Training the Unemployed in France: Impact on Unemployment Duration and Recurrence

PRELIMINARY VERSION

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Abstract

Econometric evaluations of public-sponsored training programs generally find little evidence of an impact of such policies on transition rates out of unemployment.We perform the first evaluation of training effects for the unemployed adults in France, exploiting a unique longitudinal dataset from the Unemployment Insurance System. Using the so-called 'timing-of-events' methodology to control for both observed and unobserved heterogeneity, we find that training does not accelerate the exit from unemployment, but has significant and positive effect on the duration of subsequent employment spells. Accounting for training duration, we find that longer training spells cause longer unemployment spells, but also longer employment spells, suggesting that training improve the matching process between jobseekers and firms.

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1 Introduction

In France, the unemployment rate of low-educated workers is twice and a half the one of workers having a university diploma (14.3 % versus 5.9% in 2003). These figures concur with many statistical studies showing that, since the early 70s, unemployment has concerned very inequally the different categories of the labor force according to their educational level[1]. In this context, training the unemployed sounds like a good idea to bring down unemployment rates, especially for the most unskilled people. This idea contributed to the development of ambitious training programs for the unemployed in many industrialized countries. As an example, the European Council of Luxembourg in 1997 committed the member States to get 20% of their unemployed people into a training program or another equivalent active employment measure. France reached this objective for the first time in 2001, sending 20,5% of its unemployed to training.[2] In OECD countries training expenditure for the unemployed represented 23% of total expenditures for employment in 2000.[3]

This rush to training is difficult to justify on efficiency grounds, however. The vast literature evaluating its effects does not give much credit to training as an effective policy tool. In this literature, a large majority of studies use microeconometric methods to evaluate the impact of training on subsequent earnings, or on employment rates. The survey by Heckman, Lalonde and Smith (1999) points out the fact that training has generally no significant impact on earnings. When it comes to evaluating the impact of training on employment rates, the results are rather mixed. Recent evaluations of programs in Sweden (Sianesi, 2002) and in Switzerland (Gerfin et Lechner, 2000; Lalive, Van Ours

[1] See OECD (2003) for a review of recent trends in OECD countries.
[2] Source: Plan national d'action pour l'emploi 2002, p. 83.
[3] Grubb and Martin (2001).

and Zweimüller, 2000) show very weak, or even null effects of training measures. Pannenberg (1995) uses a discrete hazard rate model to evaluate the effects of training and retraining courses in East Germany. His results indicate the non-existence of significant training effects on reemployment chances. Although these examples do not give a thorough view of the existing literature, it seems that training programs for the adults are not as efficient as policy-makers could hope. The exception lies with the effect of training for unskilled women, which is frequently found to be significant and positive (see the survey by Lalonde, 1995).

In France, several studies tried to evaluate youth active policies that have a training component. As is the case for other international studies, the effect of training is found to be weak in Magnac (2000). But above all, this effect depends on the individual characteristics of trainees and on the nature of the program. In particular, Bonnal and al. (1997) and Brodaty and al. (2001) show that programs mixing training and regular employment through apprenticeship have the strongest effect on employment rates. However, there are few studies on French data evaluating training programs for the unemployed adults. This is due, mostly, to a lack of longitudinal data concerning adults. In addition, when these data are available, the samples are not large enough to estimate precisely the effects of training measures. This paper is an attempt to carry out such evaluation for France at all ages. We exploit an exceptional administrative database, set up by the French Unemployment Insurance System, that contains data on about 700,000 individual unemployment spells, and has never been used for the purpose of training evaluation. The database covers the 1993-2005 period and includes usual information about the individuals'characteristics (age, gender, diploma, etc.). It also includes information about the unemployment benefits, especially their remaining duration at each date, their amount, or the

wage level taken as a reference to compute this amount.

Most of the existing studies evaluate the impact of training on unemployment duration, which is ambiguous. Indeed, training plays a signalling role toward potential employers, in the sense that it should increase- or, less presumably, decrease- the number of employment offers received by the unemployed. But training might also raise the reservation wage of the worker, and thus increase the duration of unemployment. Another issue, which is generally not dealt with in the literature, is the one of time-dependence of the training effect. It is likely that in the short run, i.e. a few weeks after the end of the program, training exerts a stimulating effect on the hazard out of unemployment. This could stem from a "self-confidence" impact for the individual, implying that training raises the perception of his (or her) own abilities. In the long run, i.e. after months or years of subsequent unemployment, this impact might disappear, or even turn into a negative one. We address this issue by considering differentiated and time-dependent effects of training *within* an unemployment spell.

Furthermore, evaluating the impact of training on unemployment duration alone is not sufficient, because any impact on unemployment rates or employment levels involves both unemployment *and* employment durations. For that matter, training might yield human capital effects, and raise the duration of subsequent employment spells. So it is necessary to distinguish between short-term and long-term effects of training. Using German panel surveys, Hujer and al.(1997) and Lechner (1996) find a positive effect of training on the short-run employment rate, but this effect shades off in the long-run. Evaluating a training program in Belgium, Cockx and Bardoulat (2000) also identify a positive short-term effect, but their data do not allow them to check the persistence of this effect. In our study, we measure the effectiveness of training in raising the transition rate from unemployment to work, and lowering recurrence into

unemployment. Because sampling is on individuals, we can observe both unemployment duration and recurrence.The major finding of this paper is that training the unemployed has no significant impact on the duration of unemployment, but increases the duration of subsequent employment spells.

Another important finding is that duration of training programs should be taken into account when evaluating their impact. In the literature, little attention has been paid to the quality of training, as measured by its duration. Among a few papers, Lechner et al. (2005) find that long training programs of about two years yields substantive effects in terms of employment probability, but at the price of large negative lock-in effects. Considering this dimension, we estimate separately the lock-in effect and the effect on unemployment duration after training has been completed. We find that long training spells (more than one year) increase the duration of subsequent unemployment compared to shorter programs (4 to 12 months). By contrast, long training spells have stronger positive effect on subsequent employment duration than shorter programs.

While controlled experiments are available in some countries for the purpose of training evaluation, this is not the case in France, where they are often ruled out on grounds of cost or ethical objections. In a comparable situation, though, Gerfin and Lechner (2000) or Sianesi (2002) have used matching methods on rich databases to evaluate training and subsidized jobs programs simultaneously. However, they have to assume selection on observables only. Still, Abbring and Van den Berg (2003) have shown that semiparametric identification of causal parameters in the presence of selectivity on unobservables is possible, relying on the timing of events and the proportional hazard specification. A set of recent papers implemented this strategy (Abbring and al., 2000; Lalive and al., 2000; Van den Berg and al., 2004; see also Bonnal et al., 1997, for an early model in

that vein). In this paper, the size of our database allows flexible estimation of the impact of training, including heterogeneous and time dependent effects. Effects of training are heterogeneous with respect to several characteristics, including the remaining duration of the period of eligibility to unemployment benefits. Hence, our results shed some light on the potential trade-off between training people on a compulsory basis and paying them their benefits without assigning them to such active measures as training.

The paper is organized as follows. The next section presents the institutional background of the training system for the unemployed in France. Section 3 gives an insight into the data. Section 4 presents the empirical model for estimation. Results are discussed in Section 5. Section 6 concludes.

2 The French public training system

The French Training System for Jobseekers (FTSJ) is run by three different protagonists: the State, the administrative regions and the social partners (trade unions and employers' organizations). In the FTSJ, a major distinction should be made between the jobseekers eligible to unemployment insurance (UI) benefits, and the others. The State plays a key role, as it funds training programs for the long-term unemployed that have exhausted their rights to UI, as well as for welfare recipients. It also provides revenues to jobseekers not eligible to UI who get through State-accepted training programs. These revenues are labelled "Régime de Stagiaire Public" (RSP). Besides, the State orders training for both the eligible and non-eligible unemployed through the French public employment service, *Agence Nationale pour l'Emploi (ANPE)*, a mission that was reinforced in 2001 in the framework of the PARE ("Plan d'Aide au Retour à l'Emploi") reform. Thus, the PARE makes the ANPE the obliged spot for a jobseeker wishing to enter a training program.

Theoretically, the administrative regions have much power for funding the jobseekers' training since the decentralization laws launched in 1983. In practice, however, the State is still the principal decision-maker when it comes to prescribing training measures.[4] In contrast, the role of the social partners, which run the Unemployment Insurance Organization ("UNEDIC"), has been thoroughly reinforced when the PARE was created in 2001. Before this date, the role of UNEDIC was to provide the UI recipients who got trained with a benefit called "Allocation Formation Reclassement" (AFR), constant over time, that substituted to the degressive benefit then granted to regular UI recipients. Though paid by UNEDIC, the AFR was mainly funded by the State (which accounted for 80% of the AFR before 1997, and 41 % between 1997 and 2001). With the PARE reform set up in 2001, the UNEDIC now funds integrally the benefits of those trainees eligible to UI. These benefits are now labelled "Allocation de retour à l'emploi-Formation" (AREF). Besides, UNEDIC and its local agencies, the ASSEDIC, are now in charge of prescribing and buying training courses. In particular, the ASSEDIC are in charge of buying training programs that:

- either respond to local needs for skills in preliminarily identified activities;
- or provide the jobseeker with skills for a peculiar job, for which the employer has committed to hire the unemployed individual at the end of the training period.

In our sample, only 10 % of the unemployment spells are associated with participation to a training program. Although it benefits a limited number of persons, the total cost of training, including courses and benefits payment for the trainees, represented 3,35 billion euros in 2003.

[4] See Marimbert (2004).

To simplify, the current FTSJ aims at the following organization: the most needy peole (especially the long-term unemployed) should be handled by the State, whereas the UNEDIC would be in charge of UI recipients who have potentially a higher employability. The administrative regions express their needs for skills at the local level to the other actors (namely, the ASSEDIC and the ANPE), and are also in charge of the funding. Our data set covers the 1993-2005 period, which is composed of two distinct subperiods for the FTSJ: before and after the PARE reform: 1993-2001 (July) and 2001-2005. Another reason why splitting the 1993-2005 period in two is that between 1993 and 2001, the time profile of UI was declining in France. But getting into a training program caused the benefits to remain constant until the program stopped. Hence, the system was providing an incentive to enter a program, whatever well-suited to the individual's situation training was. By reintroducing a constant time profile for all the period of eligibility to UI, the PARE reform removed this feature, so it is necessary to consider transitions into training before and after the reform[5].

3 Data and descriptive analysis

The empirical analysis is based on data extracted from the «Fichier National des Assedic» (FNA) collected by UNEDIC. The FNA gathers information on all the workers entering the unemployment insurance system, whether they are eligible for UI, or welfare recipients. This is due to the fact that UNEDIC is in charge of dealing both UI benefits and welfare benefits.

The initial sample has been drawn randomly from the FNA. More precisely, the sample is made of one unemployed out of forty in the FNA. For each individual, it contains all the unemployment spells since 1993. The sample mixes

[5] In the current version of this paper, we focus on the analysis of training in unemployment spells beginning in the 2001-2005 period, but we use information about the individuals' histories as from 1993.

information from the UNEDIC, which is in charge of paying the unemployed their benefits, and from the ANPE, which role is to monitor and counsel the unemployed during their job search period. It contains the dates when people are registered and deregistered as unemployed by the ANPE, as well as the dates people begin and finish to receive their benefits from UNEDIC. Information about the nature of the benefits makes it possible to identify training spells from "regular" unemployment spells. More precisely, an individual eligible to unemployment benefits is reported to be trained if he or she receives AFR (before 2001) or AREF (after 2001) benefits. If he/she is not eligible to unemployment benefits, then he/she receives "RSP" benefits during training. Defining a training period by the nature of the benefits, we can identify the dates of entry in and exit out of a training program. The sample we use includes 707,564 spells, among which 61,872 are associated with at least one training program.

Besides, we retain the following individual characteristics: gender, nationality, educational level, skill level of the last job, type of the last job contract (i.e .short-term or long-term), reason of entry into unemployment, unemployment history (cumulative unemployment duration in the past two years), unemployment recurrence (rank of the unemployment spell), amount of the UI benefit, last wage used to compute the UI benefit, and remaining duration of UI eligibility.

Entry into and exit from unemployment are recorded on a daily basis, so that we model duration in continuous time. In our evaluation, we model training as part of an unemployment spell. The reason for that is that getting into a training program does not change the individual's administrative status (he or she is still registered as unemployed): only the nature of his/her benefits change. This differs from the usual approach in the empirical literature, where training is often considered as a separate state with regards to unemployment

and employment. Assuming that training is a substate of unemployment implies that training durations are part of unemployment durations. Hence, transitions may occur from "regular" (i.e. without training) unemployment to employment, from "regular" unemployment to training, from training to employment and from employment to "regular" unemployment. We do not consider transitions from employment to training, as people must stay at least a few days unemployed before getting into training. An employment spell is defined as a spell that corresponds to a transition from unemployment to employment. The duration of the spell is known when the individual reenters unemployment. Because sampling is based on individuals and not spells, we may observe the individual again in that case. Yet, it is unclear wether the person stays at work without interruption or not. So it is proper to consider that we measure unemployment recurrence, rather than employment duration. As a consequence, we treat exits out of unemployment as censored if they don't prove to be transitions to work.

Regarding our data, the definition of employment is not straightforward yet. The FNA is an administrative file, which purpose is not to carry out evaluation studies. In particular, the information it gives about the employment status of an individual is based on declarations of the latter that are not compulsory. This can lead to underestimating the rates of transition to employment, as it is common that people having found a job do not inform the public employment service of it. To deal with this difficulty, we consider as transition towards employment any exit out of employment for which the individual either:

1. either declared having found a job,
2. or did not send his/her monthly situation sheet to the public employment service *and* has not exhausted his/her benefits at the date considered.

The idea is that people who are still entitled to unemployment benefits should not loose contact with the public employment service (this would make

the payment of benefits to stop immediately), unless they found another source of revenue, i.e. they found a job.

Table 1 indicates that assignment to treatment is certainly not random. Women receive training more often than men; training probability increases with the educational level, and it is higher for French people than for foreigners. Training is also more often provided to younger individuals. Finally, having experienced other unemployment spells in the past two years decreases the probability of receiving treatment.

Figure 1 displays the empirical survival functions in unemployment of both trainees and non-trainees over the 2001-2005 period. There we consider as trainees those individuals who experienced at least one training spell during their unemployment spell. The figures show that trainees have a lower probability of exiting out of unemployment than non-trainees over time. This can be explained by a lock-in effect, implying that participation in training diminishes the individuals' search effort. This might also result from the training assignment process, which aims at giving priority to the less employable individuals. Although there is empirical evidence of some "cream-skimming" in the assignement to training programs in other countries,[6] the hypothesis of a "negative" selectivity bias in the French system is quite defensible. Whereas financial incentives for the employment caseworkers to place as many jobseekers as possible can prove to yield cream-skimming attitudes, there exist no such framework in the FTSJ at the time being. Furthermore, focusing the means on the less employable individuals is a recurrent aspect of French employment policies. By contrast, Figure 2 shows that trainees have a higher probability to stay employed than non-trainees. Whether this is due to a cream-skimming effect -in contradiction to the above argument- or to a positive causal effect of

[6] See for example Barnow (1999) for an analysis of the *Job Training Partnership Act* in the US.

training is yet unclear, and is a case for a deeper analysis.

4 Evaluating training with a duration model

As for most active labour market policies, assignment to training programs is likely to be endogenous, as it is based on the caseworker decision and the unemployed agreement. Both decisions depend on observed and unobserved (to the econometrician) characteristics. As shown by Abbring and Van den Berg (2003), a duration framework makes it possible to identify separately the causal effect of treatment on subsequent duration, and the distribution of unobserved characteristics, although both contribute to observed correlations between durations. Abbring and Van den Berg (2003) provide identification conditions for the mixed proportional hazards model. Their identification proof is nonparametric in the sense that no functional form is assumed for the baseline hazards and for the multivariate distribution of unobserved heterogeneity terms. Abbring and Van den Berg show that the elapsed duration until treatment contains useful information to disentangle the causal effect from the effect induced by selection on observables. The competing hazards model until entry into treatment or exit to unemployment -whichever occurs first- identifies the joint distribution of unobservables. The remaining duration identifies the causal effect of the treatment. The exact timing of events is important because the causal effect is revealed by the change in the unemployment-employment transition hazard rate that occurs once treatment is received (if treatment is effective). This can be distinguished from unobserved heterogeneity because the latter is assumed constant over a spell. In contrast, if unobserved shocks occurred along the spell and their timing was correlated with that of treatment, identification would fail.

Identification requires that the duration until treatment vary sufficiently. It implies that we should observe individuals at many dates of entry into treat-

ment. Figure3 shows that the probability to enter treatment is distributed quite uniformly over the unemployment spell.

4.1 Modelling the effect of training on unemployment

In this section, we present the statistical model used to identify the causal effect of treatment in our data. The model is based on the model introduced by Abbring and Van den Berg (2003), but it is extended to account for training duration, and for unemployment recurrence. As our data show much heterogeneity within unemployment, employment and training durations and recurrence, we use a rather flexible framework, accounting for differentiated treatment effects with regard to the duration before, during and after training.

First we consider the case of a single unemployment spell. Individuals enter unemployment and may exit to training or to employment, whichever occurs first. We account for training duration by modelling the transition from training. When individuals are trained, they may move either to unemployment or to employment. The causal effect of treatment is defined as a shift in the hazard of the transition toward employment, once treatment has occurred. This effect may depend on observed characteristics of individuals and may vary with the elapsed duration since entry into treatment and with the duration of treatment.

Let us denote t_U the total unemployment duration, t_D the duration until treatment (for individuals without treatment, $t_U = t_D$), and t_F the duration of the training spell. These durations are associated with the following hazard rates: η_U, η_D, η_F. x is a set of observed variables; v_U, v_D and v_F are the sets of unobserved characteristics that govern transitions from unemployment to employment, transitions from unemployment to treatment, and transitions from treatment to unemployment, respectively.

The hazard functions are assumed to be generated by a mixed proportional

hazards model, which is standard in duration analysis (Lancaster, 1990). The conditional hazard rate of transition from unemployment to employment, given the set of observed and unobserved characteristics, received treatment T, and durations t_D and t_F, may be written:

$$\eta_U\left(t \mid x, T, t_D, t_F, v_U\right) =$$

$$\psi_U\left(t\right) \exp\left(\lambda_U(x) + \left[\alpha_U(t_F) + \beta_U\left(t - t_F - t_D\right) + \gamma_U(x)\right]T + v_U\right)$$

where $\psi_U\left(t\right)$ is the baseline hazard and the term between square brackets captures the causal effect of treatment. The term α_U captures heterogeneous effects with respect to the duration of training, and $\gamma(x)$ allows for heterogeneous treatment effects with respect to individual characteristics. The term β_U accounts for a short-term effect of training which is potentially different from the long-term one,as $(t - t_F - t_D)$ represents the time elapsed since the end of training. The intuition is that training may act as a stimulus during a few days or weeks, without having any long-lasting impact on the individual's ability to find a job. Finally, the corresponding survival function is:

$$S_U(t \mid x, T, t_D, t_F, v_U) = \exp\left(-\int_0^{t_U} \eta_U\left(t \mid x, T, t_D, t_F, v_U\right) dt\right)$$

We set $c(u) = 1$ when the unemployment spell is not censored and $c(u) = 0$ when it is. It enables us to write the likelihood contribution of an unemployment spell with duration t as:

$$L_U\left(t \mid x, T, t_D, t_F, v_U\right) = \eta_U\left(t \mid x, T, t_D, t_F, v_U\right)^{c(u)} \times S_U(t \mid x, T, t_D, t_F, , v_U)$$

4.2 Introducing training spells

In France, the process of allocating job seekers to training is characterized by substantial heterogeneity on the part of the public employment service and on the part of the job seeker. Thus it is unlikely that participants and nonparticipants differ with respect to unobservables that jointly determine participation in training and unemployment duration. To deal with this problem, we use the 'timing-of-events' methodology which uses a semiparametric identification strategy to address the issue of self-selection into programs. In our analysis, we specify the nonrandom nature of the selection process into training, for which the hazard rate is noted η_D, by setting:

$$\eta_D\left(t \mid x, v_D\right) = \psi_D\left(t\right) \exp\left(x b_D + v_D\right)$$

The corresponding survival function is noted $S_D\left(t \mid x, v_D\right)$. Besides, we account for training duration by modeling the transition process out of training, for which the hazard is η_F:

$$\eta_F\left(t \mid x, v_F\right) = \psi_F\left(t\right) \exp\left(x b_F + v_F\right)$$

and the corresponding survival function is noted $S_F\left(t \mid x, v_F\right)$. Note that the duration of a training spell is determined by both the unemployed and the employment service caseworker *prior* to the beginning of the training period. Hence the process of exiting the training program should not be driven by the unemployed behavior, except in the case where he or she decides to stop the program before its term. Unfortunately, our data do not allow us to observe anticipated exits out of training, so we treat training spells as censored only if they lead to an exit to employment.

4.3 Introducing employment duration

In our data, individuals enter, exit and sometimes reenter unemployment. Recall that we consider as an "employment" spell a spell that begins with an exit from unemployment to employment (see Section 3 for our definition of employment). The duration of the spell is known when the individuals reenters unemployment, otherwise the spell is treated as censored. The hazard rate of employment duration is:

$$\eta_E\left(t \mid x, v_E\right) = \psi_E\left(t\right) \exp\left(x b_E + \left[\alpha_E\left(t_F\right) + \gamma_E(x)\right] T + v_E\right)$$

There again the term in square brackets captures the causal effect of treatment on the duration of a subsequent employment spell. It may shift the hazard rate differently according to individual characteristics and training duration. For individuals that move from unemployment to employment, the likelihood involves an additional term which is the likelihood of the employment spell:

$$L_E\left(t \mid x, T, t_D, t_F, v_E\right) = \eta_E\left(t \mid x, T, t_D, t_F, v_E\right)^{c(E)} \times S_E\left(t \mid x, T, t_D, t_F, v_E\right)$$

where $c(E) = 1$ when the employment spell is not censored and $c(E) = 0$ otherwise.

4.4 Specification issues

In practice, estimating the joint distribution of unobserved heterogeneity with a completely flexible covariance matrix would be very difficult, as the number of parameters is very large. We model this distribution as a two-factor loading model; assuming that there are two fundamental factors V_1 and V_2 that enter every duration, the distribution of the unobserved terms is thus :

$$v_k = \exp(\alpha_k^1 V_1 + \alpha_k^2 V_2)$$

with $k = \{U, E, D, F\}$. Following Heckman and Singer (1984), we assume that the unobserved factors have a discrete distribution with two mass points. We thus assume that V_1 and V_2 are both distributed on the support $\{-1; 1\}$ with distinct probabilities. The explanatory variables we introduce include gender, nationality, the educational level, the skill level of the last job, the type of the last job contract (i.e. short-term or long-term), the reason of entry into unemployment, the individual unemployment history (his/her cumulative unemployment duration in the past two years), the individual unemployment recurrence (the rank of the current unemployment spell), the amount of the UI benefit, the previous wage used to compute the UI benefit, and the remaining duration of eligibility to UI. We adopt a piecewise constant hazard for the baseline functions $\psi_k(t)$, which has the form:

$$\psi_k(t) = \sum_{l=1}^{L} e^{\psi_{kl}} 1(t \in I_l)$$

For unemployment and employment durations, we allow for eight intervals, each being 90 days long, i.e. covering the first two years of unemployment: $I_1 = [1, 90], I_2 = [91, 180], I_3 = [181, 270], I_4 = [271, 360], I_5 = [361, 450], I_6 = [451, 540], I_7 = [541, 630], I_8 = [631, 720]$. For duration before training, as well as for training duration, we allow for four intervals of 90 days each. Because local maxima are likely, we run optimization a number of time with randomly chosen starting values. The tolerance for the gradient was set to 10^{-6} and we use Gauss optmum library with the BFGS algorithm so as to deal with the very large number of observations and parameters. Out of ten set of random

starting values, nine converged to the same maximum, and only one converged to another set of parameters showing a lower likelihood. Thus we are confident that the reported estimates are at a global maximum.

5 Estimation Results

5.1 Impact of observables on durations

If individual characteristics are useful to control for observed heterogeneity when estimating the causal effect of treatment, the model's constant effect parameters also give an insight into the determinants of durations. Table 2 provides the estimated effect of spent duration and individual characteristics on the transition rate from unemployment to work, from employment back to unemployment, from unemployment to training and from training back to unemployment, respectively. Accounting for unobserved heterogeneity and modelling the joint distribution of the four durations, it is possible to interpret these parameters as causal effects.

Unemployment duration decreases with unemployment recurrence (here, the number of unemployment spells in the past two years), and related factors, such as the non-eligibility to unemployment insurance or the last contract being a short-term one. Older individuals and persons with high cumulated unemployment durations (total time spent in unemployment in the past two years).experience longer unemployment spells.

Unemployment recurrence speeds up entry into training, and so does training accumulation (i.e. total time spent in training in the past training spells). The latter indicates that the decision of assignment to training by caseworkers is not influenced by the individual's history: people that have already benefited from training tend to go on this way. Unemployed workers living in high un-

employment districts experience lower durations before entering training, which can be interpreted as a supply effect, as public means for training are volontarily augmented in such areas. At last, high remaining benefit durations yield faster entries into training. By contrast, multiple unemployment spells, short-term labour contracts and non-eligibility to UI are associated with longer unemployment durations before entry into training, which is quite surprising with regard to the objective of the public employment sevice caseworkers who aim at assigning the most needy people to training. This could be interpreted as a reluctance to get into training on the part of the most precarious people.

Considering training duration, the results indicate that having experienced numerous unemployment spells, being a graduate or a senior yields shorter training spells when training occurs. On the other hand, longer training spells are experienced by individuals with much training capital, high remaining benefit durations (although unsignificantly), high unemployment recurrence (idem).

At last, shorter employment spells are driven by unemployment recurrence. Men experience longer employment spells. They earned higher wages in the past employment spells, have higher training capital, higher cumulated unemployment durations and higher remaining benefit durations. This makes sense if we interpret unemployment as an effective job search period, during which individuals look for a job that match their skills and career expectations. More classically, both higher educational levels and age increase employment durations.

5.2 Causal effect of training

5.2.1 Heterogeneous effect model

Tables 3 reports the treatment effects on unemployment transitions associated to selected individual characteristics for the 2001-2005 period; they also report

parameters of a model without unobserved heterogeneity. Comparison between the two illustrates that assuming selectivity on observables, as with matching methods, would be misleading in some instances. When unobserved heterogeneity is not allowed for, training seems to have a positive and significant impact on the duration of unemployment: the transition rate to work of trainees would increases by about 66% ($exp(0.507) - 1$) when training is completed. Introducing correlated unobserved heterogeneity changes this result: the transition rate of individuals attending training increases by only 2%, and is non-significant.

Regarding the effect of training on transitions from employment back to unemployment, we also observe differences whether the model allows or not for selection on unobservables.With no unobserved heterogeneity, the effect is positive but small, as it decreases the transition rate by about 8%. When allowing for correlated unobserved heterogeneity, the effect of training is much stronger, as it decreases recurrence by 22% (Table 4).

In our analysis, we also allow treatment effects to vary with some selected individual characteristics detailed in Tables 3 and 4. Table 3 displays heterogeneous effects of training on the transitions from unemployment to employment. The model with unobserved heterogeneity shows that younger individuals benefit more from training as their transition rate toward employment increases by 21 % with respect to the reference. Training also exerts a stronger positive effect on less educated people (+ 11 %), but this effect turn off to be not significant. At last, the impact of training is stronger for individuals with high remaining duration before benefits exhaustion, and is lower for individuals having experienced many unemployment spells in the past two years.

When it comes to transitions from employment to unemployment, no individual characteristic has any significant effect on the treatment impact. Such detailed estimation is data demanding and it is likely that we have no sufficient

employment duration data with treatment for this model.

5.2.2 Effect of training duration

A striking feature is the effect of training duration on both unemployment duration and recurrence. Longer training spells yield drops of hazard rates into employment. Training spells between 4 and 8 months decrease employment probability by about 25 % with respect to the reference (0 to 4 months); spells between 8 and 12 months reduce the hazard rate by 34 % and spells of more than one year by 38 %. Recall that training duration enter the causal effect of training on unemployment duration additively. Due to this negative impact the global effect of training on unemployment duration is thus clearly negative. These results suggest that training act as a more and more negative signal toward potential employers as the unemployment spell elapses. This is coherent with the effect of training within the unemployment spell, which decreases with the duration of the latter. Six months after the end of training, the hazard rate into employment falls by 14 %, a result that turns off to be significant. This supports the idea that training acts as a stimulus during a few weeks only. This may be due to some "self-confidence" effect. In the long run, i.e. after months or years of subsequent unemployment, this impact turns into a negative one, presumably as discouragment prevails on the part of the jobseeker.

6 Conclusion

In this paper we have carried out the first evaluation of training programs for the unemployed adults in France. Using the so-called 'timing-of-events' methodology to control for both observed and unobserved heterogeneity, we find that training does not accelerate the exit out of unemployment, which is in line with

a vast majority of studies dedicated to this matter. This negative effect is accentuated in case of longer training durations, which confirms the existence of a negative signal towards employers. A rather new finding lies with the positive and significant effect of training on the duration of subsequent employment spells. This effect is sensitive to training durations too, but in the opposite sense: longer training spells are associated to longer employment spells. This is coherent with the idea that training improve the matching process between firms and jobseekers, leading the latter to increase their reservation wage and helping them find jobs more suited to their skills.

References

[1] Abbring, J. H. and G.J. van de Berg [2003], "The non-parametric identification of treatment effects in duration models", *Econometrica*, 71, 1491-1517.

[2] Abbring, J. H., G.J. van den Berg and J. van Ours (2000), "The Effect of unemployment insurance sanctions on the transition rate from unemployment to employment", mimeo.

[3] Bonnal L., Fougère D., Serandon A. [1997], " Evaluating the Impact of French Public Employment Policies on Individual Labour Market Histories", *Review of Economic Studies*, 64, p. 683-713.

[4] Brodaty, T., Crepon, B., Fougère, D. [2001], "Using Kernel Matching Estimators to Evaluate Alternative Youth Employment Programs : Evidence from France 1986-1988 " in *Econometric Evaluations of Labour Market Policies*, M. Lechner and F. Pfeiffer (eds.), Heidelberg: Physica Verlag, p. 85-124.

[5] Cockx B., Bardoulat I. [2000], " Vocational Training : Does it speed the Transition Rate out of Unemployment ?"», *Discussion paper, Tinbergen Institute*, n° 00-016/3.

[6] Fougère D., Kramarz F., Magnac T. [2000], " Youth Employment Policies in France ", *European Economic Review*, 44, p. 928-942.

[7] Grubb, M., Martin, J.P. [2001], "What Works and for Whom: a Review of OECD Countries Experiences with Active Labour Market Policies", *OECD Working Paper* n° 2001-14.

[8] Heckman, J.J., Lalonde, R. et Smith, J. [1999], " The Economics and Econometrics of Active Labor markets Programs ", in *Handbook of Labor Economics*, A. Ashenfelter and D. Card (eds.), Elsevier Science, vol.3A, chap 31, p. 1865-2097.

[9] Gerfin M., Lechner M. [2000], " Microeconometric Evaluation of the Active Labour Market Policy in Switzerland ", Mimeo.

[10] Hujer R., Maurer K.-O., Wellner M. [1997], " The impact of Unemployment Duration in West Germany. Combining a Discrete Hazard Rate Model with Matching Techniques ", *Working Paper*, Goethe University Frankfurt am Main.

[11] Lalive, R., Van Ours, J., Zweimüller, J. [2000], " The Impact of Active Labor Market Programs and Benefits Entitlement Rules On the Duration of Unemployment", *IZA Discussion Paper*, n° 149.

[12] Lalonde, R. [1995] « The Promise of Public Sector-Sponsored Training Programs » *The Journal of Economic Perspectives*, Vol. 9, No. 2, 149-168.

[13] Lechner M. [1996], "An Evaluation of Public Sector Sponsored Continous Vocational Training Programs in East Germany ", Institut fur Volkswirtschaftslehre and Statistik der Universitat Mannheim, p. 539-96.

[14] Lechner, M., Miquel, R. and Wunsch, C.[2005], "Long-Run Effects of Public Sector Sponsored Training in West Germany", IAB *Discussion Paper* n°3/2005

[15] Magnac T. [2000], " L'apport de la micro-économétrie à l'évaluation des politiques publiques", *Cahiers d'économie et sociologie rurales*, INRA, n° 54.

[16] Marimbert, J. [2004], *Rapport au Ministre des Affaires sociales, du Travail et de la Solidarité sur le rapprochement des services de l'emploi.*

[17] OECD (2003), *Employment Outlook.*

[18] Sianesi, B. [2002], " Differential Effects of Swedish Active Labour Market Programmes for Unemployed Adults During the 1990s." *IFAU Working Paper* n° 2002-5.

[19] Van den Berg, G., B. Van der Klaauw and J. Van Ours (2004), "Punitive sanctions and the transition rate from welfare to work", *Journal of Labor Economics*, 22, 211-241.

Table 1: Sample individual characteristics		
	Spells without training	Spells with training
male	53 %	50 %
female	47 %	50 %
elementary school	84 %	80 %
upper secondary	12 %	14 %
higher education	4 %	6 %
French	90 %	94 %
foreigner	10 %	6 %
age below 25	36 %	35 %
age 25-35	34 %	37 %
age 35-45	18 %	19 %
age 45-55	12 %	9 %
unemployment recurrence	43 %	36 %
no recurrence	57 %	64 %

Source: FNA, authors computation. 1993-2005, 707,654 spells

[Insert Table 2 here]

Table 3

Transitions from Unemployment to Employment: 2001-2005

	Without unobserved heterogeneity		**With unobserved heterogeneity**	
Intercept	0.507	(0.051)	0.020	(0.066)
Male	-0.043	(0.023)	0.062	(0.029)
Less than 25 years old	-0.025	(0.025)	0.189	(0.032)
At most lower secondary degree	0.061	(0.048)	0.103	(0.061)
Days before benefit exhaustion (log)	0.100	(0.023)	0.125	(0.028)
Unemployment recurrence (1)	-0.109	(0.016)	-0.062	(0.022)
6 to 12 months after the end of training	-0.393	(0.031)	-0.157	(0.032)
$>$ 12 months after the end of training	-0.396	(0.033)	-0.017	(0.038)
Training program between 4 and 8 months	0.155	(0.027)	-0.294	(0.036)
Training program between 8 and 12 months	0.368	(0.032)	-0.415	(0.042)
Training programs of more than 12 months	0.686	(0.063)	-0.480	(0.075)

Remark: standard errors are reported between parentheses

(1) Number of unemployment spells in the past two years

Table 4

Transitions from Employment to Unemployment: 2001-2005

	Without unobserved heterogeneity		**With unobserved heterogeneity**	
Intercept	-0.026	(0.081)	-0.248	(0.084)
Male	0.031	(0.040)	0.088	(0.041)
Less than 25 years old	-0.058	(0.042)	-0.009	(0.043)
At most lower secondary degree	-0.016	(0.078)	-0.009	(0.080)
Days before benefit exhaustion (log)	-0.090	(0.037)	-0.089	(0.037)
Unemployment recurrence (1)	-0.112	(0.027)	-0.095	(0.028)
Training programs between 4 and 8 months	0.000	(0.048)	-0.116	(0.049)
Training programs between 8 and 12 months	-0.108	(0.060)	-0.335	(0.061)
Training programs of more than 12 months	-0.151	(0.125)	-0.481	(0.125)

Remark: standard errors are reported between parentheses

(1) Number of unemployment spells in the past two years

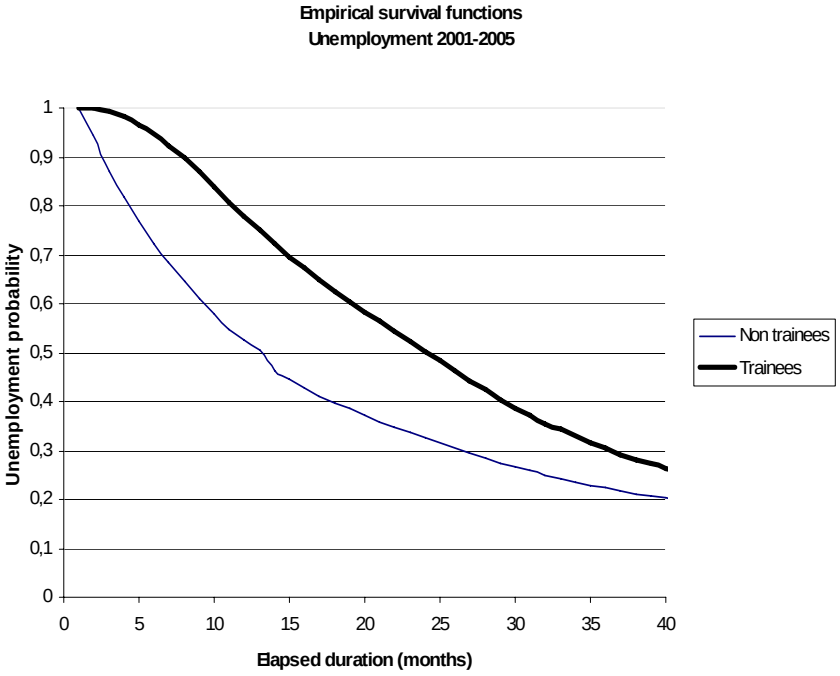

Figure 1: **Unemployment probability: 2001-2005**

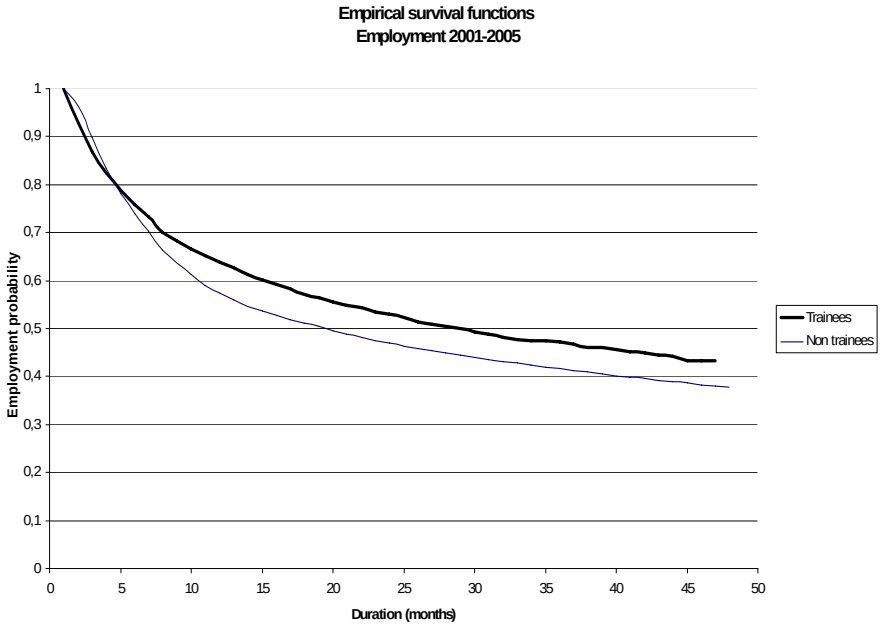

Figure 2: **Employment probabiliy: 2001-2005**

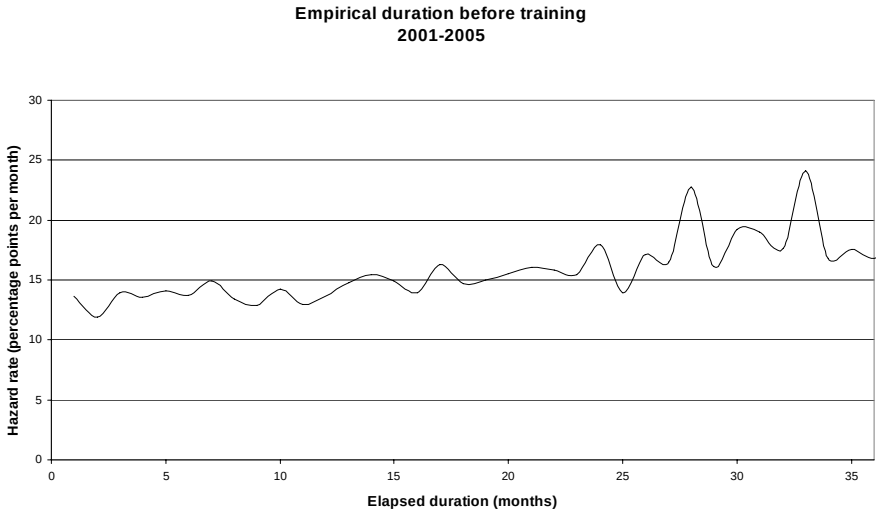

Figure 3: **Transitions into training (trainees subsample)**