Equilibrium Effects of Counseling

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VERY PRELIMINARY

DO NOT QUOTE OR CIRCULATE

Abstract

We develop a partial equilibrium stochastic job matching model of the labor market in order to examine whether the counseling of unemployment workers displaces unemployed workers not offered the counseling. The model is focused on workers paid the minimum wage. Jobs differ in the duration of the contract offered to the worker. In this model, the improvement of the reservation utility of counseled job seekers induces them to refuse more job offers. This behavior, which exerts a negative spillover on job creation, reduces the arrival rate of job offers to the unemployed workers who do not benefit from counseling. Then, we estimate this model on data concerning intensive counseling schemes that are provided to about 20 percent of the unemployed since the 2001 French unemployment policy reform (PARE). We find significant favorable effects of counseling on the length of employment spells of counseled workers. This phenomenon can be interpreted as a consequence of the positive impact of counseling of the reservation utility of unemployed workers. We are also able to identify the size to the displacement effect on workers not offered the counseling.

1 Introduction

Many labor market policies have been evaluated comparing the behavior of participants and non participants in the policies. The differences in outcomes between the treatment group and the control group yield estimates of the mean impact of the policy assuming that the outcomes of the control group are not influenced by the policy. This approach can provide meaningful estimates of the effects of policies that involve a number of individuals which is sufficiently small to ensure that the outcomes of the control group are not influenced by the policy. If it is not the case, such estimates may be of limited usefulness as stressed by a growing body of research which shows that a policy may have very different implications when it is implemented for a large share of the population and when it is implemented on only a small number of participants (Calmfors, 1994, Heckman, Lochner and Taber, 1998, Heckman and Smith, 1998, Davidson and Woodbury, 1993, Blundell, Costa Dias, and Meghir, 2003, Van der Linden, 2005, Albrecht, van den Berg and Vroman, 2005, Lise, Seitz and Smith, 2005)

The aim of our paper is to evaluate, from this perspective, the effects of the intensive counseling schemes that are provided to about 20 percent of the unemployed workers in France since the 2001 unemployment policy reform (PARE[1]). Estimating differences in outcomes between the treatment group and the control group, Crepon, Dejemeppe and Gurgand (2005) find significant favorable effects of the counseling schemes included in the PARE on unemployment and employment spells. However, their results do not account for equilibrium effects since it is assumed that the outcomes of the control group are not influenced by the counseling schemes. Our paper looks further into their contribution by accounting for such effects in a simple equilibrium model of the labor market with search and matching, inspired from the contributions of Davidson and Woodbury (1993) and Pissarides (2000). In this framework, counseling exerts displacement effects on non counseled unemployed workers through three channels. First, counseled unemployed workers crowd out those who are non counseled because they compete to get the same jobs. Second, by

[1]PARE is the acronym of Plan d'Aide au Retour à l'Emploi.

increasing search efficiency, counseling induces employers to create more jobs since they expect to recruit workers more quickly. Third, counseling reduces the overall job offers arrival because counseled unemployed workers, who are more choosy than those who do not benefit from counseling, refuse more job offers. This behavior induces employers to open less job vacancies since the probability to meet a workers who refuses job offers is increased when a larger share of the population is counseled. It turns out that the first and third displacement effects are negative whereas the second is positive. Accordingly, the sign of the total displacement effect is ambiguous.

We analyze the displacement effects of counseling for French low skilled workers paid the minimum wage in a model where jobs differ in the durations of the contracts offered to the workers. We show that the improvement of the reservation utility of counseled job seekers induces them to refuse more job offers. This behavior, which exerts a negative spillover on job creation, reduces the arrival rate of job offers to the unemployed workers who do not benefit from counseling. In this setup, counseling induces a negative total displacement effect on non counseled workers. Then, we estimate the model. We find significant favorable effects of counseling on the length of employment spells of counseled workers. This phenomenon can be interpreted as a consequence of the positive impact of counseling of the reservation utility of unemployed workers. We are also able to identify the size to the displacement effect on workers not offered the counseling.

The paper is organized as follows: the model is presented in section 2. Section 3 presents the econometric implementation and section 4 is devoted to the description of the data. Results are given in section 5. Section 6 concludes.

2 The model

We consider a labor market with a continuum of infinitely-lived risk neutral workers whose measure is normalized to one. Their common discount rate r, is strictly positive. Workers can be in three different states: employed, unemployed and counseled, unemployed and not counseled. Workers who enter into unemployment begin without being counseled. Then, they enter into the counseled situation at rate μ and they continue to benefit from counseling until they find a job. As we focus on low skilled workers, we only consider workers who are paid at the minimum wage. Therefore, the wage is an exogenous variable. The duration of jobs, denoted by Δ, is match specific. It depends on the adaptability of the worker for the type of job to which he is matched. The employer evaluates the adaptability of the worker, which determines the duration Δ where the worker is productive. Once the duration is evaluated, the employer offers a contract with an employment spell Δ. Offered employment durations are drawn in a distribution whose cumulative distribution function is denoted by F. The distribution is the same for counseled and non counseled unemployed workers.

The assumption that there is a binding minimum wage and heterogeneous job durations allows us to account for two important features of the French labor market for low skilled workers. First, in France, the legal minimum wage covers about 15 percent of the workforce and most low skilled workers are covered by the minimum wage. Moreover, more than 70 percent of workers are recruited with fixed term contracts, this figure being higher for low skilled workers. This feature is related to the specificity of the French labor market regulation with very high firing costs (mainly due to costly legal procedures) for regular contracts with no fixed duration that induce employers to offer fixed term contracts. Therefore, the heterogeneity of low skilled jobs relies much more on differences in contract durations rather than on wage differences.

There is an endogenous number of jobs. Each job can be either vacant of filled. Filled jobs produce y units of the numeraire good per unit of time whereas vacant jobs cost h per unit of time.

Vacant jobs and unemployed workers (the only job seekers, by assumption) are brought together in pairs through an imperfect matching process. This process is captured by the customary matching function, which relates per period total contacts to the seekers on each side of the market. Let us denote by u_0 and u_1 the number of non counseled and counseled unemployed workers respectively. Let us normalize to one the number of efficiency units of job search of each non counseled unemployed worker. Counseled unemployed workers are assumed to produce a different number of efficiency units of search, which is denoted by δ. In this setting, the number of efficiency units of job search per unit of time amounts to $s = u_0 + \delta u_1$.

If v denotes the number of job vacancies, the number of employer-worker contacts in period t is given by $M(s, v)$, where the matching function is twice continuously differentiable, increasing and concave in both of its arguments, and linearly homogeneous. Linear homogeneity of the matching function allows us to express the per period probability for a vacant job (unemployed worker) to meet an unemployed worker (a vacant job) as a function of the labor market tightness ratio, $\theta = v/s$. A vacant job can meet on average $M(s, v)/v = m(\theta)$ unemployed workers per unit of time, with $m'(\cdot) < 0$. Similarly, the rate at which counseled and non conseled unemployed job seekers can meet jobs is $\lambda_1 = \delta\theta m(\theta)$ and $\lambda_0 = \theta m(\theta)$ respectively. It is worth noting that all job contacts do no necessarily lead to job creation because some job matches may yield jobs with duration that can be considered as too short by the worker.

2.1 The supply side

Let us denote by V_0, V_1 and $V_e(\Delta)$ the value function of a non counseled unemployed worker, of a counseled unemployed workers and of a worker recruited on a job with duration Δ respectively.

The value function of a non counseled unemployed worker satisfies

$$rV_0 = b + \mu(V_1 - V_0) + \lambda_0 \left(\int_0^{+\infty} \max\left[V_e(\Delta), V_0\right] \mathrm{d}F(\Delta) - V_0 \right), \tag{1}$$

where b stands for the unemployment benefits. The value function of a counseled unemployed worker satisfies

$$rV_1 = b + \delta\lambda_0 \left(\int_0^{+\infty} \max\left[V_e(\Delta), V_1\right] \mathrm{d}F(\Delta) - V_1 \right). \tag{2}$$

The value of employment with duration Δ satisfies

$$V_e(\Delta) = V_0 + \gamma(\Delta)(w - rV_0), \tag{3}$$

where w denotes the wage and $\gamma(\Delta) = \int_0^{\Delta} e^{-rt}\mathrm{d}t = \left(1 - e^{-\Delta r}\right)/r$. This equation implies that $V_e(0) = V_0$ because $\gamma(0) = 0$. Workers accept jobs only if $w \geq rV_0$. We assume that this condition is fulfilled. This implies that $V_e(\Delta)$ is increasing with respect to Δ. Therefore, the best rule for not counseled unemployed workers is to accept any job whatever its duration $\Delta > 0$. We deduce from this that the value function of non counseled unemployed workers satisfies

$$rV_0 = b + \mu (V_1 - V_0) + \lambda_0 (w - rV_0) \int_0^{+\infty} \gamma(\Delta) \mathrm{d}F(\Delta). \tag{4}$$

The behavior of counseled unemployed workers is different from the behavior of non counseled workers because their expected discounted utility, V_1, is higher than that of non counseled unemployed workers. Counseled workers only accept jobs whose duration is above a reservation value, denoted by Δ_1, which is defined by $V_e(\Delta_1) = V_1$. Using equation (3), this equality reads

$$\gamma(\Delta_1) = \frac{V_1 - V_0}{w - rV_0}. \tag{5}$$

Thus

$$rV_1 = b + \delta\lambda_0 \int_{\Delta_1}^{+\infty} [V_e(\Delta) - V_1] \mathrm{d}F(\Delta). \tag{6}$$

It is possible to get, from equations (4), (5) and (6), a relation between the arrival rate of job offers to the non counseled unemployed workers and the reservation productivity of counseled unemployed workers which reads:[2]

$$\frac{(r+\mu)}{\lambda_0} = \delta \int_{\Delta_1}^{+\infty} \frac{\gamma(\Delta) - \gamma(\Delta_1)}{\gamma(\Delta_1)} \mathrm{d}F(\Delta) - \int_0^{+\infty} \frac{\gamma(\Delta)}{\gamma(\Delta_1)} \mathrm{d}F(\Delta) \tag{7}$$

This equation can be interpreted as a labor supply condition, which defines the relation between the minimum duration of jobs accepted by the counseled unemployed workers

[2] Equations (4) and (6) imply:

$$(r+\mu)(V_1 - V_0) = \delta\lambda_0 (w - rV_0) \int_{\Delta_1}^{+\infty} [\gamma(\Delta) - (V_1 - V_0)] \, dF(\Delta) - \lambda_0 (w - rV_0) \int_0^{+\infty} \gamma(\Delta) dF(\Delta),$$

that is

$$r + \mu = \delta\lambda_0 \frac{w - rV_0}{V_1 - V_0} \int_{\Delta_1}^{+\infty} \gamma(\Delta) dF(\Delta) - \delta\lambda_0 \bar{F}(\Delta_1) - \lambda_0 \frac{w - rV_0}{V_1 - V_0} \int_0^{+\infty} \gamma(\Delta) dF(\Delta).$$

Using the definition (5) of the reservation productivity of counseled unemployed workers, one gets equation (7).

and the arrival rate of job offers. It turns out that the reservation duration of counseled workers increases with the arrival rate of job offers because unemployed workers become more choosy when they can get more job offers.

2.2 The demand side

The demand side describes the behavior of firms. It is assumed that each new match can produce $y > w$ units of good per unit of time for a period Δ. The employer offers a contract that stipulates the duration of the job, Δ, and the wage w. At the end of the spell Δ, employers get rid of the worker. The value of a job with duration Δ, denoted by $\Pi(\Delta)$, satisfies

$$\Pi(\Delta) = \int_0^{\Delta} (y - w)e^{-rt}\mathrm{d}t + e^{-\Delta r}\Pi_v.$$

Π_v denotes the value of a vacant job, which satisfies

$$r\Pi_v = -h + m(\theta)\left(\alpha \int_0^{+\infty} \Pi(\Delta)\,\mathrm{d}F(\Delta) + (1-\alpha)\int_{\Delta_1}^{+\infty} \Pi(\Delta)\,\mathrm{d}F(\Delta)\right)$$

where h stands for the cost of job vacancy per unit of time and α is the probability to meet an unemployed worker not counseled given that an unemployed workers has been met:

$$\alpha = \frac{u_0}{u_1\delta + u_0}.$$

The free entry condition, $\Pi_v = 0$, implies that

$$\frac{h}{m(\theta)} = \left(\alpha \int_0^{+\infty} \gamma(\Delta)\,\mathrm{d}F(\Delta) + (1-\alpha)\int_{\Delta_1}^{+\infty} \gamma(\Delta)\,\mathrm{d}F(\Delta)\right)(y - w).$$

In steady state equilibrium, the flows of entries into and exits from counseled unemployment are equal:

$$\mu u_0 = \lambda_0 \bar{F}(\Delta_1)\delta u_1$$

where $\bar{F} = 1 - F$, thus

$$\alpha = \frac{\lambda_0 \bar{F}(\Delta_1)}{\lambda_0 \bar{F}(\Delta_1) + \mu}.$$

Let us assume that $m(\theta) = m_0\theta^{-\eta}$. Then, from $\lambda_0 = \theta m(\theta)$, we get $m(\theta) = m_0^{1/(1-\eta)}\lambda_0^{-\eta/(1-\eta)} = \Lambda\lambda_0^{-\sigma}$.

We therefore obtain the demand condition

$$\frac{rh}{(y-w)\Lambda} = \lambda_0^{-\sigma}\left(\frac{\mu}{\lambda_0\bar{F}(\Delta_1)+\mu}\int_{\Delta_1}^{+\infty}\gamma\left(\Delta\right)\mathrm{d}F\left(\Delta\right)+\frac{\lambda_0\bar{F}(\Delta_1)}{\lambda_0\bar{F}(\Delta_1)+\mu}\int_0^{+\infty}\gamma\left(\Delta\right)\mathrm{d}F\left(\Delta\right)\right) \tag{8}$$

which relies the job offer arrival λ_0 to the reservation duration of counseled unemployed workers. The job offers arrival decreases with the reservation duration because employers face a higher probability to meet a worker who refuses job offers when the reservation duration is higher. From this point of view, the reservation duration of counseled unemployed workers has a negative impact on the job arrival rate of the non counseled unemployed workers.

2.3 Equilibrium counterfactual

Equibrium in presence of the policy is determined by equations (7) and (8), where r, δ, $F(.)$, h, π, Λ and σ are parameters, μ is the policy and λ_0 and Δ_1 are endogeneously determined:

The properties of λ_0 and Δ_1 as implicit functions are summarized in Appendix A. It can be checked that (7) defines an increasing relation between λ_0 and Δ_1 with $\lambda_0 \to 0$ when $\Delta_1 \to 0$ and $\lambda_0 \to +\infty$ when $\Delta_1 \to +\infty$, whereas (8) defines a decreasing relation between λ_0 and Δ_1, with $\lambda_0 \to 0$ when $\Delta_1 \to +\infty$ and $\lambda_0 \to \lambda_{00}$ when $\Delta_1 \to 0$, where λ_{00} is the counterfactual equilibrium offer arrival rate (in the absence of the policy, $\mu = 0$), which is merely given by:

$$\frac{h}{(y-w)\Lambda} = \lambda_{00}^{-\sigma}\int\gamma(\Delta)dF\left(\Delta\right) \tag{9}$$

The equilibrium effect of the policy on the untreated is given by λ_0/λ_{00}.

3 Econometric implementation

We note R for $rh/(y-w)\Lambda$, a measure directly related to the return on opening jobs, and we assume that the distribution $F\left(\Delta\right)$ can be parametrized:

$$F\left(\Delta\right) = 1 - e^{-\eta\Delta}$$

implying that the employment duration has a constant hazard. We group data into cells formed by a set of observed (X) and unobserved (ε) characteristics and we assume that there exist separate job 'markets' for each cell. Unobserved characteristics follow a parametrized distribution $H(\varepsilon;\pi)$. Each market has its own values for exogeneous parameters μ, R and η: $\mu(X,\varepsilon)$, $R(X,\varepsilon)$ and $\eta(X,\varepsilon)$. Parameters δ and σ are assumed constant across markets and r and σ are not estimated. In other words, we allow for heterogeneity in productivity and access to treatment, but not in structural treatment effect and market efficiency. As explained above, equations 7 and 8 implicitly define the two endogenous, within each market (X,ε):

$$\lambda_0\left(\delta,\sigma,\mu(X,\varepsilon),R(X,\varepsilon),\eta(X,\varepsilon)\right)$$
$$\Delta_1\left(\delta,\sigma,\mu(X,\varepsilon),R(X,\varepsilon),\eta(X,\varepsilon)\right)$$

For convenience we also defined the net exit rate of the treated as:

$$\lambda_1=\lambda_0\left(1+\delta\right)\overline{F}\left(\Delta_1\right)$$

Our objective is to estimate the parameters of this model, with data on transitions on the labor market, while imposing the structure of the model implied by those two implicit functions.

We potentially observe three durations:

- t_U: total unemployment duration
- t_T: unemployment duration until entry into treatment
- t_E: employment duration

In a given market (conditional on X and ε), the likelihood has the following expressions (where dependence of all parameters over X and ε is kept implicit):

- If treatment occurs before exit to employment ($t_T<t_U$):

$$L(t_U,t_T,t_E|X,\varepsilon)=\mu\left[\lambda_1\right]^{c(U)}e^{-([\lambda_0+\mu]t_T+\lambda_1[t_U-t_T])}\left[\eta^{c(E)}1_{t_E>\Delta_1}e^{-\eta(t_E-\Delta_1)}\right]^{c(U)}$$

- If exit to employment occurs before treatment ($t_T = t_U$):

$$L(t_U, t_T, t_E|X, \varepsilon) = [\lambda_0]^{c(U)} e^{-((\lambda_0+\mu)t_U)} \left[\eta^{c(E)} e^{-\eta t_E}\right]^{c(U)}$$

where $c(U) = 0$ when the unemployment spell is censored and 1 otherwise and $c(E) = 0$ when the employment spell is censored and 1 otherwise.

The observable likelihood then has the following expression:

$$L(t_U, t_T, t_E|X) = \int L(t_U, t_T, t_E|X, \varepsilon) dH(\varepsilon; \pi)$$

3.1 Identification

We show that due to constant hazards the model can be identified for a given value of σ, even without continuous covariates.

The model defines λ_0, Δ_1 and $\lambda_1 = \lambda_0 (1 + \delta) \overline{F} (\Delta_1)$, as functions of parameters δ and σ, and values of μ, R and η, which contain heterogeneity terms. We have

$$\begin{aligned}
\lambda_0 &= \lambda_0 (\delta, \sigma, \mu, R, \eta) \\
\Delta_1 &= \Delta_1 (\delta, \sigma, \mu, R, \eta) \\
\lambda_1 &= \lambda_1 (\delta, \sigma, \mu, R, \eta) = \lambda_0 (\delta, \sigma, \mu, R, \eta)_0 (1 + \delta) \exp (-\eta \Delta_1 (\delta, \sigma, \mu, R, \eta))
\end{aligned}$$

We reset these parameters as $x = \lambda_0 + \mu$, $y = \lambda_1$ and $z = \eta$. Likewise we can express:

$$\begin{aligned}
\mu &= \mu (\delta, \sigma, x, y, z) \\
\lambda_0 &= \lambda_0 (\delta, \sigma, x, y, z) = x - \mu (\delta, \sigma, x, y, z) \\
\lambda_1 &= y \\
\Delta_1 &= \Delta_1 (\delta, \sigma, x, y, z) = \left(\log (x - \mu (\delta, \sigma, x, y, z)) - \log \left(\frac{y}{(1 + \delta)} \right) \right) \Big/ z \\
R &= R (\delta, \sigma, x, y, z) \\
\eta &= z
\end{aligned}$$

We assume that this transformation is locally invertible, so that the new density G is well-defined. The data identifies the probability of transition at different time:

$$p\left(t_t, t_R, t_E\right) = \int \mu\lambda_1\eta\exp\left(-\left(\lambda_0+\mu\right)t_T - \lambda_1 t_R - \eta\left(t_E-\Delta_1\right)\right)H\left(t_E-\Delta_1\right)dG\left(x,y,z\right)$$
$$= \int \exp\left(-xt_T - yt_R - zt_E\right)\mu\left(\delta,\sigma,x,y,z\right)yz\exp\left(z\Delta_1\left(\delta,\sigma,x,y,z\right)\right)H\left(t_E-\Delta_1\right)g\left(x,\right.$$

where H is the Heavyside function, t_T is the date of treatment, $t_R = t_U - t_T$ the residual duration in unemployment in case of treatment and t_E the employment duration.

Recalling the injectivity of Laplace transform, for given δ and σ we identify the function $\mu\left(\delta,\sigma,x,y,z\right)yz\exp\left(z\Delta_1\left(\delta,\sigma,x,y,z\right)\right)g\left(x,y,z,\delta,\sigma\right)$ (that is $\left(1+\delta\right)\mu\left(\delta,\sigma,x,y,z\right)\left(x-\mu\left(\delta,\sigma,x,\right.\right.$) as we know $\mu\left(\delta,\sigma,x,y,z\right)$, for δ and σ given, we know $g\left(x,y,z,\sigma,\delta\right)$. Using that $\int g\left(x,y,z,\sigma,\delta\right)dxdydz = 1$, we see that we can identifies one of δ and σ.

3.2 Estimation

For the sake of tractability, we further assume that:

$$\mu(X,\varepsilon) = \exp(X\beta_\mu + \varepsilon^1\pi^1_\mu + \varepsilon^2\pi^2_\mu)$$
$$R(X,\varepsilon) = \exp(X\beta_R + \varepsilon^1\pi^1_R + \varepsilon^2\pi^2_R)$$
$$\eta(X,\varepsilon) = \exp(X\beta_\eta + \varepsilon^1\pi^1_\eta + \varepsilon^2\pi^2_\eta)$$

so that heterogeneity is modeled as a loading factor model. With two factors, the covariances between the parameters μ, R and η is unrestricted. $\varepsilon = (\varepsilon^{1,2})$ is iid binomial $\sim \mathcal{B}(0.5, 0.5)$ with mass points taking values $-1, 1$, and $\pi = \left(\pi^{1,2}_\mu, \pi^{1,2}_R, \pi^{1,2}_\eta\right)$ are loading factors. We also calibrate $r == 0.05$ and $\sigma == 1$[3]. Also, δ is parameterized as $\exp(\beta_\delta)$, which excludes the possibility that counseling may lead to less efficient search (it does not imply, however, that exit from unemployment is necessarily faster, as this also depends on $\bar{F}(\Delta_1)$). Finally, the parameters to estimate are $(\beta_\mu, \pi^{1,2}_\mu, \beta_R, \pi^{1,2}_R, \beta_\eta, \pi^{1,2}_\mu, \beta_\delta)$. Estimation proceeds in two steps :

(1) Maximize the likelihood separately for every cell c to recover $(\hat{\mu}_c, \widehat{\pi}^{1,2}_{\mu c}, \widehat{R}_c, \widehat{\pi}^{1,2}_{Rc}, \widehat{\eta}_c, \widehat{\pi}^{1,2}_{\eta c}, \widehat{\beta}_{\delta c})$. This step implies the numerical resolution of the implicit equations 7 and 8 for each cell c in order to include the resulting values λ_{0c} and Δ_{1c} in the likelihood.

[3] We did robustness checks for 21 values of σ ranging between 0.75 and 1.25.

(2) In order to recover parameters $(\beta_\mu, \pi_\mu^{1,2}, \beta_R, \pi_R^{1,2}, \beta_\eta, \pi_\mu^{1,2}, \beta_\delta)$, estimate an asymptotic least square model over the vector of cells estimates $(\hat{\mu}_c, \widehat{\pi}_{\mu c}^{1,2}, \widehat{R}_c, \widehat{\pi}_{Rc}^{1,2}, \widehat{\eta}_c, \widehat{\pi}_{\eta c}^{1,2}, \widehat{\beta}_{\delta_c})$:

$$
\begin{aligned}
\hat{\mu}_c &= X_c\beta_\mu + \phi_{\mu c} \\
\widehat{\pi}_{\mu c}^{1,2} &= \pi_\mu^{1,2} + \phi'_{\mu c} \\
\widehat{R}_c &= X_c\beta_R + \phi_{Rc} \\
\widehat{\pi}_{Rc}^{1,2} &= \pi_R^{1,2} + \phi'_{Rc} \\
\widehat{\eta}_c &= X_c\beta_\eta + \phi_{\eta c} \\
\widehat{\pi}_{\eta c}^{1,2} &= \pi_\mu^{1,2} + \phi'_{\eta c} \\
\widehat{\beta}_{\delta_c} &= \beta_\delta + \phi_\delta
\end{aligned}
$$

For each structural parameter $\mu(X,\epsilon)$, $R(X,\epsilon)$ or $\eta(X,\epsilon)$, the share of the unobserved heterogenity in its variance can be computed as the empirical analog of $\frac{E\{Var(\dagger(X,\epsilon)|X)\}}{E\{Var(\dagger(X,\epsilon)|X)\}+Var\{E(\dagger(X,\epsilon)|X)\}}$ which is $\frac{(\hat{\pi}^1)^2+(\hat{\pi}^2)^2}{(\hat{\pi}^1)^2+(\hat{\pi}^2)^2+\hat{Var}(\dagger_c|c)}$

We can then compute counterfactuals based on $(\beta_\mu, \pi_\mu^{1,2}, \beta_R, \pi_R^{1,2}, \beta_\eta, \pi_\mu^{1,2}, \delta, \sigma, r)$:

- The effect of the policy on the non-treated : the exit rate from unemployment for the non treated λ_0 compared with the exit rate λ_{00} that would prevail if the policy did not exist $(\delta = 0)$. This is a measure of the policy spillover on the un-treated.

- The effect of the treatment : the treated net exit rate from unemployment, $\lambda_0\delta e^{-\eta\Delta_1}$ vs the exit rate λ_0 of the non treated.

- The equilibrium effect of the reform on the treated, ie $\lambda_0\delta e^{-\eta\Delta_1}$ vs the exit rate λ_{00} in the absence of the policy.

- The effect of the policy on unemployment duration: the expected duration (*ex ante* ie either treated or non treated) vs the counterfactual expected duration in the absence of the reform $(\delta = 0)$.

4 Data

The empirical analysis is based on administrative longitudinal data extracted from the records of the French public unemployment service (ANPE). We use unemployment inflow starting in July 2001, when counseling schemes where introduced at a significant scale as part of the so-called *Plan d'Aide au Retour à l'Emploi*. During a compulsory meeting, the unemployed person and the caseworker come to an agreement over the degree of assistance that the person should receive. Depending on this evaluation and available spots, the unemployed may be subsequentely offered a scheme. We count as treatment, 4 categories of schemes: a basic *Skill assessment*; a more intensive *Project assessment* whereby a personel adviser helps the individual analyse her past experience and match her skills with a new employment project compatible with the state of the labor market; *Job-search support*, aimed at directly helping individuals on their search actions; finally a *Project support* similar to Project assessment, but targetted at lower ability workers who have stronger difficulties with the labor market. Although there is sufficient data to analyze those schemes separately (Crépon et al. 2005), we bunch them into a unique treatement.

We use a 1/12 nationally representative sample of all unemployed persons registered with ANPE [4]. We sample all inflow spells since July 2001 and data end in June 2004. We also truncate spells when the unemployed reaches 55. The data contain a large number of individual characteristics. We retain the following characteristics: gender, nationality, children, marital status, educational level, age, and reason of entry into unemployment.

Entry into and exit from unemployment are recorded on a daily basis, so that we model duration in continuous time. In this data, unemployment differs from the ILO conventional notion, in the sense that people are recorded as job seekers as long as they report so to ANPE on a monthly filled form, even if they have held occasional or short-term jobs, which they have to declare. As a result, we have reconstructed unemployment spells to account for the fact that a job is found, even if the individuals still reports himself

[4]The sample consists of all individuals born on March of an even year or October of an odd year. This sample, named "Fichier historique statistique" is updated routinely by ANPE.

as a job-seeker to the administration. In practice, we end the spell when the individuals either exits for good or holds such a short-term job, provided he worked at least 78 hours in the month. The exact date of employment is not declared in that case and we compute it arbitrarily, as if reported hours where worked full time at the end of the period. When this occasional employment stops, we start a new spell (with the same kind of conventional starting date), and so on. We end up with a sample of 983,453 unemployment spells.

Transitions may occur towards other destinations than employment but they will be treated as censoring, which implies that they depend upon a disjoint subset of parameters. Although undesirable in some instances, this hypothesis maintains tractable estimation. "Other destinations" include training, illness, inactivity and, most importantly, subsidized public employment. In addition, some unemployed do not send their monthly form at some point so that they are known to exit but the destination is unobserved. Estimation is limited to individuals with known exit.

As we have no direct information on employment periods, we measure employment duration as the time between an exit to employment and a new unemployment spell. We have 553,422 such employment spells.

ANPE also provided data on the services that benefited each unemployed worker in the sample, with a date for the effective beginning of the scheme. This has been matched with the data on unemployment spells. Out of the 983,453 spells, 108,691 received counseling. Note that, when we split administrative spells into a series of effective spells, we maintain the treatment status only for the effective spells in effect when treatment started.

5 Results

We defines cells by sex, age, education, marital status and nationality. We end up with $14,113$ cells. We only retain the 2057 of them which consist of 51 or more observation. The largest cell contains 34260 observations. Table 1 give a few statistics on these cells.

Table 2 shows the estimated parameters, β_μ, β_R, β_η, and δ, as well as heterogeneity parameters, obtained from asymptotic least squares on maximum likelihood first step. Table 3 shows how the λ_{0c} and Δ_{1c} -based on the μ_c, R_c and η_c from the first step- vary X.

Tables 4 and 5 show the regression of policy counterfactuals against X. Most parameters are precisely estimated. The structural effect of treatment, δ, is to increase exit rates at which the unemployed meet jobs: the average value for $1 + \delta$ is $1,8$, precisely estimated, so that counseling accelerates the exit rates from unemployment by 80% conditional on the acceptance of the job offer by the unemployed ($d \geq \Delta_1$). The net acceleration due to the treatment $\lambda_1 e^{-\eta\Delta_1}$ is lower, however, as mentioned above and this will be addressed later on.

Entry rates into counseling μ_c The average probability to enter a counseling scheme in less than a year is 25%. Women tend to receive counseling more often (18%) than do men, especially if divorced. Having children also increases this probability. One more child increased by 5% this probability. Migrant from the rest of Europe enroll significantly more (60% more). Education has a noticeable impact : the most treated are people with medium academia standards (finishing high school). Counseling is the least frequent at mid-career (30-40 year-old). Those whose were not fired neither resigning are less targeted by the scheme. Nearly 5% of the variance of μ across individuals is explained by the covariates X, the other 95% by the unobserved heterogeneity.

The productivity factor R_c This parameter is actually inversely proportional to productivity $y - w$. As a result, it is no surprise that it decreases mainly with education and age. Demographic variables are more difficult to interpret. 12% of the variance of R across individuals is explained by the covariates X, the other 88% by the unobserved heterogeneity.

Exit rates from employment η_c The average duration of an employment spell, based on our parameters is 7-month long. This duration is 6% lower for women, again even more so for divorced ones. Individuals from European countries experience the same duration as French-born workers, while Africans face a typical duration of $4,5$ months only. People previous laid off stay 25% less longer in their new jobs than the baseline. The duration increases with the level of education, up to 13 months for the most educated. Age has no significant effect. The average dispersion is equal to 1.3. Gender has no significant impact on it. Rearing children increases it by 5%. People from a Northern African background seem to be much more heterogeneous (60%) towards job duration. The same holds for those who went to college but get not diploma - but with lesser figure of 25% -. The newcomers and the young are close to the baseline, while older and incumbent show lesser dispersion within a cell. 11% of the variance of η across individuals is explained by the covariates X, the other 89% by the unobserved heterogeneity.

The effect of the policy on the non-treated In our model, the policy considered -counseling a fraction of the jobless- makes the exit rate of the unemployed λ_0 lower by 2.5% than in the absence of the policy, as compared to the rate that would prevail in the absence of the policy, λ_{00}. This can be interpreted as a dominating substitution effect : the counseled are higher in the waiting queue at the expense of the non-counseled. The effect is -1 point stronger for women and -2 points stronger for those with children. For the Northern African it deviates from the baseline down to -5%. The effect gets close to 0 for the jobless who resigned or whose contract came to an end. The elderly turn out to be significantly more affected by this substitution, by -5%. Nearly 50% of the variance of this effect across individuals is explained by the covariates X.

The effect of the treatment The net effect of the treatment on exit rate from unemployment to employment, $\lambda_1 e^{-\eta\Delta_1}/\lambda_0$, is 9.5% on average. Once again, gender and family environment matter : the treatment is 1 point stronger for women, 3 points stronger for those with children, 5 points for the divorced ones. The treatment is significantly higher for Northern African (18 points more). Post-high school diploma has only a small effect. The newcomers are close to the baseline. Those whose contract came to an end show a much smaller effect (8 point less). The effect increases with age up to 13 point more, for the 50-55. Only 5% of its variance across individuals is explained by X.

The effect of the policy on the treated The policy increased the exit rate of the treated by 6.5% (the sum of the two previous effect). Being a women increases this effect by one more point. Having one child increases it by $1,5$ additional point. Otherwise children do not have any significant effect left. Being divorced is again an advantage regarding the exit rate of the treated (2 more points than the baseline). Being from a foreign background also increases this rate (between 3 and 8 as well). Diploma have no significant effect. The effect increases with age up to 8.5 points more for the 50-55. Nearly 2% of the variance of the effect across individuals is explained by the covariates.

The effect of the policy on unemployment duration The reform would make unemployment 2% longer on average, which implies that the substitution effect would overcome the effect of a better/quicker matching of the counseled. The estimates of the covariates are much less significant. Being divorced, having children, being form an Northern African background or over 50 bring 2 more points to the baseline effect. On the other hand, end of contracts and lower diploma decreases it by nearly 1 point. A mere 1% of its variance is accounted by the covariates.

6 Conclusion

The policy seems to induce a large displacement effect : people counseled exit unemployment quicker after the reform, but they do at the expense of the other jobless. More precisely, while the effect of the treatment on the treated is high and the effect on the non treated is low in absolute value, the treatment is not widespread at this stage of the reform. Further simulations shows (...)

To be continued

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7 Appendix A : implicit functions $\lambda_0(r,\sigma,R,\eta,\mu,\delta)$ and $\Delta_1(r,\sigma,R,\eta,\mu,\delta)$

As above, we assume that he distribution $F(d)$ can be parameterized as:

$$F(d) = 1 - e^{-\eta d}$$

Equations (7) and (8) reduce to:

$$\begin{aligned}(\eta + r)(r+\mu)(1-e^{-r\Delta_1}) &= \lambda r\left((1+\delta)e^{-(\eta+r)\Delta_1} - 1\right)\\ r(\eta+r)(\lambda e^{-\eta\Delta_1} + \mu) &= R\lambda^{-\sigma}e^{-\eta\Delta_1}(\mu\eta(1-e^{-r\Delta_1}) + r\mu + r\lambda)\end{aligned}$$

where r,σ,R,η,μ and δ are given market or policy parameters, and λ_0 and Δ_1 are the endogenous to determine. For a given set of these parameters, we prove the existence and the uniqueness of λ_0 and Δ_1 solving (7.2), as well as the regularity of the implicit functions they define. Then we describe the behaviour of λ and Δ_1 as parameters vary across policies and markets. For the sake of simplicity we denote :

$$\begin{aligned}S_g &= (\eta + r)(r+\mu)(1-e^{-r\Delta_1})\\ D_g &= r(\eta+r)(\lambda e^{-\eta\Delta_1} + \mu)\\ S_d &= \lambda r\left((1+\delta)e^{-(\eta+r)\Delta_1} - 1\right)\\ D_d &= R\lambda^{-\sigma}e^{-\eta\Delta_1}(\mu\eta(1-e^{-r\Delta_1}) + r\mu + r\lambda)\end{aligned}$$

such as (7.2) becomes:

$$\begin{aligned}S_g\left(r,\sigma,R,\eta,\mu,\delta;\lambda,\Delta_1\right) &= S_d\left(r,\sigma,R,\eta,\mu,\delta;\lambda,\Delta_1\right)\\ D_g\left(r,\sigma,R,\eta,\mu,\delta;\lambda,\Delta_1\right) &= D_d\left(r,\sigma,R,\eta,\mu,\delta;\lambda,\Delta_1\right)\end{aligned}$$

7.1 Derivatives of S_g,S_d,D_g and D_d

The computation of the derivative of $\log S_g$,$\log S_d$,$\log D_g$ and $\log D_d$ by $r,\sigma,R,\eta,\mu,\delta\lambda$ and Δ_1 is useful for the various proofs of the paper. That is:

$$\begin{pmatrix}
\frac{1}{r+\eta}+\frac{1}{r+\mu}+\frac{\Delta_1 e^{-r\Delta_1}}{1-e^{r\Delta_1}} & \frac{1}{r+\eta}+\frac{1}{r} & \frac{1}{r}-\frac{\Delta_1(1+\delta)e^{-r\Delta_1}}{(1+\delta)e^{-(\eta+r)\Delta_1}-1} & \frac{\mu+\lambda+\mu\eta\Delta_1 e^{-r\Delta_1}}{\mu\eta(1-e^{-r\Delta_1})+r\mu+r\lambda} \\
0 & 0 & 0 & -\log(\lambda) \\
0 & 0 & 0 & \frac{1}{R} \\
\frac{1}{r+\eta} & \frac{1}{r+\eta}-\frac{\lambda\Delta_1 e^{-eta.d1}}{\lambda e^{-\eta\Delta_1}+\mu} & -\frac{\Delta_1(1+\delta)e^{-(\eta+r)\Delta_1}}{(1+\delta)e^{-(\eta+r)\Delta_1}-1} & -\Delta_1+\frac{\mu(1-e^{-r\Delta_1})}{\mu\eta(1-e^{-r\Delta_1})+r\mu+r\lambda} \\
\frac{1}{r+\mu} & \frac{1}{\lambda e^{-\eta\Delta_1}+\mu} & 0 & \frac{\eta(1-e^{-r\Delta_1})+r}{\mu\eta(1-e^{-r\Delta_1})+r\mu+r\lambda} \\
0 & 0 & \frac{e^{-(\eta+r)\Delta_1}}{(1+\delta)e^{-(\eta+r)\Delta_1}} & 0 \\
0 & \frac{e^{-\eta\Delta_1}}{\lambda e^{-\eta\Delta_1}+\mu} & \frac{1}{\lambda} & -\frac{r}{\lambda}+\frac{r}{\mu\eta(1-e^{-r\Delta_1})+r\mu+r\lambda} \\
-\frac{re^{-r\Delta_1}}{1-e^{-r\Delta_1}} & -\frac{\eta\lambda e^{-\eta.\Delta_1}}{\lambda e^{-\eta\Delta_1}+\mu} & -\frac{(\eta+r)(1+\delta)e^{-(\eta+r)\Delta_1}}{(1+\delta)e^{-(\eta+r)\Delta_1}-1} & -\eta+\frac{r\eta\mu e^{-r\Delta_1}}{\mu\eta(1-e^{-r\Delta_1})+r\mu+r\lambda}
\end{pmatrix}$$

7.2 Existence and uniqueness of

$r, \sigma, R, \eta, \mu, \delta$ are held fixed. The sign of the jacobian $J = \begin{vmatrix} \frac{\partial(S_g-S_d)}{\partial\lambda} & \frac{\partial(S_g-S_d)}{\partial d1} \\ \frac{\partial(D_g-D_d)}{\partial\lambda} & \frac{\partial(D_g-D_d)}{\partial d1} \end{vmatrix}$ must not change over the domain of interest:

$$J = -\frac{\eta}{\lambda_0}(1-\lambda e^{-\eta\Delta_1} - r\mu e^{-r\Delta_1}) - ()()$$

To be continued

7.3 Derivatives

Following the implicit functions Theorem, the derivatives $\nabla\lambda_0, \nabla\Delta_1$ of λ and Δ_1 by $r, \sigma, R, \eta, \mu, \delta$ must satisfy:

$$0_{2\times 6} = \begin{pmatrix} \nabla(S_g - S_d) \\ \nabla(D_g - D_d) \end{pmatrix} .Id_6 + \begin{pmatrix} \frac{\partial(S_g-S_d)}{\partial\lambda} & \frac{\partial(S_g-S_d)}{\partial d1} \\ \frac{\partial(D_g-D_d)}{\partial\lambda} & \frac{\partial(D_g-D_d)}{\partial d1} \end{pmatrix} . \begin{pmatrix} \nabla\lambda \\ \nabla\Delta_1 \end{pmatrix}$$

8 Appendix B

	Freq.	Percent
Gender		
Female	1,162	56.52
Male	894	43.48
# **Gender**		
Child=0	932	45.33
Child=1	501	24.37
Child=2	353	17.17
Child=3+	270	13.13
Marital status		
Single	605	29.43
Divorced	313	15.22
Married	1,138	55.35
Background		
French	1,734	84.34
Western Europe	34	1.65
Rest of Europe	32	1.56
Northern African	207	10.07
Rest of Africa	36	1.75
Other background	13	0.63
Job termination		
Newcomers	209	10.17
End of contract	628	30.54
Resignal	194	9.44
Fired	456	22.18
Other	569	27.68
Education		
Other	398	19.36
BEPC	211	10.26
BEP	467	22.71
BAC equivalent	201	9.78
BAC equivalent	251	12.21
Bachelor equivalent	115	5.59
Bachelor equivalent	183	8.90
Bachelor+	230	11.19
Age		
25	250	12.16
25-30	367	17.85
30-40	674	32.78
40-50	530	25.78
50-55	235	11.43
# obs.	2056	

Table 1: Descriptive statistics for cells > 50

	R		μ		η		δ	
	coef.	sd.	coef.	sd.	coef.	sd.	coef.	sd.
Gender (ref.= Male)								
Female	-0.051	(0.015)	0.181	(0.015)	0.06	(0.012)		
# **Children** (ref.=0)								
Child=1	-0.107	(0.028)	0.051	(0.022)	0.007	(0.023)		
Child=2	-0.019	(0.03)	0.128	(0.022)	-0.09	(0.025)		
Child=3+	-0.039	(0.036)	0.033	(0.03)	0.036	(0.03)		
Marital status (ref.=Married)								
Divorced	-0.137	(0.038)	0.191	(0.025)	0.071	(0.03)		
Single	0.026	(0.023)	-0.032	(0.018)	0.098	(0.02)		
Background(ref.=French)								
Western Europe	0.061	(0.163)	0.618	(0.126)	0.023	(0.138)		
Rest of Europe	-0.435	(0.264)	-0.343	(0.132)	0.17	(0.213)		
Northern African	0.287	(0.06)	0.055	(0.061)	0.394	(0.045)		
Rest of Africa	0.134	(0.244)	-0.19	(0.24)	0.468	(0.166)		
Other background	-0.329	(1.038)	1.057	(0.116)	0.582	(0.354)		
Job termination(ref.=Newcomers)								
End of contract	0.282	(0.03)	-0.388	(0.036)	0.057	(0.026)		
Resignal	0.084	(0.043)	0.112	(0.036)	-0.11	(0.037)		
Fired	-0.778	(0.038)	-0.047	(0.037)	-0.186	(0.032)		
Other	-0.203	(0.033)	-0.087	(0.033)	-0.064	(0.029)		
Education(ref.=BEPC)								
BEP	0.092	(0.036)	-0.102	(0.03)	-0.12	(0.029)		
BAC equivalent	-0.008	(0.046)	-0.062	(0.047)	-0.15	(0.037)		
BAC equivalent	0.027	(0.039)	-0.118	(0.036)	-0.274	(0.031)		
Bachelor equivalent	0.004	(0.05)	0.234	(0.039)	-0.258	(0.041)		
Bachelor equivalent	-0.113	(0.041)	0.023	(0.038)	-0.576	(0.034)		
Bachelor+	-0.646	(0.044)	-0.303	(0.055)	-0.692	(0.038)		
Other	0.114	(0.042)	-0.174	(0.031)	-0.174	(0.034)		
Age(ref.=BEPC)								
25-30	-0.203	(0.021)	-0.234	(0.026)	0.029	(0.018)		
30-40	-0.307	(0.022)	-0.134	(0.023)	-0.002	(0.018)		
40-50	-0.337	(0.027)	-0.092	(0.026)	-0.007	(0.023)		
50-55	-1.037	(0.057)	-0.029	(0.031)	-0.068	(0.043)		
Intercept	1.242	(0.051)	-1.185	(0.049)	0.644	(0.042)	-0.21	(0.021)
Loading factors								
θ^1	1.518	(0.009)	-0.079	(0.009)	1.152	(0.006)		
θ^2	-0.112	(0.015)	0.38	(0.012)	0.576	(0.012)		
# obs.	2052		2052		2052			

Table 2: Structural parameters estimates β_μ, β_R, β_η and β_δ (ALS)

	λ_0		Δ_1	
	coef.	sd.	coef.	sd.
Gender (ref.= Male)				
Female	-0.213	(0.02)	-0.043	(0.02)
# **Children** (ref.=0)				
Child=1	-0.203	(0.028)	0.139	(0.028)
Child=2	-0.054	(0.032)	0.12	(0.032)
Child=3+	-0.157	(0.036)	0.112	(0.037)
Marital status (ref.=Married)				
Divorced	-0.188	(0.031)	0.174	(0.032)
Single	-0.161	(0.026)	0.025	(0.026)
Background (ref.=French)				
Western Europe	0.267	(0.295)	0.584	(0.302)
Rest of Europe	-0.589	(0.199)	0.086	(0.204)
Northern African	-0.143	(0.063)	0.047	(0.064)
Rest of Africa	-0.334	(0.191)	0.055	(0.195)
Other background	-0.849	(0.284)	0.165	(0.291)
Job termination (ref.=Newcomers)				
End of contract	0.547	(0.036)	-0.313	(0.037)
Resignal	0.429	(0.05)	0.044	(0.051)
Fired	-0.289	(0.039)	0.01	(0.04)
Other	-0.047	(0.037)	-0.179	(0.038)
Education (ref.=BEPC)				
BEP	0.22	(0.039)	-0.183	(0.04)
BAC equivalent	0.134	(0.05)	0.006	(0.052)
BAC equivalent	0.337	(0.044)	-0.097	(0.045)
Bachelor equivalent	0.303	(0.055)	-0.024	(0.056)
Bachelor equivalent	0.436	(0.053)	0.058	(0.054)
Bachelor+	0.058	(0.055)	0.111	(0.056)
Other	0.263	(0.045)	0.018	(0.046)
Age(ref.=BEPC)				
25-30	-0.362	(0.029)	0.097	(0.03)
30-40	-0.501	(0.03)	0.09	(0.031)
40-50	-0.583	(0.032)	0.178	(0.032)
50-55	-1.012	(0.049)	0.598	(0.05)
Intercept	1.748	(0.057)	0.511	(0.059)
# Obs.	2052		2052	

Table 3: β_{λ_0} and β_{Δ_1} (ALS across cells)

	Effect (1)		Effect (2)		Effect (1)+(2)	
	coef.	sd.	coef.	sd.	coef.	sd.
Gender (ref.= Male)						
Female	-0.01	(0.004)	0.021	(0.006)	0.011	(0.003)
# **Children** (ref.=0)						
Child=1	-0.021	(0.006)	0.035	(0.008)	0.014	(0.004)
Child=2	-0.019	(0.007)	0.026	(0.009)	0.007	(0.005)
Child=3+	-0.031	(0.008)	0.04	(0.01)	0.009	(0.005)
Marital status (ref.=Married)						
Divorced	-0.028	(0.007)	0.05	(0.009)	0.022	(0.005)
Single	-0.022	(0.005)	0.031	(0.007)	0.009	(0.004)
Background (ref.=French)						
Western Europe	0.004	(0.063)	0.027	(0.084)	0.031	(0.044)
Rest of Europe	-0.005	(0.042)	0.069	(0.057)	0.063	(0.03)
Northern African	-0.05	(0.013)	0.099	(0.018)	0.049	(0.009)
Rest of Africa	-0.018	(0.041)	0.047	(0.054)	0.029	(0.029)
Other background	-0.102	(0.06)	0.189	(0.081)	0.087	(0.043)
Job termination (ref.=Newcomers)						
End of contract	0.04	(0.008)	-0.081	(0.01)	-0.041	(0.005)
Resignal	0.018	(0.011)	-0.028	(0.014)	-0.01	(0.008)
Fired	0.006	(0.008)	0.009	(0.011)	0.015	(0.006)
Other	0.033	(0.008)	-0.046	(0.011)	-0.013	(0.006)
Education (ref.=BEPC)						
BEP	0.027	(0.008)	-0.045	(0.011)	-0.018	(0.006)
BAC equivalent	0.014	(0.011)	-0.011	(0.014)	0.003	(0.008)
BAC equivalent	0.023	(0.009)	-0.034	(0.013)	-0.01	(0.007)
Bachelor equivalent	0.014	(0.012)	-0.007	(0.016)	0.006	(0.008)
Bachelor equivalent	0.015	(0.011)	-0.016	(0.015)	-0.001	(0.008)
Bachelor+	-0.001	(0.012)	0.014	(0.016)	0.013	(0.008)
Other	0.008	(0.01)	-0.013	(0.013)	-0.005	(0.007)
Age(ref.=BEPC)						
25-30	-0.006	(0.006)	0.02	(0.008)	0.015	(0.004)
30-40	0	(0.006)	0.014	(0.009)	0.014	(0.005)
40-50	-0.011	(0.007)	0.042	(0.009)	0.031	(0.005)
50-55	-0.046	(0.01)	0.132	(0.014)	0.086	(0.007)
Intercept	-0.033	(0.012)	0.086	(0.016)	0.052	(0.009)
# obs.	2052		2052		2052	

Table 4: Policy effects on exit rate from unemployment (ALS across cells)

	Δ Expected duration		Δ dispersion	
	coef.	sd.	coef.	sd.
Gender (ref.= Male)				
Female	0.005	(0.004)	-0.153	(0.094)
# **Children** (ref.=0)				
Child=1	0.018	(0.005)	0.493	(0.13)
Child=2	0.015	(0.006)	0.551	(0.149)
Child=3+	0.028	(0.006)	0.816	(0.169)
Marital status (ref.=Married)				
Divorced	0.024	(0.006)	0.405	(0.146)
Single	0.019	(0.005)	0.16	(0.121)
Background (ref.=French)				
Western Europe	-0.001	(0.053)	-0.9	(1.388)
Rest of Europe	-0.01	(0.036)	-0.682	(0.936)
Northern African	0.024	(0.011)	0.105	(0.295)
Rest of Africa	0.012	(0.034)	-0.422	(0.897)
Other background	0.034	(0.051)	0.461	(1.361)
Job termination (ref.=Newcomers)				
End of contract	-0.029	(0.007)	-0.705	(0.171)
Resignal	-0.012	(0.009)	0.158	(0.237)
Fired	-0.005	(0.007)	0.058	(0.183)
Other	-0.027	(0.007)	-0.56	(0.176)
Education (ref.=BEPC)				
BEP	-0.023	(0.007)	-0.241	(0.182)
BAC equivalent	-0.013	(0.009)	-0.091	(0.237)
BAC equivalent	-0.02	(0.008)	-0.17	(0.209)
Bachelor equivalent	-0.016	(0.01)	0.372	(0.258)
Bachelor equivalent	-0.014	(0.01)	-0.087	(0.249)
Bachelor+	-0.001	(0.01)	0.251	(0.257)
Other	-0.005	(0.008)	1.1	(0.212)
Age(ref.=BEPC)				
25-30	0.005	(0.005)	0.112	(0.138)
30-40	-0.001	(0.005)	-0.15	(0.141)
40-50	0.004	(0.006)	-0.066	(0.148)
50-55	0.028	(0.009)	0.261	(0.232)
Intercept	0.027	(0.01)	0.597	(0.27)
# obs.	2052		2052	

Table 5: Policy effect on unemployment duration (ALS across cells)