer. This can be interpreted as a clear indication of the liquidity constraints effect: richer households do not have significant liquidity constraints and therefore unemployment benefits do not increase their unemployment duration; on the contrary, liquidity constraints are important for the rest of households so that benefits mitigate these constraints and, with time, reduce re-employment probabilities. The lack of increase in unemployment duration for richer families also indicates that moral hazard effect is, at least for this category, hardly present.

Interesting findings are obtained also when we partition individuals on the base of their problems in "making ends meet" (regression (ii) in table 2). In this case we observe that, for individuals with more problems, there is no significant positive effect of benefits on re-employment probabilities and, to all extent, UI only increases unemployment duration. On the contrary, re-employment probabilities for individuals without particular financial problems are at first enhanced by benefits and later reduced, still indicating that these individuals face milder liquidity constraints and, therefore, are less affected by the liquidity constraint mitigation from benefits. In truth the non significance of the direct effect of benefits for worse off households should be taken with caution: in fact first, the coefficients of these variable are not significantly different in the two groups (see the test on equality of coefficients in table 2) so that the lack of a significant effect is due mostly to the high standard error of the coefficient and, second, in different specifications of the model the direct effect of benefits appear to be significantly positive (see below). As for the interaction of benefits with

time, even with this partition, we obtain a clean-cut difference between the two groups: the interaction has a negative effect on re-employment probabilities for individuals from households that declare having problems, while, for individuals from households that are faring better, the interaction does not exhibit a similar negative effect. This result has the same interpretation as in the other case and further show how the liquidity constraint effect of benefits is less relevant for individuals with milder economic problems.

The results we obtain allow also a useful comparison of the two possible partitions: the one made on the base of "recorded" wealth and the other on the self-perceived economic condition. Both variables appear to be able to partition individuals on the base of liquidity constraints and thus on the (different) effect that benefits have on unemployment duration. This clearly highlights a relevant interaction between benefits and wealth which should be taken into account when designing UI scheme. Interestingly enough, the results are similar independently of which of the two variables we use to make the partition: therefore the "recorded" variable seem to capture similar dimensions as the subjective one and vice versa.

To test the robustness of the analysis on different groups we perform again the estimation using a parametric model (with Weibull distribution)[9]: the results, contained in table 3, are robust to this different specification and confirm our findings: the only difference is related to the coefficient of direct effect of benefits for individuals from households that declared having problems, in fact, according to this specification, the coefficient is still positive but it is now even significant.

TABLE 3: Parametric Cox Estimations of Reemployment Probabilities with Group-Specific Basaline Hazard and Coefficients

We can now sum up our findings. To all extents, unemployment benefits have a complex effect on unemployment duration: at first the incentives they provide to the quantity and the quality of search seems to overcome any possible negative effect due to liquidity constraints and moral hazard effects. However, after some time, the latter effects take over and UI seems to increase duration. The liquidity constraints effect is in any case a driving force of unemployment duration and it affects unemployment duration directly and through its interaction with UI: from this point of view, households wealth has an important role in determining unemployment duration. Finally, we have seen that UI affect

[9]In appendix A we also report the results of an estimation of a frailty model that takes into account possible unobserved heterogeneity adding in the estimation of the hazard rate a random multiplicative factor that is inverse Gaussian distributed. However, given the stratified approach we are following, we have to estimate the frailty model separately for each group. This greatly reduces the sample size so that coefficients of some of variables maintain the same sign but lose statistical significance. However, all the coefficients related to unemployment benefits and to their interaction with time maintain both the same sign and the same statistical significance as the results in table 2 and table 3: therefore the results on this aspects appear to be fully robust.

differently workers from different groups: individuals from households that are richer or with fewer problems might be in less need of the benefits, but they also suffer from a smaller (or zero) increase in unemployment duration from benefits. On the contrary, workers from households that are worse off clearly need the benefits more, but this also translate in a larger positive effect of benefits on unemployment duration.

5 Conclusions

Our analysis focused on the role that wealth and unemployment benefits have on unemployment duration, trying to tackle the different mechanisms through which these components interact and affect duration. In particular we investigated whether liquidity constraints (and moral hazard) affect search effort and thus unemployment duration and whether the benefits eligibility criteria, requiring active search could produce incentives to find a job. Using a sample of newly unemployed individuals from Italy we performed estimations of Cox hazard models and highlighted how actually benefits seem to have at first a positive (direct) effect, reducing unemployment duration, but this effect reverts with time. This seems to suggest that the presence of benefits gives on one side incentives to actively search for a job but on the other, mitigating the liquidity constraints, they also increase duration. The role of wealth was explored in details and we found that individuals from households that are wealthier or that are not experiencing problems in "making ends meet" display lower unemployment duration, indicating that liquidity constraints play an important role in the determination of unemployment duration. Relevant interactions between unemployment benefits and wealth were also found: for individuals from better off households, we found no sign that benefits increase unemployment duration whereas, for the rest of individuals, we find evidence of this effect.

From a policy point of view our findings seem to suggest that benefits should be quite generous but not particularly long, and in any case they should be given only together with search requirements and re-employment services and counseling. If we consider the results on the interaction between wealth and benefits, the policy indications become more complex and it is not possible to give a clean cut answer to whether benefits eligibility should be based on wealth. In fact, according to our analysis, benefits given to individuals from richer households bring only beneficial effect with no clear sign of an increase in unemployment duration and, if anything, with an actual reduction in it. Clearly, these households are in less need of benefits but, on the other side they appear to bring beneficial effect so that subsiding them with benefits should not be ruled out altogether and public resources spent to support these individuals do not appear to be wasted.

A Appendix: Estimation of frailty models

We present below in table 4 the estimation results when we include unobserved heterogeneity in the form of a random multiplicative factor which is inverse Gaussian distributed. Given the stratified approach we want to follow, once we introduce the error term, we have to estimate different regressions for different groups. This implies smaller sample size and thus, some of the coefficients, while maintaining the usual sign, lose statistical significance.

TABLE 4: Frailty Model Estimations of Reemployment Probabilities on Different Groups of Individuals

References

[1] Ashenfelter, O., Ashmore, D., Deschenes, O., 2005. Do unemployment insurance recipients actively seek work? Evidence from randomized trials in four U.S. States. Journal of Econometrics 125(1-2), 53-75;

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

[3] Bloemen H., 2002. The relation between wealth and labour market transitions: an empirical study for the Netherlands. Journal of Applied Econometrics 17(3), pages 249-268;

[4] Bloemen, H. G., Stancanelli, E. G. F, 2001. Individual Wealth, Reservation Wages, and Transitions into Employment. Journal of Labor Economics 19(2), pages 400-439;

[5] Bloemen, H. G., Stancanelli, E. G. F, 2005. Financial Wealth, Consumption Smoothing and Income Shocks Arising from Job Loss. Economica 72(3), pages 431-452, 08;

[6] Box-Steffensmeier, J. M., Reiter, D., Zorn, C. H. W., 2003. Nonproportional Hazards and Event History Analysis in International Relations. Journal of Conflict Resolution 47, 33-53.

[7] Card, Chetty and Weber, 2007. Cash-On-Hand and Competing Models of Intertemporal Behavior: New Evidence from the Labor Market. The Quarterly Journal of Economics122(4), pages 1511-1560;

[8] Chetty R., 2005. Why do Unemployment Benefits Raise Unemployment Durations? Moral Hazard vs. Liquidity, NBER Working Papers 11760, National Bureau of Economic Research, Inc;

[9] Chetty R., 2008. Moral Hazard vs. Liquidity and Optimal Unemployment Insurance. Journal of Political Economy 116(2): 173-234, 2008;

[10] Eurostat, 2007, Description of SILC user Database Variables: Cross-Sectional and Longitudinal.

[11] Grambsch, P. M. and T. M. Therneau, 1994. Proportional hazards tests and diagnostics based on weighted residuals. Biometrika 81(3): 515-526

[12] Klepinger, Johnson and Joesch, 2002. Effects of unemployment insurance work-search requirements: The Maryland experiment. Industrial and Labor Relations Review;

[13] Lalive, R., 2007, Unemployment Benefits, Unemployment Duration, and Post-Unemployment Jobs: A Regression Discontinuity, The American Economic Review 97(2), pp. 108-112;

[14] Manning A., 2006, You can't always get what you want: The impact of the UK Jobseeker's Allowance. Labour Economics, Elsevier 16(3), pages 239-250;

[15] Ortega, J., Rioux, L. 2010. On the extent of re-entitlement effects in unemployment compensation. Labour Economics, Elsevier 17(2), pages 368-382;

[16] Pellizzari, M., 2006. Unemployment duration and the interactions between unemployment insurance and social assistance. Labour Economics 13(6), pages 773-798;

[17] Petrongolo, B., 2001. Reemployment Probabilities and Returns to Matching. Journal of Labor Economics 19(3), pages 716-41.

[18] Rogerson, Shimer and Wright, 2005, Search-Theoretic Models of the Labor Market: A Survey. Journal of Economic Literature, 43, pp. 959–988.

Table 1

	(i) Semi-Parametric	(ii) Paremetric Regression with Weibull distribution	(iii) Paremetric Regression with Weibull distribution and frailty
Unemploymnet benefits	1.000087 *** (.0000293)	1.000116 *** (.0000195)	1.000179 *** (.000033)
Interaction of benefits with time	.9999592 * (.0000248)	.999924 *** (.0000206)	.9998869 *** (.0000436)
Age	.9984475 *** (.0414931)	1.152427 *** (.0429555)	1.248505 *** (.0700109)
Age squared	.9982893 *** (.000489)	.9984295 *** (.0004495)	.9975211 *** (.0006949)
Education	1.404527 * (.254321)	1.629288 ** (.3507661)	1.853144 ** (.5914721)
Living in a southern region	.71574 ** (.12358)	.6775372 * (.1385415)	.5535086 ** (.1651651)
Payments for mortgage	1.000073 ** (.0000379)	1.000081 * (.0000446)	1.000124 ** (.000064)
Wealth	.9992374 * (.0004287)	.9991183 * (.0004435)	.9985303 ** (.0007215)
Problems in making ends meet	1.321404 * (.220511)	1.443871 (.2862531)	1.718784 ** (.5049065)
Months of Unemployment in 2006	.9695331 (.0192833)	.9724036 * (.0218598)	.9541039 ** (.0330062)
Observations	527	527	527

Standard errors in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

[TABLE 1: **Cox Estimations of Reemployment Probabilities**]

Table 2

	(i) **Group 1**: Individuals from households in the fourth quartile of wealth distributions (wealthier) **Group 2**: Rest of individuals	(ii) **Group 1**: Individuals from households not having problems making ends meet **Group 2**: Rest of individuals
Unemployment benefits for individuals from group 1	1.000115 ** (.0000428)	1.000106 *** (.0000173)
Unemployment benefits for individuals from group 2	1.000085 *** (.0000267)	1.00006 (.0000425)
Interaction of benefits with time for individuals from group 1	1.000037 (.000056)	1.000072 * (.0000432)
Interaction of benefits with time for individuals from group 2	.9999375 ** (.0000258)	.9999371 *** (.0000229)
Age	1.148111 *** (.0424705)	.9985069 *** (.0418666)
Age squared	. 9984007 *** (.0004694)	.9983891 *** (.0004695)
Education	1.35155 ** (.2483471)	1.360958 * (.2459278)
Living in a southern region	.7171638 ** (.0000325)	.7285196 * (.1259022)
Payments for mortgage	1.000074 ** (.000035)	1.000075 ** (.000038)
Wealth		.9991241 * (.0004334)
Problems in making ends meet	1.357438 * (.2240662)	
Months of Unemployment in 2006	.9670521 * (.0189272)	.9726451 (.0194894)
Test of equality for the effect of benefits for different groups	chi2(1)=0.40	chi2(1)= 1.31
Test of equality for the effect of interaction of benefits and duration for different groups	chi2(1)= 2.73 *	chi2(1)=7.61 ***
Observations	527	527

Standard errors in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

[TABLE 2: **Semi-Parametric Cox Estimations of Reemployment Probabilities with basaline hazard and coefficients that differ across groups**]

Table 3

	(i) **Group 1**: Individuals from households in the fourth quartile of wealth distributions (wealthier). **Group 2**: Rest of individuals	(ii) **Group 1**: Individuals from households not having problems making ends meet **Group 2**: Rest of individuals
Unemployment benefits for individuals from group 1	1.000133*** (0.000028)	1.000128*** (0.000013)
Unemployment benefits for individuals from group 2	1.000111*** (0.000026)	1.000098** (0.000042)
Interaction of benefits with time for individuals from group 1	1.000054 (0.000047)	1.000047 (0.000042)
Interaction of benefits with time for individuals from group 2	0.999897*** (0.000025)	0.999882*** (0.000025)
Age	1.154811*** (0.043879)	1.146108*** (0.043680)
Age squared	0.998371*** (0.000459)	0.998473*** (0.000462)
Education	1.548253** (0.338936)	1.576177** (0.336168)
Living in a southern region	0.679809* (0.139557)	0.682672* (0.139786)
Payments for mortgage	1.000082* (0.000045)	1.000078* (0.000046)
Wealth		0.999040* (0.000494)
Problems in making ends meet	1.510834** (0.299036)	
Months of Unemployment in 2006	0.966706 (0.021678)	0.975523 (0.021959)
Constant	0.002945*** (0.002405)	1.437077*** (0.070485)
Test of equality for the effect of benefits for different groups	chi2(1)=0.40	chi2(1)=0.34
Test of equality for the effect of interaction of benefits and duration for different groups	chi2(1)=12***	chi2(1)=8.63***
Observations	527	527

Standard errors in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

[TABLE 3: **Parametric Cox Estimations of Reemployment Probabilities with basaline hazard and coefficients that differ across groups**]

Table 4

	Degree of Wealth		Ability of making ends meet	
	Households in the fourth quartile of wealth distributions	Rest of individuals	Households not having problems making ends meet	Rest of individuals
Unemployment benefits	1.000159***	1.000183***	1.000190***	1.000176**
	(0.000042)	(0.000048)	(0.000026)	(0.000081)
Interaction of benefits with time	1.000170	0.999822***	1.000126	0.999784***
	(0.000111)	(0.000053)	(0.000083)	(0.000048)
Age	1.154741	1.269752***	1.225457***	1.256687***
	(0.186468)	(0.079826)	(0.088495)	(0.109987)
Age squared	0.997422	0.997333***	0.997629***	0.997545**
	(0.001978)	(0.000797)	(0.000845)	(0.001137)
Education	0.440219	1.944652**	1.406122	2.354207**
	(0.366776)	(0.651700)	(0.672165)	(0.976712)
Living in a southern region	0.081316*	0.600129	0.656749	0.481106*
	(0.122963)	(0.187403)	(0.309220)	(0.184903)
Payments for mortgage	1.000521***	1.000074	1.000131	1.000117
	(0.000179)	(0.000069)	(0.000094)	(0.000094)
Wealth			0.998877	0.994701**
			(0.000736)	(0.002200)
Problems in making ends meet	0.317875	2.001586**		
	(0.294155)	(0.618608)		
Months of Unemployment in 2006	0.753018***	0.965351	0.940828	0.976119
	(0.071277)	(0.035512)	(0.050980)	(0.042502)
Constant	0.009363	0.000280***	0.000891***	0.000593***
	(0.033438)	(0.000354)	(0.001399)	(0.001025)
Observations	87	440	290	237

Standard errors in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

[TABLE 4: **Frailty Model Estimations of Reemployment Probabilities on different groups of individuals**]

Figure 1

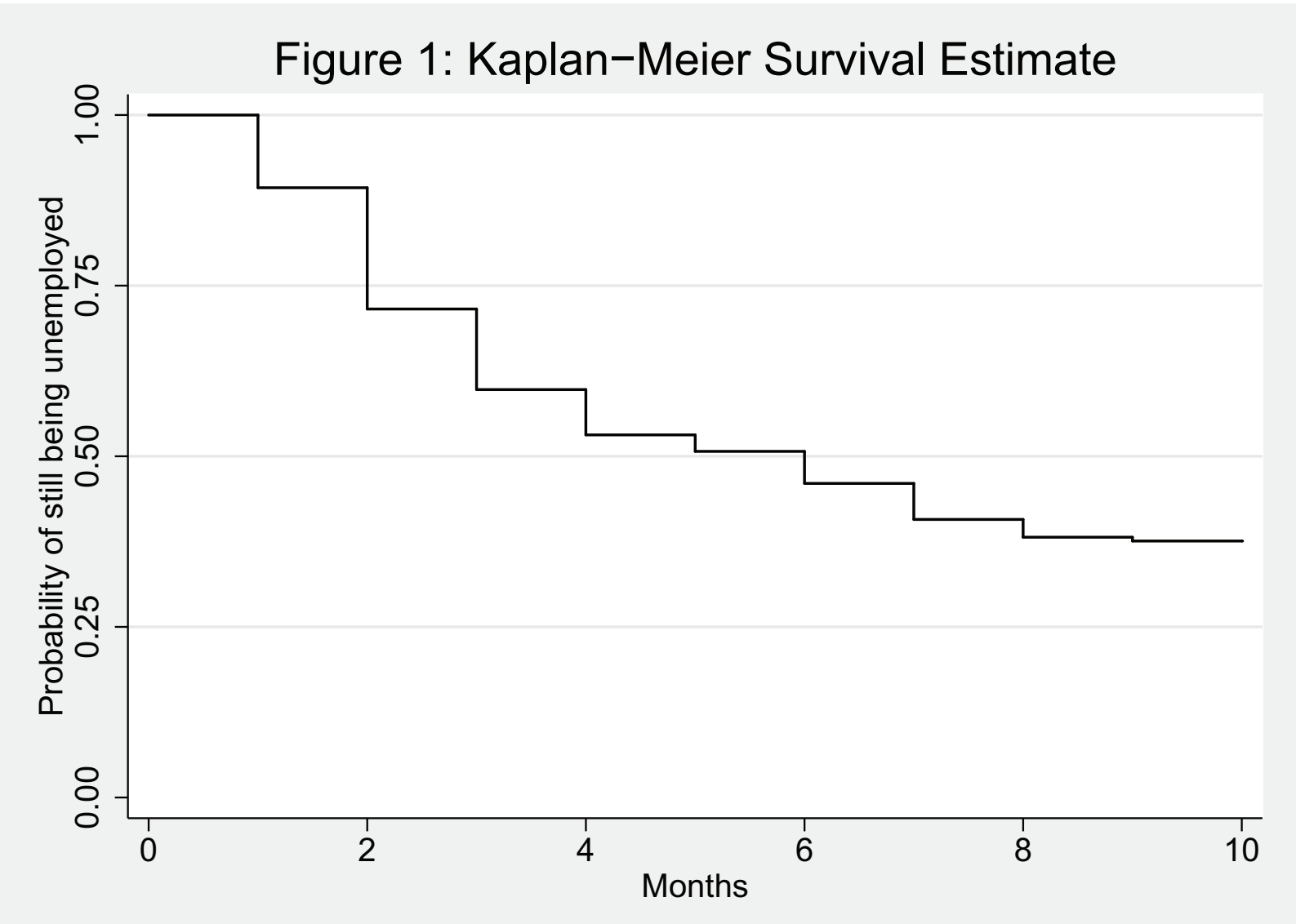


Figure 1: Kaplan−Meier Survival Estimate
Probability of still being unemployed
0.00
0.25
0.50
0.75
1.00
0
2
4
6
8
10
Months

Figure 2

Figure 2: Hazard Estimates