The Lock-in Effects of Information on Part-time Unemployment Benefits
On Line Appendix and Supplementary Figures

Hélène Benghalem* Pierre Cahuc† Pierre Villedieu‡

University of Lausanne Sciences Po Paris, IZA, CEPR Sciences Po Paris

This version: September, 2023

*Contact: helene.benghalem@gmail.com
†Contact: pierre.cahuc@sciencespo.fr
‡Contact: pierre.villedieu@sciencespo.fr

A Appendix

A.1 Unemployment Insurance in France

Eligibility conditions

To qualify for unemployment benefits, the claimant must satisfy the following conditions:

- reside in France,
- have worked at least 122 days or 610 hours (4 months) in the last 28 months (or in the last 36 months for job seekers aged 50 and over) before becoming unemployed,
- have involuntarily lost his/her job (termination by the employer, the end of a fixed-term employment contract or an assignment contract, termination by mutual agreement or resignation for a valid reason),
- be registered as a job seeker with "Pôle emploi",
- be actively seeking employment.

Potential benefit duration

The potential benefit duration is computed based on the principle of "a day of work equals a day of compensation". Claimants must have worked at least 4 months before becoming unemployed. Benefits are then paid for a minimum period of 4 months and a maximum period of 24 months for job seekers aged under 50, and 36 months for job seekers aged over 50.

Benefits

Benefits are calculated on the basis of a daily reference wage. The reference wage is based on earnings subject to contributions during the 12 calendar months prior to the last day of paid work[1]. It is calculated as follows:

$$\text{Daily reference wage } = \frac{\text{Earnings during the past 12 months}}{\text{Number of working days during the past 12 months (up to 365 days)}}$$

The daily benefit is equal to the highest of the following amounts:

- 40.4% of the daily reference wage + a set amount (11.84 euros in 2017)
- 57% of the daily reference wage

This amount cannot be below 28.86 euros or exceed 75% of the daily reference wage.

Monthly benefits, denoted b in the text, are then computed as the number of days in a month times daily benefit.

[1] Up to a limit of 4 times the social security ceiling (13,076 euros per month).

Part-time benefits

The part-time unemployment insurance scheme allows unemployed workers to work on non-regular jobs while on claim. They are allowed to work for any employer, including their past employers. For the sake of simplicity, the text only describes the rules in *net* terms for a job seeker who earned the minimum wage before unemployment. Nevertheless, the rules have been designed in *gross* terms. The marginal benefit reduction rate in gross terms is 70%, meaning that for each euro earned from work, 0.70 cents are deducted from the benefits.

When both the social contributions paid on the wage and on the benefits are deducted, the net financial gain of working is much lower as explained in the text. The contributions on wage amount to around 23% of the gross wage. Moreover, the social contributions on benefits for a job seeker who earned the minimum wage before unemployment represent 4.5%. For job seekers who earned more than the minimum wage before unemployment, the social contributions on benefits represent 9.6%. The net marginal benefit reduction rate is then comprised between 82% ($= \frac{70\%}{1-23\%}(1-9.6\%)$) and 87%($= \frac{70\%}{1-23\%}(1-4.5\%)$).

Evolution of the unemployment insurance capital

At the beginning of her claim, the job seeker is informed about her monthly benefits b and about her potential benefit duration. The initial unemployment insurance capital B_0 is equal to the potential benefit duration times the level of benefits. If job seekers are totally unemployed all along their claim and receive their benefits each month, their benefits will lapse after their potential benefit duration. When job seekers are only paid part of their benefits in a given month, the unpaid amount is rolled over to a later month in the claim, so the capital depreciates at a slower pace. Working while on claim is thus a way to delay the initial exhaustion date. The exhaustion date can be delayed without any limitation. Besides, after the initial benefit entitlement has expired, individuals can be eligible for a new entitlement period at the exhaustion of the unemployment benefits related to their current entitlement period. To do so, job seekers must meet less restrictive eligibility requirements. They must have worked at least 1 month while on claim (instead of 4 months for a first claim). The new potential benefit duration is still calculated on the principle of "a day of work while on claim equals a day of compensation".

A.2 Job search model solution

Maximization of program (4) with respect to the search effort e_t yields the first order condition:

$$-1 + \lambda'(e_t)\beta\left[W - U(B_{t+1})\right] + \eta_t = 0 \tag{A1}$$

where $\eta_t \geq 0$ stands for the multiplier associated with the constraint $e_t \geq 0$. This equation defines the optimal search effort e_t in each period. In order to analyze how e_t evolves over time one needs to know how $U(B_{t+1})$ evolves. We know that B_t decreases over time. Therefore, it suffices to know the sign of the derivative of U to know how e_t evolves. One can show that $U'(B) > 0$. The envelope theorem implies that

$$U'(B_t) = \begin{cases} \beta\left[1 - \lambda(e_t)\right]U'(B_{t+1}) & \text{if } B_t \geq b \\ v'(c_t) & \text{otherwise} \end{cases} \tag{A2}$$

In equation (A2), the case where $U'(B_t) = v'(c_t)$ arises the period just before the total exhaustion of the unemployment insurance capital B_t. It shows that $U'(B_t) = v'(c_t) > 0$ in this period. Then, solving backward, condition $U'(B_t) = \beta\left[1 - \lambda(e_t)\right]U'(B_{t+1})$ in the top of the right hand side of equation (A2) shows that $U'(B_t) > 0$ in all periods, implying that $U(B_t)$ decreases over time since B_t decreases over time.

Let us first consider the case where $\eta_t > 0$. We get from equation (A1)

$$\eta_t = 1 - \lambda'(0)\beta\left[W - U(B_{t+1})\right]$$

We just showed that $U(B_t)$ decreases with t for all $t < T$ and reaches the minimum value $U(0)$ for all $t \geq T$ where T stands for the benefits exhaustion date T. Thus, this equation implies that $\eta_t > 0$ and then $e_t = 0$ for all t iff

$$1 - \lambda'(0)\beta\left[W - U(0)\right] > 0.$$

This situation can arise when the gap between the value of employment and the value of unemployment after the date of exhaustion of benefits is small.

Now, let us consider the case where $U(0)$ is small enough to yield a positive search effort at the benefits exhaustion date T and assume that $\exists t < T$ such that $e_t > 0$. In this case, e_t is defined by equation (A1) with $\eta_t = 0$. Since $\lambda''(e_t) < 0$, differentiation of equation (A1) implies that

$$\frac{\mathrm{d}e_t}{\mathrm{d}U(B_{t+1})} = \frac{\lambda'(e_t)}{\lambda''(e_t)\left[W - U(B_{t+1})\right]} < 0 \tag{A3}$$

and then that the search effort e_t increases over time since $U(B_t)$ decreases over time.

Therefore, the optimal search effort can take 3 different types of time profiles depending on the values of parameters:

1. $e_t = 0$ for all t if $e_T = 0$. This situation arises when the expected gains from job search effort are low.

2. $e_t = 0$ for all $t \leq t_0 \in]0, T[$, $e_t > 0$ for all $t > t_0$, $e_t < e_{t+1}$ for all $t \in [t_0, T[$ and $e_t = e_T$ for all $t \geq T$ if $e_T > 0$,. This situation arises when the expected gains from job search effort at the start of the unemployment spell are low because the initial expected value of unemployment

is high, but declines enough over time to trigger positive search effort before reaching the date of exhaustion of benefits.

3. $e_t > 0$ for all t, $e_t < e_{t+1}$ for all $t < T$ and $e_t = e_T$ for all $t \geq T$ if $e_T > 0$,. This situation arises when the expected gains from job search effort are high from the start of the unemployment spell.

Now, let us look at the choice of working while on claim. Since we look for the reservation level of earnings from work while on claim in situations where individuals accumulate unemployment benefits b and earnings from work while on claim z_t, which arise when $z_t < b+(1-\tau)z_t$, we can focus on the case $z_t < b/\tau$ without loss of generality to determine this reservation level. Maximization of program (4) with respect to Ω_t implies that individuals prefer to work while on claim (i.e. choose $\Omega_t = 1$) if and only if this yields utility gains $\Delta > 0$. The first order approximation of the utility gains from work while on claim with earnings z_t can be computed using equation (4):

$$\Delta \simeq [z_t(1-\tau) - \kappa]\, v'(b) + \beta\,[1 - \lambda(e_t)]\, U'(B_{t+1})\mathrm{d}B_{t+1}$$

Equation (3) implies that $\mathrm{d}B_{t+1} = \tau z_t$, when an individual earns z_t from working while on claim compared with the situation in which she does not work. Using equation (A2) we get:

$$\Delta \simeq [z_t(1-\tau) - \kappa]\, v'(b) + \tau z_t U'(B_t) \tag{A4}$$

The first term of the right hand side, $[z_t(1-\tau) - \kappa]\, v'(b)$, corresponds to the increase in the marginal utility of the current period induced by the increase in current consumption and the second term, $\tau z_t U'(B_t)$, corresponds to the increase in the future expected consumption. From equation (A2) we know that $U'(B_t)$ increases along the unemployment spell, because $\beta(1 - e_t\lambda) < 1$ implies that $U'(B_t) < U'(B_{t+1})$. This property, together with equation (A4), implies that the incentives to work while on claim increase over time.

Now, let us show that equation (A4) implies that the effects of the part-time unemployment insurance scheme on the propensity to work while on claim depend on a single parameter, the marginal taxation rate, which encapsulates all the parameters of the part-time unemployment insurance scheme.

The expected discounted income from work while on claim in period t for an individual who gets benefits until the exhaustion date T – i.e. period T where $B_T = 0$ and $B_{T-1} > 0$ according to the law of motion (3)– is equal to the instantaneous income, $z_t(1-\tau)$, plus the future income that the individual can expect T if she is still unemployed in that period $T-1$. Note that, for the sake of simplicity in this discrete time framework, we assume that the taxed earnings from work while on claim increase the income in the last period before the exhaustion date, and neglect the situation where these taxed earnings move the exhaustion date, without loss of generality. Thus, the expected discounted income from earnings z from working while on claim in period t in the neighborhood of $c_T = b$ is equal to

$$y_t = z_t(1-\tau) + \tau z_t \beta^{T-t} \mathbb{E}_t \left(\prod_{j=t}^{T-1} [1 - \lambda(e_j)] \right)$$

By definition, the marginal taxation rate in period t, denoted by m_t, is equal to $1 - (\mathrm{d}y_t/\mathrm{d}z_t)$,

which yields, from the previous equation

$$m_t = \tau \left[1 - \beta^{T-t} \mathbb{E}_t \left(\prod_{j=t}^{T-1} \left[1 - \lambda(e_j) \right] \right) \right] \tag{A5}$$

Using equation (A2) to compute $U'(B_t)$ recursively from the last period T in which unemployed benefits are collected, we get, in the neighborhood of $c_T = b$:

$$U'(B_t) = \beta^{T-t} \mathbb{E}_t \left(\prod_{j=t}^{T-1} \left[1 - \lambda(e_j) \right] \right) v'(b) \tag{A6}$$

From equations (A5) and (A6), we get

$$\tau U'(B_t) = v'(b) \left(\tau - m_t \right) \tag{A7}$$

Substituting this expression of $\tau U'(B_t)$ in equation (A4) yields

$$\Delta \simeq z_t v'(b) \left(1 - m_t - \frac{\kappa}{z_t} \right) \tag{A8}$$

where m_t is defined by equation (A5). Equation (A8) implies that it is worth working while on claim in period t if and only if

$$z_t (1 - m_t) > \kappa$$

A.3 Definition of variables

Outcomes	Tables and Figures	Definitions
Work while on claim		
Probability to work while on claim	Tables 6, A2, A3, B4, B5, B8, B9, B10, B11, B12, B13, C5 and Figures 7, 10	A job seeker has worked while on claim during a given month if the hours of work during the month and the monthly unemployment benefits are both positive.
Cumulative number of months with work while on claim	Tables 4, A1, A3, B6, B8, B9, B10, B11, B12, B13, C6	Sum of months with a positive number of hours of work while on claim (i.e. positive number of hours of work and positive benefits)
Cumulative number of hours with work while on claim	Tables 4, 5, A1, A3, B6, B8, B9, B10, B11, B12, B13, C7 and Figures 8, 9, A3, A4	Sum of hours of work while on claim (i.e. hours of work when benefits are positive)
Cumulative earnings with work while on claim	Tables 4, 5, A1, A3, B6, B8, B9, B10, B11, B12, B13	Sum of earnings over months with a positive number of hours of work while on claim (i.e. positive number of hours of work and positive benefits)
Cumulative number of hours worked while on claim at the intensive margin	Tables5, B6	Same as above, for the subset of job seekers who worked while on claim at least one day.
Cumulative earnings (in euro) from work while on claim at the intensive margin	Table5, B6	Same as above, for the subset of job seekers who worked while on claim at least one day.

Outcomes	**Tables and Figures**	**Definitions**
Compensated unemployment		
Survival in compensated unemployment	Figures 11, C8	A job seeker has exited compensated unemployment in the month if she perceive no benefit during this month.
Survival in compensated unemployment among job seekers with PBD superior or equal to 2 years	Figures 12, C9	Same as above, for the subset of job seekers with a a potential benefit duration (PBD) superior or equal to 2 years.
Exit toward regular employment		
Survival in unemployment (compensated, non-compensated or part-time)	Figure 13	A job seeker has exited unemployment toward regular employment if he or she is not registered anymore as unemployment and if we observe a hire. Since our data on hires is not exhaustive, we also consider that a job seeker has exited toward regular employment if he or she is not registered anymore as unemployed but still has unclaimed benefits.
Probability to be in regular employment in the last quarter	Tables 7, B7	Let T denote the initial exhaustion month. A job seeker is in regular employment in the last quarter if he or she has exited toward regular employment during month T, $T-1$ or $T-2$ and is still off the unemployment lists at month T.
Probability to be in regular employment in the last month	Tables 7, B7, B8, B9	Let T denote the initial exhaustion month. A job seeker is in regular employment in the last month if he or she has exited during month T.
Hours of work		
Cumulative number of hours of work	Figure A3	Sum of hours of work (whether it is while on claim or not)
Cumulative number of hours of work among job seekers with PBD superior or equal to 2 years	Figure A4	Same as above, for the subset of job seekers with a a potential benefit duration (PBD) superior or equal to 2 years.

Outcomes	**Tables and Figures**	**Definitions**
Job quality		
Probability to have a regular job for at least 3 months	Figure 14	A job seeker has exited unemployment toward regular employment and remain out of the register of job seekers during at least 3 months.
Probability to have a regular job for at least 6 months	Figure C10	A job seeker has exited unemployment toward regular employment and remain out of the register of job seekers during at least 6 months.
Probability to have a regular job for at least 12 months	Figure C11	A job seeker has exited unemployment toward regular employment and remain out of the register of job seekers during at least 12 months.
Unemployment insurance expenditure		
Unemployment insurance payments (in euro)	Table 8	Benefits paid to job seekers.
Unemployment insurance payments (in euro) net of taxes	Tables 8	Benefits paid to job seekers minus the taxes collected by the Unemployment Insurance from work while on claim (contributions for the unemployment insurance amounts to 6.5% of the gross wage).
Number of days of compensated unemployment	Table 8	Days for which a job seeker perceive benefits. The number of days of compensated unemployment equals the number of days in the months minus the number of days not compensated because of work while on claim.

A.4 Randomization Inference

This appendix evaluates the robustness of our results to randomization based inference.

Contrary to conventional inference (cluster-robust p-value based on large sample approximations) which aims to account for sampling uncertainty, randomization based inference accounts for the uncertainty created by the treatment assignment itself. This method, first proposed by Fisher (1936), is increasingly used in experimental papers as an alternative method to perform statistical inference (Bloom et al. (2006), Ichino and Schündeln (2012), Fujiwara and Wantchekon (2013)). Moreover, Young (2019) recently demonstrated that a substantial part of seemingly significant results, obtained with conventional methods, appear to be insignificant when statistical tests are conducted with randomization based methods.

The idea behind randomization inference is intuitive. It makes use of the knowledge that the researcher has on the randomization process to generate placebo estimates of the treatment effect. Thus, the observed ITT estimate, coming from the actual treatment assignment, can be compared to the distribution of these placebo estimates to test for its statistical significance.

A.4.1 Implementation

First, we randomly re-assigned "treatment" in the same way as was done in the experimental setting, that is, a 2 levels stratified sampling as described in section 4.2. Then, we re-estimate the two placebo treatment effect parameters: β_r (Treated vs Control) and δ_r (Control vs Super-control) based on the same estimating equation as equation (7):[2]

$$y_i = \alpha_r + \beta_r Z_{r,i} + \delta_r C_{r,i} + \gamma_r X_i + \eta_{r,i}$$

where $Z_{r,i}$ is a dummy for being assigned to the treated group and $C_{r,i}$ is a dummy for being assigned to a treated area (i.e. being either in the treated group or in the control group but not in the super control group) in random re-assignment r.

We repeat this procedure 5000 times.[3] Finally, for a given outcome, randomization based p-value are obtained by computing the share of randomized based placebo estimates that are superior or equal (in absolute value) to the corresponding experimental estimate. For instance, we have for $\hat{\beta}$:

$$p - \text{value}^{\text{RI}}(\hat{\beta}) = \frac{\sum_{r=1}^{R} \mathbb{1}(\hat{\beta}_r \geq \hat{\beta})}{R}$$

where R is the total number of random draws (i.e. R = 5000 in our setting).

A.4.2 Results

Tables B6 and B7 present the results of randomization inference tests. In particular, Table B6 presents the results for part-time unemployment and Table B7 presents the results for unemployment. We only present the results for outcomes on which we measured a statistically significant treatment effect with cluster-robust p-value.

[2] All the results reported below are based on the specification including covariates.

[3] As a comparison Young (2019), used 10 000 repeftitions but did not detect any appreciable difference above 2000 draws.

Overall, the p-values obtained with randomization inference tests are very close to the cluster-robust model based p-values. To some extent this was expected, considering the relatively large sample size in our experiment. In particular, almost all (i.e. 7 out of 8) estimates that are statistically significant at 5% with model based inference are still significant at 5% with randomization based inference. Both conventional and randomized based inference thus support the view that the treatment had a statistically significant effect on both the propensity to work while on claim and the probability to exit from unemployment (i.e. lock-in effect).

A.5 Heterogeneous treatment effects

This appendix describes the estimation of heterogeneous treatment effects following the approach of Chernozhukov et al. (2018).

The Conditional Average Treatment Effect (CATE) function is:

$$s_0(X) = E[Y(1)|X] - E[Y(0)|X]$$

where X denotes a vector of covariates and Y is the outcome of interest.

We start by splitting evenly the whole sample into a *main* subsample, used to predict $s_0(X)$, and an *auxiliary* subsample, used to estimate the key features of $s_0(X)$. The auxiliary sample is used to predict $s_0(X)$ with machine learning (e.g. Elastic Net, Random Forest). We estimate the model separately for observations in the treatment and control groups, resulting in two prediction models. We then compute the estimated outcome for each observation in the main sample under both treatment statuses, i.e. $\hat{Y}^T(X_i)$ and $\hat{Y}^C(X_i)$ and the estimated propensity score $\hat{p}(X_i)$. Finally we compute $\hat{S}(X_i) = \hat{Y}^T(X_i) - \hat{Y}^C(X_i)$ our proxy for the true CATE, $s_0(X_i)$. However, except under strong assumptions about the ML estimator, this proxy predictor is likely to be an inconsistent estimate of $s_0(X_i)$. This motivates the second step of the procedure where the ML proxy is *post-processed* into the estimates of the key features of $s_0(X_i)$.

To estimate the best linear predictor of the conditional average treatment effect function we run the following weighted regression

$$y_i = \alpha + \beta_1(Z_i - \hat{p}(X_i)) + \beta_2(Z_i - \hat{p}(X_i))(\hat{S}(X_i) - \mathbb{E}\hat{S}(X_i)) + \theta\hat{Y}^C(X_i) + \epsilon_i \tag{A9}$$

where Z_i is an indicator variable equal to 1 for treated individuals, $\mathbb{E}$ denotes the empirical expectation with respect to the main sample and the weights are equal to

$$w(X_i) = \frac{1}{\hat{p}(X_i)(1 - \hat{p}(X_i)))}$$

Chernozhukov et al. (2018) show that $\beta_1 + \beta_2(\hat{S}(X_i) - \mathbb{E}\hat{S}(X_i))$ identifies the best linear predictor of the conditional average treatment effect $s_0(X_i)$. Besides, β_1 identifies the average treatment effect (ATE) and rejecting the null hypothesis that $\beta_2 = 0$ therefore means that there is both heterogeneity and $\hat{S}(X_i)$ captures a relevant part of this heterogeneity. Table B8 presents our estimates of the best linear predictor of the conditional average treatment effect.

Next we estimate the sorted group average treatment effects. Here the parameters of interest are $\mathbb{E}[s_0(X_i)|G]$, where G is an indicator of group membership based on our proxy predictor $\hat{S}(X_i)$. As shown by Chernozhukov et al. (2018), we can recover these parameters by estimating the following weighted regression:

$$y_i = \alpha + \sum_{k=1}^{5} \gamma_k(Z_i - \hat{p}(X_i)) * \mathbb{1}(G_k) + \theta\hat{Y}^C(X_i) + \epsilon_i \tag{A10}$$

where the weights are the same as in equation (A9) and $\mathbb{1}(G_k)$ is equal to 1 if $\hat{S}(X_i)$ lies in the k^{th} interval and 0 otherwise. We cut $\hat{S}(X_i)$ at 50^{th}, 75^{th}, 90^{th}, 95^{th} percentiles. In particular, Group 1 corresponds to the observations that lie in the bottom 50% of $\hat{S}(X_i)$ and Group 5 corresponds to the observations that lie in the top 5% $\hat{S}(X_i)$. Table B9 displays the results we obtained by estimating equation (A10).

A.6 Heterogeneity of treatment effects on the super control group

It is possible that the lack of spillover documented in Tables 4 and 5 arises from the absence of any effects of the treatment on the control group. But it is also possible that the two effects cancel each other out. Crépon et al. (2013) identify displacement effects from variations in the share of treated individuals in each unemployment agency. This does not help us to identify the relative impact of the two effects since the strength of both effects is expected to increase with the share of treated individuals: when more individuals are treated, both information transmission and displacement effects may increase.

However, Crépon et al. (2013) find displacement effects only in weak labor markets where the unemployment rate is high. Thus, in labor markets with a low unemployment rate, only the transmission of information is likely to have a significant impact on the control group if there are informational spillovers. This means that one should observe a positive impact of the treatment on the part-time unemployment take-up of the control group in labor markets where the unemployment rate is low if the provision of information spreads to the control group. To test this assumption, we estimate the following model for individuals in the control and the super control groups:

$$y_i = \alpha_0 + \alpha_1 C_i + \alpha_2 U_i + \alpha_3 (C_i \times U_i) + \alpha_4 X_i + \epsilon_i \tag{A11}$$

where y_i is a measure of part-time unemployment take-up of individual i, U_i is an indicator function equal to one if individual i is located in a commuting zone in the bottom tercile of local unemployment rates ; C_i is a dummy for being in the control group – i.e. in a treated area but not in the treated group since it is excluded from the sample here. $(C_i \times U_i)$ denotes the interaction between C_i and U_i. As previously, X_i is a vector of control variables that includes the variables reported in the summary statistics (Table 2) as well as unemployment entry months and regional fixed effects. Coefficient α_3 is positive if the provision of information spreads to the control group.

Table A1 shows that there is no evidence that the part-time unemployment take-up of the control group increases, compared with the super control group, when the local unemployment rate is low. This suggests that there are no significant information spillovers to the control group arising from the treatment. Accordingly, the absence of spillover – from both displacement effects and information transmission – reported in Tables 4 and 5 is likely the consequence of the absence of any significant impact of the informational treatment on the control group.

Table A1: Spillover effects on part-time unemployment

	3 months		12 months		36 months	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A : Cumulative number of months with work while on claim						
Control	-0.0015	0.0006	0.0047	0.0142	-0.0367	-0.0114
	(0.0043)	(0.0041)	(0.0187)	(0.0162)	(0.0545)	(0.0430)
	[0.725]	[0.891]	[0.799]	[0.379]	[0.501]	[0.790]
Low	0.0025	-0.0035	0.0545**	-0.0219	0.2887***	-0.0278
	(0.0066)	(0.0075)	(0.0236)	(0.0276)	(0.0691)	(0.0754)
	[0.707]	[0.638]	[0.021]	[0.429]	[0.000]	[0.713]
Low X Control	-0.0005	-0.0003	-0.0018	0.0012	0.0316	0.0309
	(0.0079)	(0.0073)	(0.0301)	(0.0267)	(0.0879)	(0.0723)
	[0.946]	[0.970]	[0.953]	[0.965]	[0.719]	[0.669]
Mean super control	0.10		0.57		1.70	
Panel B : Cumulative number of hours worked while on claim						
Control	-0.2188	-0.0466	-0.4772	0.2655	-3.7746	-1.3492
	(0.3031)	(0.2926)	(1.5610)	(1.3726)	(5.2196)	(4.1148)
	[0.471]	[0.873]	[0.760]	[0.847]	[0.470]	[0.743]
Low	0.7206	-0.0510	8.7680***	0.2101	39.7589***	3.5531
	(0.5002)	(0.5525)	(2.1647)	(2.3707)	(7.4701)	(7.7616)
	[0.150]	[0.926]	[0.000]	[0.929]	[0.000]	[0.647]
Low X Control	-0.0246	-0.0472	-0.8199	-1.0094	-1.1072	-3.0131
	(0.5859)	(0.5532)	(2.7197)	(2.4288)	(9.3550)	(7.6591)
	[0.966]	[0.932]	[0.763]	[0.678]	[0.906]	[0.694]
Mean super control	5.75		40.76		135.85	
Panel C : Cumulative earnings (in euro) from work while on claim						
Control	-2.9422	-0.9830	-7.4255	0.2810	-38.7499	-12.8498
	(3.9135)	(3.6114)	(22.1168)	(17.4544)	(73.9316)	(53.5499)
	[0.452]	[0.786]	[0.737]	[0.987]	[0.600]	[0.810]
Low	13.4765*	2.6427	142.4420***	15.2339	641.1864***	106.4218
	(7.1747)	(7.7183)	(31.2417)	(31.7882)	(112.2593)	(104.2902)
	[0.061]	[0.732]	[0.000]	[0.632]	[0.000]	[0.308]
Low X Control	-4.9249	-5.9131	-24.7816	-33.4379	-71.7663	-122.5675
	(8.0957)	(7.6851)	(38.4159)	(33.3205)	(137.1450)	(107.4938)
	[0.543]	[0.442]	[0.519]	[0.316]	[0.601]	[0.255]
Mean super control	69.46		501.78		1709.82	
Covariates	No	Yes	No	Yes	No	Yes
N	69356	69356	69356	69356	69356	69356

Note: This table reports the estimates of coefficients α_1, α_2 and α_3 of equation (A11). Levels of significance: * $<$ 0.10, ** $<$ 0.05, *** $<$ 0.01. Standard errors, reported in parenthesis below the coefficients, are robust and clustered at the local agency level. p-values are reported in brackets. Dependent variables are the same as in Table 4. Each duration (i.e. 3, 12, and 36 months) indicates the elapsed time since treatment. Covariates include all stratum variables reported in Table 2 as well as entry months and regions fixed effects. The sample comprises the control group and the super control group only. "Control" (coefficient α_1) is a dummy for individuals in treated area but not treated. "Low" (coefficient α_2) is a dummy for areas in the bottom tercile of the unemployment rate. "Low $\times$ Control" (coefficient α_3) is the interaction term. The number of observations N corresponds to the number of individuals.

A.6.1 Characteristics of individuals working while on claim in the treated group

It is possible that the informational treatment impacted individuals particularly sensitive to information received by email, implying that those induced to work while on claim by the treatment are very different from those who work while on claim in the absence of our treatment. Knowing whether individuals induced to work while on claim because they received our information about

part-time unemployment benefits resemble other individuals working while on claim is important when it comes to gauging the external validity of our analysis; or, to put it differently, when it comes to gauging whether the effect of the treatment can be compared to the effect of changes in the marginal tax on earnings from work while on claim. We examine this issue in two different ways. First, we compare the characteristics of individuals working while on claim in the treatment and in the control groups. Second, we use the super control group to predict the individual characteristics associated with the propensity to work while on claim and we analyze how treated individuals react to the treatment depending on these characteristics.

Comparison of individuals working while on claim in the treated group and control group Table A2 reports the means of the characteristics of individuals who worked while on claim at least once six months after the treatment, which corresponds to the period in which the treatment has the largest impact on the number of job seekers working while on claim. It is clear that the characteristics of treated individuals working while on claim do not differ from those of other individuals also working while on claim, except for the duration of the last contract before the entry into unemployment. Individuals of the treated group in part-time unemployment had contracts whose duration was more frequently below 3 months before starting their unemployment spell compared with other individuals in part-time unemployment. This means that the informational treatment has larger effects on the propensity to work on non-regular jobs for individuals who worked on such jobs in the past. This is likely because those individuals are more inclined or have more opportunities to work on non-regular jobs. Apart from this difference, the characteristics of individuals of the treated group in part-time unemployment are not statistically different from those of other individuals who work while on claim.

Treatment impact conditional on predicted characteristics associated with work while on claim Now, let us analyze whether the informational treatment has a stronger impact on the probability to work while on claim for individuals more likely to work while on claim in the absence of the treatment. We start by regressing the probability to work while on claim on the covariates displayed in the summary statistics (Table 2) as well as month of entry into unemployment and regional fixed effects for individuals belonging to the super control group.[4] This allows us to rely on out-of-sample untreated units to predict the probability to work while on claim conditional on these covariates.[5] Overall, Table A3 shows that the impact of the treatment on all measures of the intensity of the propensity to work while on claim is more important for individuals whose observable characteristics are associated with a probability above the median to work while on claim. This indicates that the treatment induces individuals to work while on claim whose observable characteristics are similar to those who have a high propensity to work while on claim, which is a situation that should arise if the marginal tax on work while on claim drops.

[4]Tables B11, B12, B13 report the results of this first stage for our outcomes of interest measured one 3, 12 and 36 months after the start of the treatment respectively. We can perceive that most of the characteristics associated with a higher probability to work while on claim at least once are also the characteristics that are prevalent in the most affected group from the CLAN analysis in Table 6. The only exception is the potential benefit duration, which is positively associated with part-time unemployment whereas it is on average lower in the most affected group.

[5]Abadie et al. (2018) stress the importance of using out-of-sample untreated units to proceed to this type of analysis.

Table A2: Summary statistics on individuals working while on claim at least once 6 months after the start of the treatment

	Means				p-value of the difference		
	All	T	C	SC	T - C	T - (C + SC)	T = C = SC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Job seekers characteristics							
Female	.504	.508	.501	.5	.503	.431	.728
Age	31.169	31.08	31.213	31.266	.547	.451	.751
Young	.418	.422	.413	.42	.345	.447	.636
Prime age	.462	.461	.466	.456	.639	.895	.774
Senior	.12	.117	.121	.125	.474	.308	.563
Lower secondary education	.236	.234	.239	.235	.53	.625	.805
Upper secondary education	.488	.488	.489	.486	.92	1	.978
Higher education	.276	.278	.272	.279	.477	.661	.732
Last contract inf to 12 m	.353	.357	.347	.354	.272	.365	.535
Last contract inf to 3 m	.103	.108	.098	.104	.077	.137	.18
Potential benefit duration	611.635	611.155	612.156	611.589	.833	.852	.975
PBD inf to 730 days	.448	.451	.448	.445	.759	.664	.905
PBD sup or eq to 730 days	.552	.549	.552	.555	.759	.664	.905
Daily Reference Wage	60.125	60.546	59.673	60.155	.281	.422	.547
DRW below the mean	.66	.663	.663	.648	.994	.554	.581
DRW above the mean	.34	.337	.337	.352	.994	.554	.581
Days since entry in unemp	105.976	106.241	105.793	105.789	.569	.548	.835
Tenure inf to 3 months	.423	.426	.423	.416	.772	.586	.754
Tenure between 4 and 6 months	.577	.574	.577	.584	.772	.586	.754
Local agencies characteristics							
Number of participants	214.148	217.323	214.428	206.974	.177	.18	.33
Number of claimants	4356.972	4371.09	4340.28	4361.041	.322	.706	.637
Share of part time unemp	.444	.443	.443	.449	.797	.46	.571
Share of long-term unemp	.431	.431	.431	.431	.866	.962	.988
Exit rate from unemp	.064	.064	.064	.064	.535	.547	.781
Unemployment rate	13.817	13.761	13.917	13.733	.102	.48	.296
N	13240	5419	5218	2603			

Columns (1), (2), (3) and (4) report the means of characteristics of individuals working while on claim at least once after the start of the treatment in our final sample, for the treatment, the control and the super control group, respectively. Columns (5)–(8) report the p-values for the difference between assigned to treatment (T) and assigned to control (C) (column 5), the difference between assigned to treatment (T) and non assigned (C + SC), and for the joint significance of assignment status (T, C and SC). See Table 2 for a description of the variables.

Table A3: Treatment heterogeneity conditional on predicted part-time unemployment activity

	After 3 months	After 12 months	After 36 months
	(1)	(2)	(3)
Panel A : Prob. to work while on claim at least once			
Treated	0.001	-0.000	0.001
	(0.0018)	(0.0032)	(0.0037)
	[0.611]	[0.892]	[0.873]
Treated × Above median	0.010**	0.010*	0.007
	(0.0040)	(0.0055)	(0.0060)
	[0.011]	[0.069]	[0.218]
Mean super control	0.06	0.19	0.30
Panel B : Cumulative number of months with work while on claim			
Treated	0.001	0.006	0.038
	(0.0032)	(0.0114)	(0.0250)
	[0.833]	[0.574]	[0.133]
Treated × Above median	0.013**	0.048**	0.100
	(0.0063)	(0.0234)	(0.0649)
	[0.037]	[0.039]	[0.123]
Mean super control	0.10	0.57	1.70
Panel C : Cumulative number of hours worked while on claim			
Treated	-0.102	-0.565	1.696
	(0.1952)	(0.8271)	(1.8660)
	[0.601]	[0.494]	[0.364]
Treated × Above median	1.591***	7.105***	12.116*
	(0.5294)	(2.1583)	(6.3581)
	[0.003]	[0.001]	[0.057]
Mean super control	5.75	40.76	135.85
Panel D : Cumulative earnings (in euro) from work while on claim			
Treated	-0.445	-7.187	14.584
	(2.1089)	(8.4265)	(18.8816)
	[0.833]	[0.394]	[0.440]
Treated × Above median	21.132***	102.325***	210.609**
	(7.0557)	(28.4939)	(84.0406)
	[0.003]	[0.000]	[0.012]
Mean super control	69.46	501.78	1709.82
Covariates	Yes	Yes	Yes
N	92391	92391	92391

Note: Levels of significance: * < 0.10, ** < 0.05, *** < 0.01. Standard errors, reported in parenthesis below the coefficients, are robust and clustered at the local agency level. p-values are reported in brackets. Each panel (outcome) ∗ column (duration) displays the results from a different regression. Each regression include the list of covariates reported in the summary statistics (see Table 2) as well as entry months and regions fixed effects. "Treated" designates individuals who were assigned to treatment (ITT estimate). "Above median" designates individuals for whom the predicted outcome is above the median. For each outcome ∗ duration, the predicted outcome is estimated by an OLS regression using individuals from the super control group only. Individuals from the super control group are not included in the regressions presented in this table to avoid potential bias arising from endogenous stratification as described in Abadie et al. (2018). The number of observations N corresponds to the number of individuals.

A.7 Emails contents

Figure A1: Screenshot of the message received by job seekers (example with gains in gross terms)

Bonjour,

Vous êtes aujourd'hui demandeur d'emploi indemnisable au titre de l'Allocation de Retour à l'Emploi (ARE). **Nous vous informons que vous pouvez travailler sans perdre votre allocation chômage.** Cette possibilité de cumuler votre salaire et votre allocation vous permet:
- **De disposer d'un revenu plus élevé** que votre seule allocation mais sans dépasser le montant de votre ancien salaire brut. Pôle emploi ne retire que 70 centimes d'allocation par euro brut gagné.
- **D'être indemnisé plus longtemps**. Le nombre de jours d'allocations non perçues en raison de votre cumul reste acquis.

A la fin de vos allocations, vous pouvez bénéficier de nouveaux droits grâce à cette activité dès que vous avez exercé 150 heures d'activité réduite.

Illustration:
Mme Dubois augmente son revenu mensuel de 180 euros brut si elle travaille 9 jours dans le mois au SMIC.

Mme Dubois bénéficie d'une allocation de 930 euros pour un mois de 31 jours sans activité. Elle travaille 9 jours sur un mois donné pour un salaire brut de 600 euros. Pôle emploi retire 70 centimes par euro brut gagné. Pôle emploi retire donc 420 euros brut (=0,7 x 600 euros) et continue à verser 510 euros d'allocation. Mme Dubois obtient un revenu mensuel brut de 1110 euros (600 euros de salaire brut + 510 euros d'allocation brute restante), **supérieur de 180 euros** aux allocations perçues pour un mois de chômage complet (930 euros).

Simuler le montant de votre allocation en cas de reprise d'activité

En pratique:
Chaque mois, l'activité professionnelle doit être déclarée au moment de votre actualisation mensuelle. Une copie du bulletin de salaire doit être envoyée aux services de Pôle emploi.

Pour plus d'information:
Les règles de cumul de votre allocation avec un salaire sont détaillées en pièce jointe.

Cordialement,
L'équipe Pôle emploi

Attention :
Ce courriel vous est envoyé automatiquement, merci de ne pas utiliser la fonction "répondre à l'expéditeur".

Vous disposez d'un droit d'accès et de rectification aux informations qui vous concernent auprès de Pôle emploi conformément à la loi du 6 janvier 1978, modifiée, relative à l'informatique,aux fichiers et aux libertés.

Figure A2: Screenshot of the message received by job seekers (example with gains in net terms)

Bonjour,

•••

Mme Dubois augmente son revenu mensuel de 60 euros net si elle travaille 9 jours dans le mois au SMIC.

Mme Dubois bénéficie d'une allocation de 930 euros brut pour un mois de 31 jours sans activité, soit 889 euros net. Elle travaille 9 jours sur un mois donné pour un salaire brut de 600 euros, soit 462 euros net. Pôle emploi retire 70 centimes par euro brut gagné. Pôle emploi retire donc 420 euros brut (=0,7 x 600 euros) et continue à verser 510 euros brut d'allocation, soit 487 euros net. Mme Dubois obtient un revenu mensuel net de 949 euros (462 euros de salaire net + 487 euros d'allocation nette restante), **supérieur de 60 euros** aux allocations perçues pour un mois de chômage complet (889 euros).

Simuler le montant de votre allocation en cas de reprise d'activité

En pratique:
Chaque mois, l'activité professionnelle doit être déclarée au moment de votre actualisation mensuelle. Une copie du bulletin de salaire doit être envoyée aux services de Pôle emploi.

Pour plus d'information:
Les règles de cumul de votre allocation avec un salaire sont détaillées en pièce jointe.

Cordialement,
L'équipe Pôle emploi

Attention :
Ce courriel vous est envoyé automatiquement, merci de ne pas utiliser la fonction "répondre à l'expéditeur".

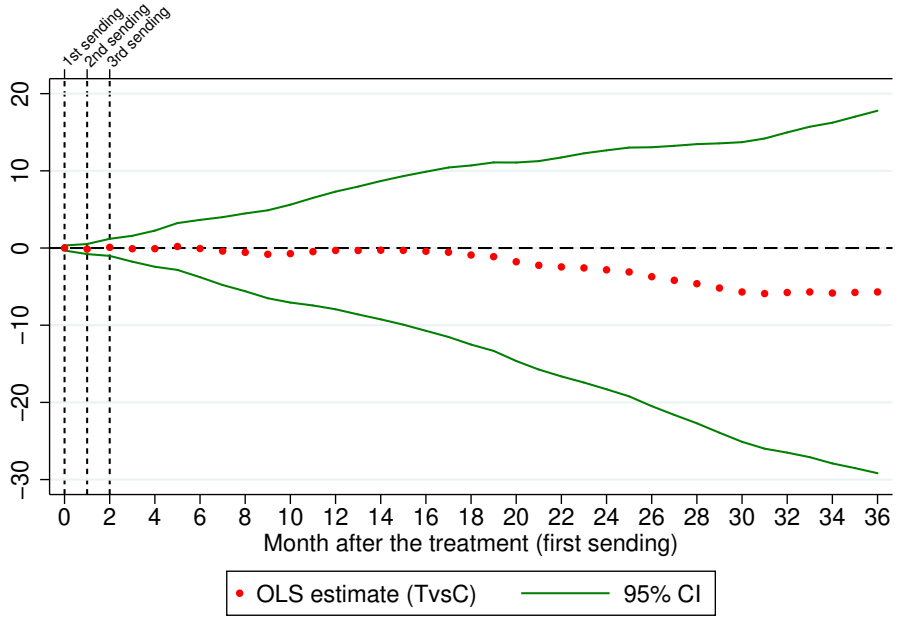
Vous disposez d'un droit d'accès et de rectification aux informations qui vous concernent auprès de Pôle emploi conformément à la loi du 6 janvier 1978, modifiée, relative à l'informatique,aux fichiers et aux libertés.

A.8 Hours of work

In order to better gauge the impact of the informational treatment on overall labor supply, we compute the difference in the number of hours worked (both in part-time unemployment and in regular employment) between the treated group and control group. These results are mainly indicative, to the extent that we know the exact number of hours worked for individuals who are registered at employment agencies but we have no information on the number of hours worked of individuals who definitely exit unemployment in our period. In this case, the number of hours worked is computed by assuming that individuals who exit toward regular employment are working at the same intensity as before their unemployment spell.

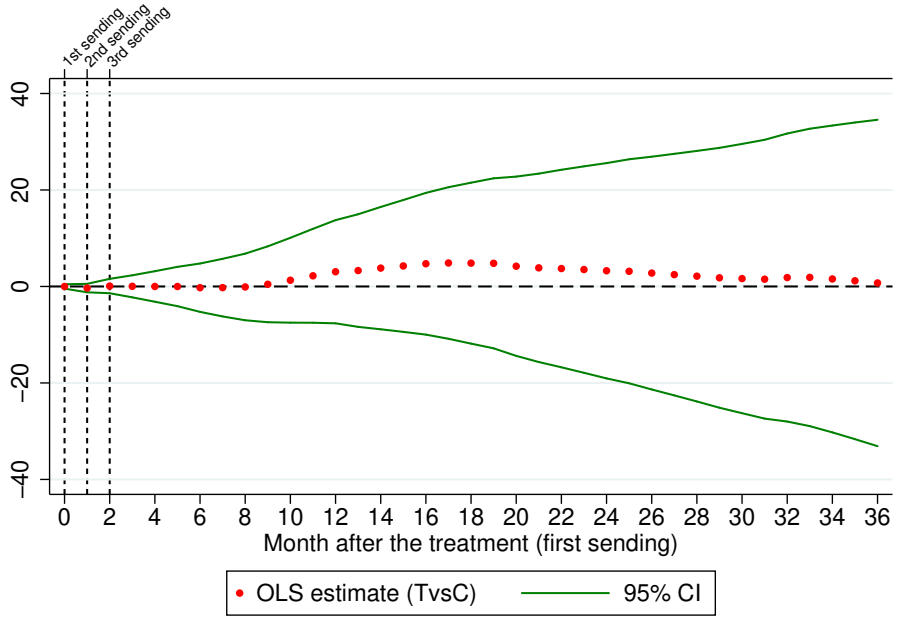
Figure A3 shows that there is a non-significant decrease in cumulative working hours in the treatment group 3 years after treatment. The absence of an increase in hours worked in the first year after the start of treatment suggests, in accordance with Figure 13, that small lock-in effects appear from the start of the unemployment spell insofar as the treatment has a positive effect on the cumulative number of hours worked during the compensation period from four months after the start of treatment (see Figure 8). Treated unemployed, for whom the potential duration of benefits is at least equal to 24 months show an increase (although not significant) in their number of hours of work accumulated until the date of initial exhaustion of benefits (see Figure A4). But it is then wiped out because they are more often unemployed close to the exhaustion date than the untreated unemployed.

Figure A3: Intention to treat effects on the number of accumulated hours of work



Note: Each red dot denotes the point estimate for intention to treat effect at a given time horizon based on OLS regressions (i.e. coefficient β in equation (7) on the number of accumulated hours of work. The green lines denote 95% confidence interval for the corresponding point estimate where standard errors are clustered at the agency level. Estimations do not include covariates but include entropy balancing weights that ensure identical outcome between the treated group and the control group at date zero (Hainmueller (2012)).

Figure A4: Intention to treat effects on the number of accumulated hours of work among job seekers with potential benefit duration superior or equal to 2 years



Note: Each red dot denotes the point estimate for intention to treat effect at a given time horizon based on OLS regressions (i.e. coefficient β in equation (7) on the number of accumulated hours worked. The green lines denote 95% confidence interval for the corresponding point estimate where standard errors are clustered at the agency level. Estimations do not include covariates but include entropy balancing weights that ensure identical outcome between the treated group and the control group at date zero (Hainmueller (2012)).

B Supplementary Tables

Table B4: Summary statistics on the overall sample

	Means				*p*-value of the difference		
	All	T	C	SC	T - C	T - (C + SC)	T = C = SC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Job seekers characteristics							
Worked while on claim before treatment	.127	.126	.126	.13	.868	.371	.414
Still on claim at treatment date	.901	.901	.9	.905	.858	.354	.404
Female	.477	.479	.479	.472	.946	.403	.138
Age	31.5	31.511	31.498	31.484	.863	.97	.977
Young	.419	.416	.418	.43	.436	.514	.265
Prime age	.442	.446	.445	.429	.735	.24	.237
Senior	.139	.139	.137	.141	.531	.342	.632
Lower education level	.224	.224	.222	.228	.321	.237	.462
Intermediate education level	.435	.431	.433	.446	.332	.531	.195
Higher education level	.341	.345	.345	.326	.887	.219	.365
Last contract duration $\leq$ to 12 months	.367	.365	.365	.375	.941	.374	.567
Last contract duration $\leq$ to 3 months	.106	.105	.106	.109	.898	.669	.754
Potential benefit duration	601.958	602.089	602.836	599.949	.632	.522	.807
... < 730 days	.469	.47	.468	.471	.659	.677	.891
... $\geq$ 730 days	.531	.53	.532	.529	.659	.677	.891
Daily Reference Wage	60.245	60.457	60.472	59.371	.957	.603	.866
... $\leq$ the mean	.669	.667	.669	.673	.492	.964	.698
... > the mean	.331	.333	.331	.327	.492	.964	.698
Unemployment entry month							
July 2016	.156	.157	.154	.156	.146	.17	.315
August 2016	.161	.161	.163	.157	.352	.091	.126
September 2016	.288	.288	.288	.289	.89	.774	.938
October 2016	.232	.231	.233	.231	.389	.398	.648
November 2016	.163	.163	.162	.167	.781	.401	.522
Local Agencies characteristics							
Unemployment rate	13.705	13.712	13.712	13.678	.983	.922	.994
Share of part time unemp	.435	.434	.434	.44	.245	.329	.318
Share of recurrent job seekers	.429	.429	.429	.428	.37	.958	.612
Exit rate from unemp	.064	.064	.064	.064	.215	.526	.416
Number of claimants	4365.983	4367.24	4378.652	4338.219	.227	.701	.398
Number of participants	223.505	225.884	226.813	212.166	.172	.119	.129
N	147878	59112	59117	29649			

Note: This table reports descriptive statistics for the sample of individuals on January 2017 before dropping observations for individuals who were not on claim or who had already worked while on claim on 31 January 2017. Columns (1), (2), (3) and (4) report the means of individual characteristics for the treatment, the control and the super control sub-samples, respectively. Columns (5)–(7) report the *p*-values for the difference between assigned to treatment (T) and assigned to control (C) (column 5), the difference between assigned to treatment (T) and non assigned (C + SC), and for the joint significance of assignment status (T, C and SC). See Table 2 for the definition of each covariate.

Table B5: Treatment effect on the probability to work while on claim

	3 months		6 months		12 months		36 months	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A : Prob. to work while on claim at least once								
Treated (β)	0.0037**	0.0037**	0.0044**	0.0044**	0.0037	0.0038	0.0033	0.0033
	(0.0016)	(0.0016)	(0.0022)	(0.0022)	(0.0027)	(0.0027)	(0.0030)	(0.0030)
	[0.025]	[0.023]	[0.046]	[0.041]	[0.177]	[0.164]	[0.277]	[0.264]
In a treated area (δ)	-0.0021	-0.0006	0.0005	0.0037	-0.0017	0.0026	-0.0107*	-0.0038
	(0.0024)	(0.0020)	(0.0034)	(0.0026)	(0.0045)	(0.0032)	(0.0063)	(0.0040)
	[0.384]	[0.765]	[0.874]	[0.147]	[0.708]	[0.417]	[0.090]	[0.345]
Mean super control	0.06		0.11		0.19		0.30	
Panel B : Prob. to work while on claim at least two months								
Treated (β)	0.0013	0.0013	0.0033**	0.0033**	0.0045**	0.0046**	0.0037	0.0038
	(0.0010)	(0.0010)	(0.0017)	(0.0016)	(0.0022)	(0.0022)	(0.0027)	(0.0027)
	[0.221]	[0.219]	[0.044]	[0.041]	[0.043]	[0.037]	[0.184]	[0.163]
In a treated area (δ)	-0.0002	0.0005	0.0003	0.0023	0.0011	0.0045*	-0.0057	0.0002
	(0.0013)	(0.0013)	(0.0023)	(0.0019)	(0.0034)	(0.0026)	(0.0052)	(0.0036)
	[0.887]	[0.719]	[0.910]	[0.233]	[0.734]	[0.083]	[0.275]	[0.965]
Mean super control	0.03		0.06		0.12		0.23	
Panel C : Prob. to work while on claim at least three months								
Treated (β)	0.0003	0.0003	0.0030**	0.0030***	0.0038**	0.0039**	0.0047**	0.0049**
	(0.0005)	(0.0005)	(0.0012)	(0.0012)	(0.0018)	(0.0018)	(0.0024)	(0.0024)
	[0.624]	[0.616]	[0.011]	[0.009]	[0.035]	[0.029]	[0.050]	[0.037]
In a treated area (δ)	0.0005	0.0005	-0.0006	-0.0001	0.0008	0.0029	-0.0041	0.0001
	(0.0007)	(0.0006)	(0.0016)	(0.0015)	(0.0027)	(0.0023)	(0.0044)	(0.0032)
	[0.434]	[0.430]	[0.694]	[0.955]	[0.771]	[0.203]	[0.345]	[0.969]
Mean super control	0.01		0.03		0.08		0.17	
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
N	115547	115547	115547	115547	115547	115547	115547	115547

Note: Levels of significance: * < 0.10, ** < 0.05, *** < 0.01. Standard errors, reported in parenthesis below the coefficients, are robust and clustered at the local agency level. p-values are reported in brackets. Each duration (i.e. 3, 6, 12 and 36 months) indicates the elapsed time since treatment. Covariates include all stratum variables reported in Table 2 as well as entry months and regional fixed effects. "Treated" designates individuals who were assigned to treatment (ITT estimate), "In treated area" refers to those registered at employment agencies where half of individuals have been treated and "super control" designates individuals registered at employment agencies where nobody has been treated. The number of observations N corresponds to the number of individuals.

Table B6: Treatment effect on part-time unemployment : model vs randomization based inference

	3 months			12 months			36 months		
	Coeff.	p-value		Coeff.	p-value		Coeff.	p-value	
	estimate	model based	rand. inference	estimate	model based	rand. inference	estimate	model based	rand. inference
Panel A : Extensive margin									
Panel A.1 : Cumulative number of months with work while on claim									
Treated (β)	0.0052	0.0505	0.061	0.0260	0.0156	0.015	0.0812	0.0052	0.005
In a treated area (δ)	0.0004	0.9116	0.903	0.0163	0.2090	0.210	0.0082	0.8230	0.816
Panel A.2 : Cumulative number of hours worked while on claim									
Treated (β)	0.3246	0.1043	0.115	2.2044	0.0196	0.022	6.7753	0.0156	0.021
In a treated area (δ)	-0.0628	0.7950	0.807	0.0595	0.9598	0.962	-1.5359	0.6735	0.672
Panel A.3 : Cumulative earnings (in euro) from work while on claim									
Treated (β)	5.6575	0.0246	0.027	33.7244	0.0075	0.007	107.4585	0.0052	0.007
In a treated area (δ)	-2.9677	0.3591	0.337	-8.7657	0.5753	0.572	-44.2654	0.3714	0.366
Covariates		Yes			Yes			Yes	
N		115547			115547			115547	
Panel B : Intensive margin									
Panel B.1 : Cumulative number of hours worked while on claim									
Treated (β)	-1.4552	0.5109	0.499	5.5382	0.1105	0.136	11.5298	0.1239	0.139
In a treated area (δ)	0.7782	0.7681	0.765	-2.5141	0.5842	0.577	-0.7025	0.9397	0.939
Panel B.2 : Cumulative earnings (in euro) from work while on claim									
Treated (β)	-1.6892	0.9496	0.953	88.6023	0.0469	0.061	191.0127	0.0563	0.070
In a treated area (δ)	-18.0860	0.5935	0.581	-74.0666	0.1950	0.207	-73.2656	0.5459	0.574
Covariates		Yes			Yes			Yes	
N		7435			21840			34317	

Note: This table presents the results obtained for the outcomes related to part time unemployment for both extensive margin (*Panel A*) and intensive margin (*Panel B*), that is, only for people who worked at least one hour while on claim in the period. Each duration (i.e. 3, 12, and 36 months) indicates the elapsed time since treatment. For each duration, the first two columns display the coefficient estimate and the model based p-value that are presented in Section **??** and the third column corresponds to the p-value based on a two-sided randomization inference test statistic.

Table B7: Treatment effect on regular employment : model vs randomization based inference

	All sample			Potential Benefit Duration < 730			≥ 730		
	Coeff.	p-value		Coeff.	p-value		Coeff.	p-value	
	estimate	model based	rand. inference	estimate	model based	rand. inference	estimate	model based	rand. inference
Panel A : Prob. to be in regular employment in the last month									
Treated (β)	-0.0059	0.0452	0.053	0.0020	0.6477	0.635	-0.0125	0.0031	0.002
In a treated area (δ)	0.0015	0.7247	0.693	-0.0052	0.3843	0.346	0.0072	0.1924	0.164
Panel B : Prob. to be in regular employment in the last quarter									
Treated (β)	-0.0052	0.0935	0.093	0.0000	0.9949	0.995	-0.0096	0.0273	0.020
In a treated area (δ)	-0.0019	0.6598	0.611	-0.0070	0.2625	0.215	0.0028	0.6091	0.589
Covariates		Yes			Yes			Yes	
N		115547			50887			64660	

Note: This table presents the results obtained for the outcomes related to unemployment in table 7. Each duration (i.e. 3, 12, and 36 months) indicates the elapsed time since treatment. For each duration, the first two columns display the coefficient estimate and the model based p-value that are presented in Section **??** and the third column corresponds to the p-value based on a two-sided randomization inference test statistic.

Table B8: Best Linear Predictor of the conditional average treatment effect

ATE (β_1)		HET (β_2)		Best ML method
Coeff.	p-value	Coeff.	p-value	
(1)	(2)	(3)	(4)	(5)
Prob. to work while on claim at least once - 12 months after treatment				
0.004	[0.650]	0.266	[0.080]	Linear Regression
Cumulative nb. of months worked in part-time unemployment - 12 months after treatment				
0.025	[0.196]	0.090	[1.000]	Linear Regression
Cumulative earnings from work while on claim - 12 months after treatment				
31.92	[0.143]	0.335	[0.362]	Elastic Net
Out of unemployment in last month before benefit exhaustion				
-0.005	[0.417]	-0.086	[0.536]	Boosting

Note: The parameter estimates and p-values - displayed in brackets - are computed as medians over 100 splits, with nominal levels adjusted to account for the splitting uncertainty.

Table B9: GATES of Most and Least Affected Groups

Heterogeneity group			Best ML method
Top 5% (γ_5)	Bottom 50% (γ_1)	Difference ($\gamma_5 - \gamma_1$)	
(1)	(2)	(3)	(4)
Prob. to work while on claim at least once - 12 months after treatment			
0.038	-0.001	0.038	Linear Regression
[0.038]	[1.000]	[0.048]	
Cumulative nb. of months worked in part-time unemp. - 12 months after treatment			
0.113	0.021	0.093	Linear Regression
[0.274]	[0.619]	[0.428]	
Cumulative earnings from work while on claim - 12 months after treatment			
194.50	15.32	176.200	Elastic Net
[0.514]	[0.793]	[0.610]	
Out of unemployment in last month before benefit exhaustion			
-0.018	-0.002	-0.017	Boosting
[0.699]	[1.000]	[0.862]	

Note: The parameter estimates and p-values - displayed in brackets - are computed as medians over 100 splits, with nominal levels adjusted to account for the splitting uncertainty.

Table B10: Treatment effect interacted with the elapsed unemployment duration at treatment date

Outcome measured 6 months after the treatment	Prob. to work while on claim at least once	Cumulated nb. of months worked while on claim	Cumulated nb. of hours worked while on claim	Cumulated earnings from work while on claim
	(1)	(2)	(3)	(4)
Treated	0.005*	0.017**	0.917	15.477**
	(0.0028)	(0.0073)	(0.6099)	(7.7612)
	[0.061]	[0.023]	[0.133]	[0.046]
Above median	-0.009***	-0.015**	-1.592***	-13.733**
	(0.0025)	(0.0064)	(0.5302)	(6.7017)
	[0.000]	[0.017]	[0.003]	[0.041]
Treated X Above median	-0.002	-0.004	0.463	4.423
	(0.0038)	(0.0101)	(0.8483)	(10.7809)
	[0.627]	[0.670]	[0.585]	[0.682]
Mean super control	0.11	0.24	16.14	198.40
Covariates	Yes	Yes	Yes	Yes
N	115547	115547	115547	115547

Note: Levels of significance: * < 0.10, ** < 0.05, *** < 0.01. Standard errors, reported in parenthesis below the coefficients, are robust and clustered at the local agency level. p-values are reported in brackets. Each column displays the results from an OLS regression of the associated outcome based on equation (7). "Treated" designates individuals who were assigned to treatment (ITT estimate). "Above median" designates individuals whose elapsed unemployment duration at treatment date is above median, which corresponds to ∼4,5 months. Each regression include the list of covariates reported in the summary statistics (see Table 2) as well as regions fixed effects. Entry months fixed effects are not included in these regressions to avoid collinearity issues with the "Above median" regressor. The number of observations N corresponds to the number of individuals.

Table B11: Correlations between individual / local characteristics and part-time unemployment activity 3 months after the treatment in the super control group

Outcome measured 3 months after the treatment	Prob. to work while on claim at least once	Cumulated nb. of months worked while on claim	Cumulated nb. of hours worked while on claim	Cumulated earnings from work while on claim
	(1)	(2)	(3)	(4)
Job seekers characteristics				
Female	0.012***	0.023***	1.044**	14.795**
	(0.0033)	(0.0055)	(0.4290)	(6.2267)
Young	0.006	0.002	-0.868*	-5.699
	(0.0040)	(0.0070)	(0.4909)	(6.4642)
Senior	-0.021***	-0.032***	-2.207**	-24.535*
	(0.0058)	(0.0103)	(0.8530)	(12.4490)
Higher education	-0.015***	-0.026***	-0.801	-4.669
	(0.0040)	(0.0068)	(0.4973)	(6.2285)
Lower secondary education	-0.009**	-0.017**	-1.177***	-10.093*
	(0.0042)	(0.0070)	(0.4414)	(5.3815)
Potential benefit duration	0.000	0.000	0.001	0.016
	(0.0000)	(0.0000)	(0.0014)	(0.0193)
Daily Reference Wage	0.000**	0.000***	0.035***	0.698***
	(0.0000)	(0.0001)	(0.0072)	(0.1613)
Last contract inf. to 3 m.	0.009	0.018	1.483*	15.822
	(0.0075)	(0.0116)	(0.8350)	(9.8805)
Last contract inf. to 12 m.	0.013**	0.012	0.941	10.170
	(0.0055)	(0.0094)	(0.6926)	(9.3814)
Local agencies characteristics				
Number of participants	-0.000	-0.000	-0.006	-0.034
	(0.0001)	(0.0001)	(0.0051)	(0.0830)
Number of claimants	0.000*	0.000*	0.000	0.002
	(0.0000)	(0.0000)	(0.0003)	(0.0038)
Share of part-time unemp.	0.049	0.055	1.488	0.951
	(0.0431)	(0.0704)	(5.5228)	(88.3497)
Exit rate from unemp	-0.133	0.022	3.992	-75.241
	(0.3174)	(0.4961)	(37.5766)	(492.3760)
Share of recurrent job seekers	-0.057	-0.067	3.723	68.471
	(0.0684)	(0.1109)	(7.2266)	(103.8840)
Unemployment rate	-0.000	-0.000	-0.052	-0.826
	(0.0004)	(0.0006)	(0.0429)	(0.5294)
N	23156	23156	23156	23156
R^2	0.007	0.006	0.006	0.009

Note: Levels of significance: * < 0.10, ** < 0.05, *** < 0.01. Standard errors, reported in parenthesis below the coefficients, are robust and clustered at the local agency level. Each column displays the results from an OLS regression of the associated outcome on the listed covariates as well as entry months and regional fixed effects. The number of observations N corresponds to the number of individuals.

Table B12: Correlations between individual / local characteristics and part-time unemployment activity 12 months after the treatment in the super control group

Outcome measured 12 months after the treatment	Prob. to work while on claim at least once	Cumulated nb. of months worked while on claim	Cumulated nb. of hours worked while on claim	Cumulated earnings from work while on claim
	(1)	(2)	(3)	(4)
Job seekers characteristics				
Female	0.035***	0.193***	13.562***	169.492***
	(0.0052)	(0.0231)	(2.1664)	(28.2983)
Young	0.008	-0.103***	-12.496***	-117.510***
	(0.0068)	(0.0250)	(2.3262)	(31.3109)
Senior	-0.109***	-0.300***	-24.269***	-285.148***
	(0.0100)	(0.0446)	(4.1396)	(58.4379)
Higher education	-0.039***	-0.124***	-4.981*	-16.307
	(0.0067)	(0.0274)	(2.5520)	(32.9411)
Lower secondary education	-0.004	-0.048*	-5.076**	-38.191
	(0.0059)	(0.0248)	(2.1947)	(28.0274)
Potential benefit duration	0.000***	0.000***	0.027***	0.307***
	(0.0000)	(0.0001)	(0.0061)	(0.0788)
Daily Reference Wage	0.000**	0.002***	0.355***	6.632***
	(0.0001)	(0.0004)	(0.0510)	(0.9395)
Last contract inf. to 3 m.	0.012	0.039	1.774	14.672
	(0.0111)	(0.0345)	(2.8504)	(33.7341)
Last contract inf. to 12 m.	0.002	-0.040	-2.660	-39.970
	(0.0089)	(0.0348)	(3.0241)	(38.5039)
Local agencies characteristics				
Number of participants	-0.000***	-0.001***	-0.075***	-0.889**
	(0.0001)	(0.0002)	(0.0237)	(0.3426)
Number of claimants	0.000***	0.000***	0.003***	0.043**
	(0.0000)	(0.0000)	(0.0012)	(0.0170)
Share of part-time unemp.	0.165***	0.578***	24.608	210.025
	(0.0605)	(0.2168)	(21.7140)	(324.3254)
Share of recurrent job seekers	0.091	0.426	54.738	638.739
	(0.0978)	(0.3727)	(35.4824)	(476.4667)
Exit rate from unemp.	0.290	0.507	94.238	809.370
	(0.4377)	(1.7558)	(174.9111)	(2261.9591)
Unemployment rate	0.001	-0.002	-0.307	-5.034*
	(0.0005)	(0.0022)	(0.1964)	(2.6034)
N	23156	23156	23156	23156
R^2	0.018	0.019	0.026	0.035

Note: Levels of significance: * < 0.10, ** < 0.05, *** < 0.01. Standard errors, reported in parenthesis below the coefficients, are robust and clustered at the local agency level. Each column displays the results from an OLS regression of the associated outcome on the listed covariates as well as entry months and regional fixed effects. The number of observations N corresponds to the number of individuals.

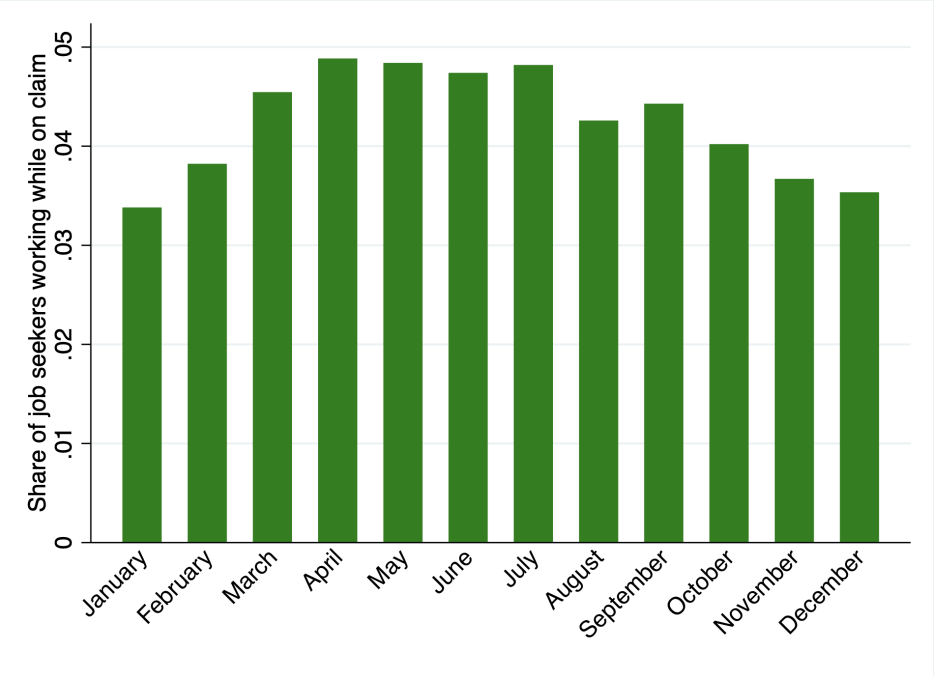
Table B13: Correlations between individual / local characteristics and part-time unemployment activity 36 months after the treatment in the super control group

Outcome measured 36 months after the treatment	Prob. to work while on claim at least once	Cumulated nb. of months worked while on claim	Cumulated nb. of hours worked while on claim	Cumulated earnings from work while on claim
	(1)	(2)	(3)	(4)
Job seekers characteristics				
Female	0.058***	0.754***	58.392***	733.635***
	(0.0062)	(0.0641)	(6.2670)	(80.8263)
Young	0.018**	-0.430***	-43.769***	-354.968***
	(0.0075)	(0.0667)	(6.5472)	(87.0175)
Senior	-0.154***	-0.538***	-50.469***	-581.447***
	(0.0126)	(0.1187)	(12.4086)	(182.4914)
Higher education	-0.076***	-0.366***	-23.598***	-150.368
	(0.0080)	(0.0713)	(7.6686)	(102.1160)
Lower secondary education	0.009	-0.126*	-18.880**	-149.567
	(0.0076)	(0.0743)	(7.4010)	(94.7158)
Potential benefit duration	0.000***	0.002***	0.125***	1.399***
	(0.0000)	(0.0002)	(0.0155)	(0.2088)
Daily Reference Wage	0.000***	0.010***	1.548***	29.057***
	(0.0001)	(0.0012)	(0.1536)	(2.7619)
Last contract inf. to 3 m.	0.027*	0.109	3.562	3.077
	(0.0139)	(0.0809)	(7.1952)	(89.1138)
Last contract inf. to 12 m.	-0.003	-0.166**	-14.454*	-198.793*
	(0.0102)	(0.0793)	(8.2918)	(110.1325)
Local agencies characteristics				
Number of participants	-0.000**	-0.003***	-0.268***	-3.381***
	(0.0001)	(0.0007)	(0.0780)	(1.0473)
Number of claimants	0.000	0.000**	0.009**	0.125**
	(0.0000)	(0.0000)	(0.0042)	(0.0581)
Share of part-time unemp.	0.164*	2.404***	177.679**	2327.809**
	(0.0923)	(0.6474)	(75.8056)	(1098.0432)
Exit rate from unemp	1.199**	1.979	48.165	-3301.319
	(0.5670)	(5.2555)	(547.9057)	(7248.3622)
Share of recurrent job seekers	0.239*	1.044	92.367	528.277
	(0.1225)	(1.0487)	(111.2905)	(1566.6654)
Unemployment rate	0.001	-0.008	-1.070*	-18.106**
	(0.0007)	(0.0060)	(0.5970)	(8.1095)
N	23156	23156	23156	23156
R^2	0.031	0.043	0.051	0.065

Note: Levels of significance: * < 0.10, ** < 0.05, *** < 0.01. Standard errors, reported in parenthesis below the coefficients, are robust and clustered at the local agency level. Each column displays the results from an OLS regression of the associated outcome on the listed covariates as well as entry months and regional fixed effects. The number of observations N corresponds to the number of individuals.

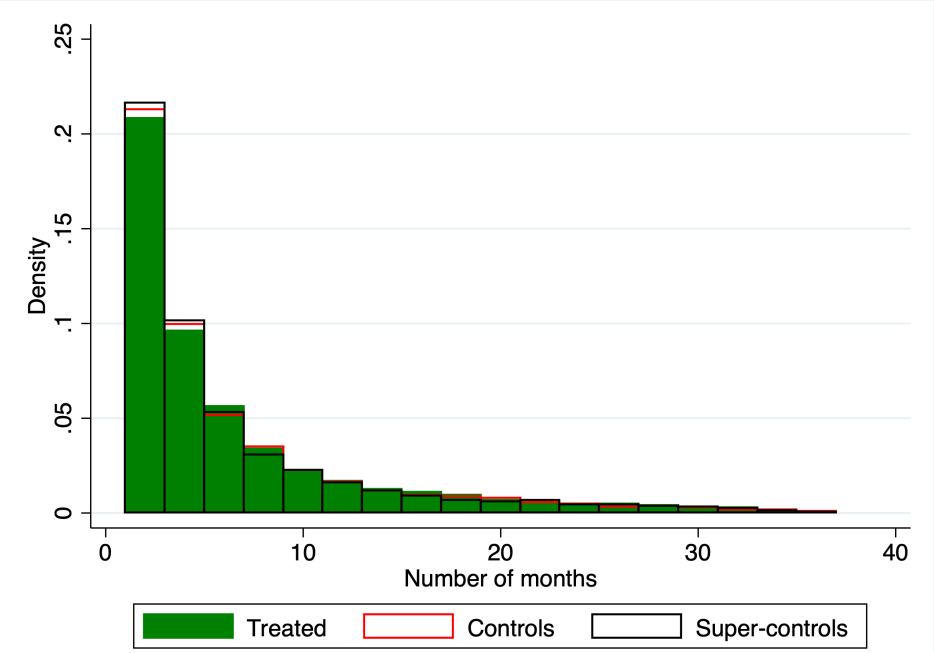
C Supplementary Figures

Figure C5: Frequency of work while claim by calendar month



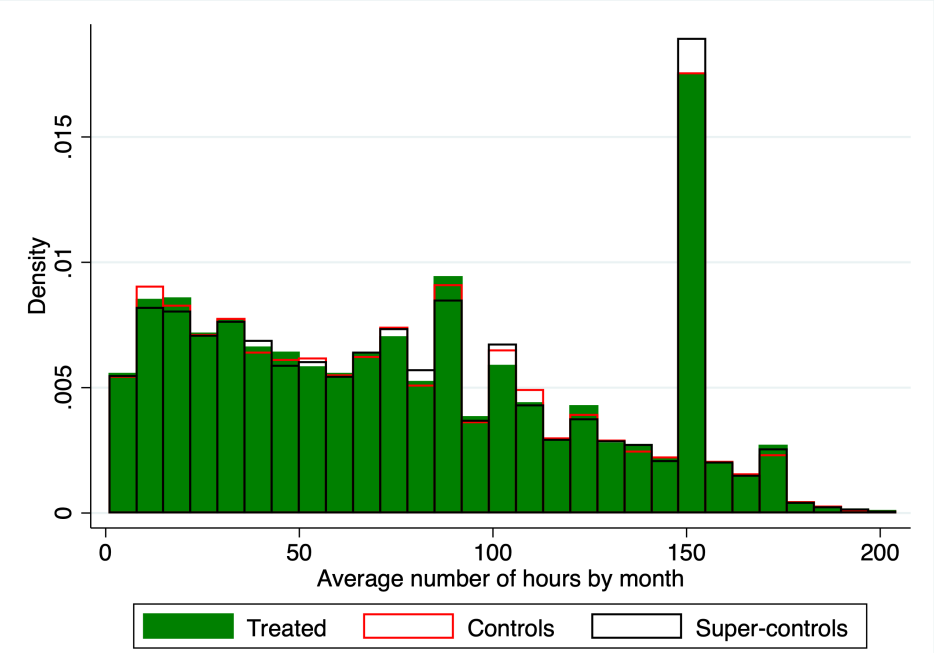
Note: This figure displays the calendar month average value of the indicator variable equal to one when the job seeker works while on claim for individuals belonging to the control group or the super control group.

Figure C6: Distribution of the number of months in part-time unemployment among those who worked while on claim



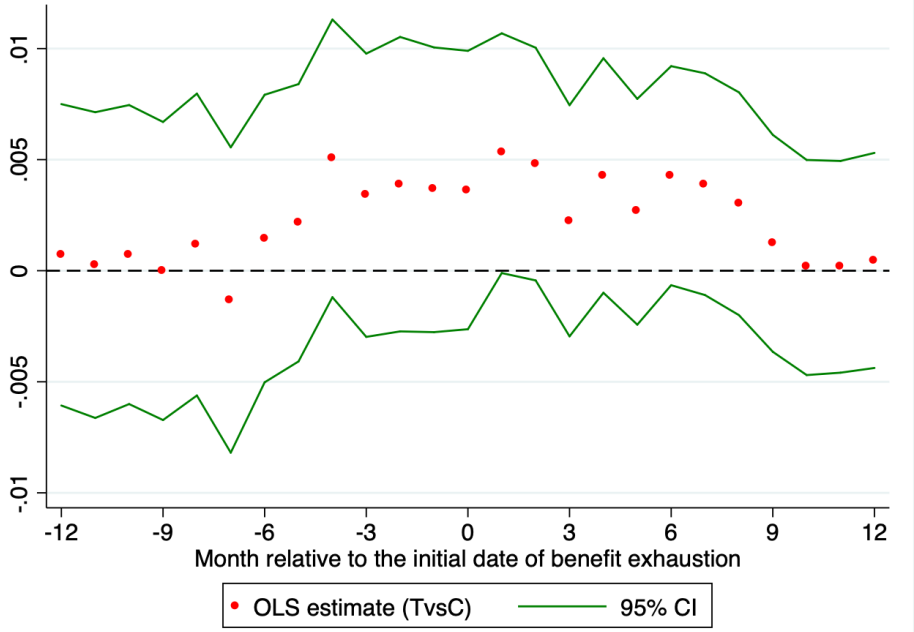
Note: This figure displays the distribution of the number of months with work while on claim by group over the 36 months of the study, conditional on working while on claim. The small number of observations per bin implies that the differences observed between groups are usually not significant. Only 2 bins display a significant difference between the supercontrol and the control groups. As for differences between the treated group and the supercontrol group or the control group, the few significant differences indicate that the treated are less present in the bottom of the distribution.

Figure C7: Distribution of the monthly number of hours worked in part-time unemployment among those who worked while on claim



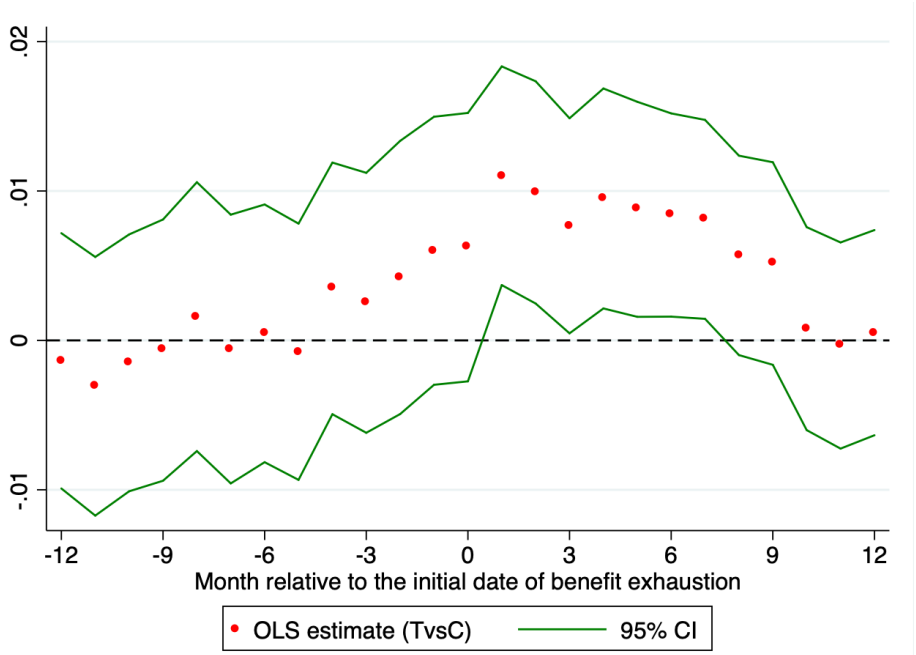
Note: This figure displays the distribution of the average number of hours worked while on claim by group over the 36 months of the study, conditional on working while on claim. The small number of observations per bin implies that the differences observed between groups are usually not significant. Only 2 bins display a significant difference between the supercontrol and the control groups. As for differences between the treated group and the supercontrol group or the control group, the few significant differences indicate that the treated are less present in the bottom of the distribution.

Figure C8: Intention to treat effects on survival in compensated unemployment



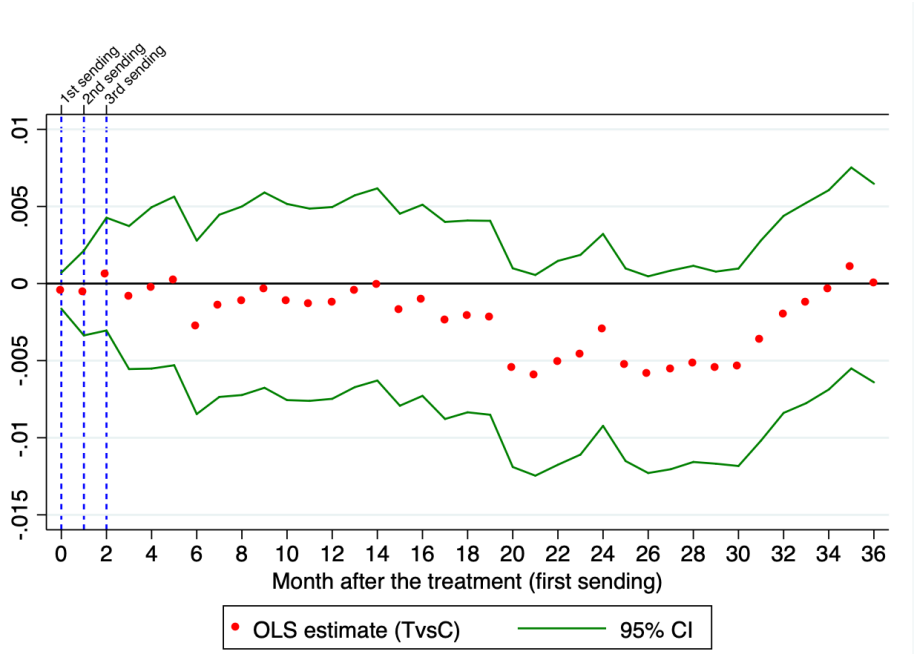
Note: Each red dot denotes the point estimate for intention to treat effect at a given unemployment spell based on OLS regressions (i.e. coefficient β in equation (7) on the probability to be in compensated unemployment in the month. The green lines denote 95% confidence interval for the corresponding point estimate where standard errors are clustered at the agency level. Estimations do not include covariates but include entropy balancing weights that ensure identical outcome between the treated group and the control group at date zero (Hainmueller (2012)).

Figure C9: Intention to treat effects on survival in compensated unemployment among job seekers with potential benefit duration superior or equal to 2 years



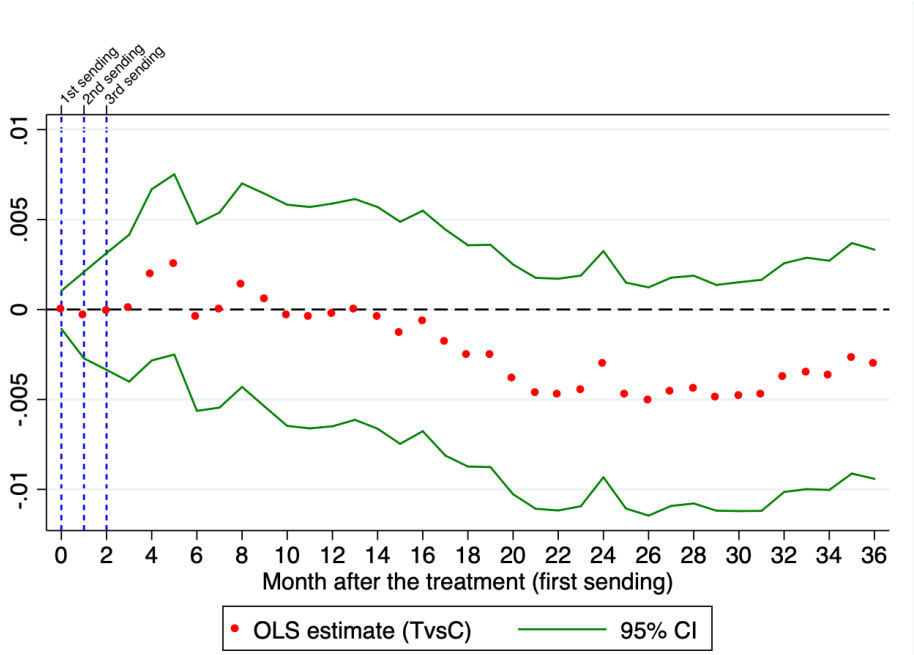
Note: Each red dot denotes the point estimate for intention to treat effect at a given unemployment spell based on OLS regressions (i.e. coefficient β in equation (7) on the probability to be in compensated unemployment in the month. The green lines denote 95% confidence interval for the corresponding point estimate where standard errors are clustered at the agency level. Estimations do not include covariates but include entropy balancing weights that ensure identical outcome between the treated group and the control group at date zero (Hainmueller (2012)).

Figure C10: Intention to treat effects on the probability to have a regular job for at least 6 months



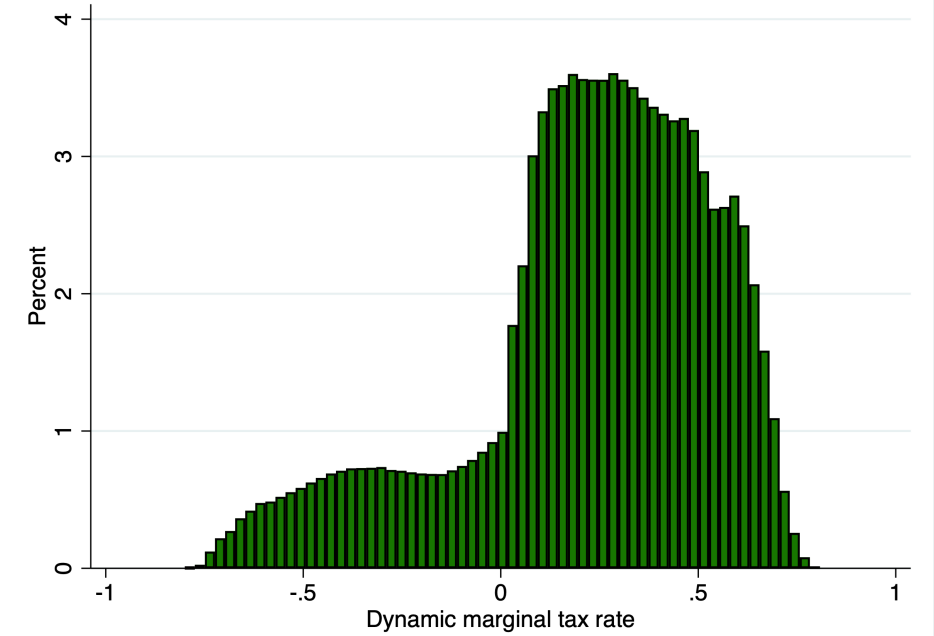
Note: Each red dot denotes the point estimate for intention to treat effect at a given time horizon based on OLS regressions (i.e. coefficient β in equation (7) on the indicator variable equal to one either if the individual is not compensated in the current month and is matched with the return-to-work indicators with permanent jobs or temporary jobs lasting at least 6 months. The green lines denote 95% confidence interval for the corresponding point estimate where standard errors are clustered at the agency level. Estimations do not include covariates but include entropy balancing weights that ensure identical outcome between the treated group and the control group at date zero (Hainmueller (2012)).

Figure C11: Intention to treat effects on the probability to have a regular job for at least 12 months



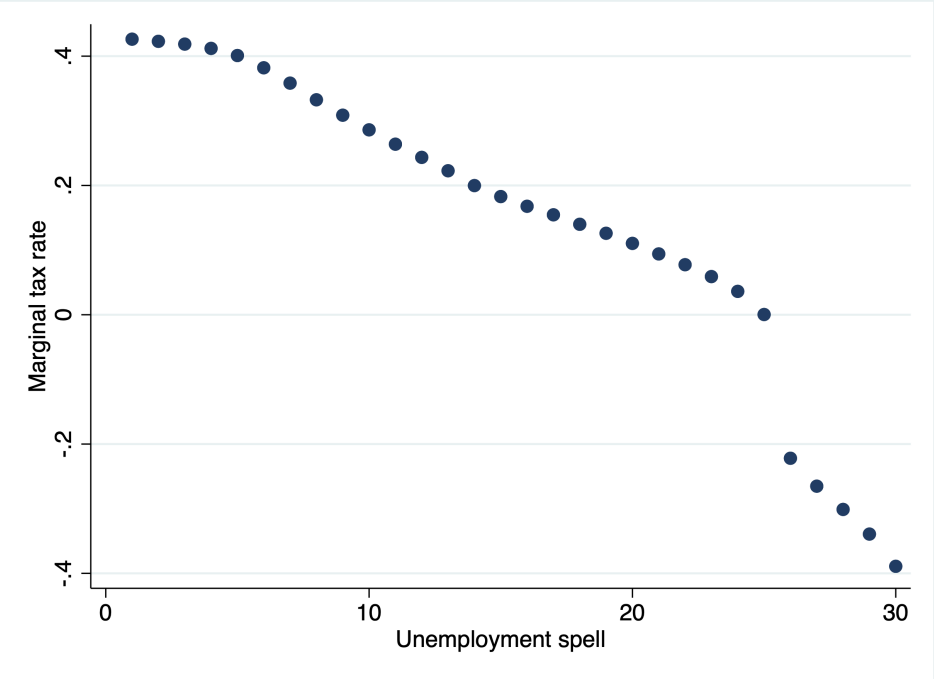
Note: Each red dot denotes the point estimate for intention to treat effect at a given time horizon based on OLS regressions (i.e. coefficient β in equation (7) on the indicator variable equal to one either if the individual is not compensated in the current month and is matched with the return-to-work indicators with permanent jobs or temporary jobs lasting at least 12 months. The green lines denote 95% confidence interval for the corresponding point estimate where standard errors are clustered at the agency level. Estimations do not include covariates but include entropy balancing weights that ensure identical outcome between the treated group and the control group at date zero (Hainmueller (2012)).

Figure C12: The distribution of marginal tax rates



Note: This figure displays the distribution of the marginal tax rate for each individual × month observation. The marginal tax rate is equal to $\tau - (\tau + \rho)\,\beta^{T-t} \prod_{j=t}^{T-1} [1 - \lambda(e_j)]$. It is different from the definition provided in equation (**??**), where the parameter ρ does not appear, because we take into account the rule according to which when the insurance capital is exhausted, individuals can be eligible for a new entitlement period. To do so, they must have worked at least 150 hours while on claim over the last 28 months. The new initial capital is computed on the basis of the daily wage of periods of work while on claim and according to the rule "one day of work yields one day of compensation". For each individual and each month, the benefits exhaustion date, which depends on the cumulative number of hours of work while on claim, is computed according to the legal rules. The individual survival probability until the benefits exhaustion date, equal to $\prod_{j=t}^{T-1} [1 - \lambda(e_j)]$ in equation (**??**), is estimated from a Cox proportional hazards model with covariates including gender, age, education, the reference wage, and the local unemployment rate. The monthly discount factor β is equal to =0.996, which corresponds to an annual discount rate equal to 5%.

Figure C13: Evolution of the average marginal tax rate over the employment spell



Note: This figure displays the average marginal tax rate month by month from the start of the unemployment spells. The marginal tax rate is equal to $\tau - (\tau + \rho)\,\beta^{T-t} \prod_{j=t}^{T-1} [1 - \lambda(e_j)]$. It is different from the definition provided in equation (**??**), where the parameter ρ does not appear, because we take into account the rule according to which when the insurance capital is exhausted, individuals can be eligible for a new entitlement period. To do so, they must have worked at least 150 hours while on claim over the last 28 months. The new initial capital is computed on the basis of the daily wage of periods of work while on claim and according to the rule "one day of work yields one day of compensation". For each individual and each month, the benefits exhaustion date, which depends on the cumulative number of hours of work while on claim, is computed according to the legal rules. The individual survival probability until the benefits exhaustion date, equal to $\prod_{j=t}^{T-1} [1 - \lambda(e_j)]$ in equation (**??**), is estimated from a Cox proportional hazards model with covariates including gender, age, education, the reference wage, and the local unemployment rate. The monthly discount factor β is equal to =0.996, which corresponds to an annual discount rate equal to 5%.

References

Alberto Abadie, Matthew M Chingos, and Martin R West. Endogenous stratification in randomized experiments. *Review of Economics and Statistics*, 100(4):567–580, 2018.

Erik Bloom, Indu Bhushan, David Clingingsmith, Rathavuth Hong, Elizabeth King, Michael Kremer, Benjamin Loevinsohn, and J Brad Schwartz. Contracting for health: evidence from cambodia. *Brookings Institution*, 2006.

Victor Chernozhukov, Mert Demirer, Esther Duflo, and Iván Fernández-Val. Generic machine learning inference on heterogenous treatment effects in randomized experiments. Working Paper 24678, National Bureau of Economic Research, June 2018.

Bruno Crépon, Esther Duflo, Marc Gurgand, Roland Rathelot, and Philippe Zamora. Do Labor Market Policies have Displacement Effects? Evidence from a Clustered Randomized Experiment. *The Quarterly Journal of Economics*, 128(2):531–580, 2013.

Ronald Aylmer Fisher. Design of experiments. *Br Med J*, 1(3923):554–554, 1936.

Thomas Fujiwara and Leonard Wantchekon. Can informed public deliberation overcome clientelism? experimental evidence from benin. *American Economic Journal: Applied Economics*, 5 (4):241–55, 2013.

Jens Hainmueller. Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political analysis*, 20(1):25–46, 2012.

Nahomi Ichino and Matthias Schündeln. Deterring or displacing electoral irregularities? spillover effects of observers in a randomized field experiment in ghana. *The Journal of Politics*, 74(1): 292–307, 2012.

Alwyn Young. Channeling fisher: Randomization tests and the statistical insignificance of seemingly significant experimental results. *The Quarterly Journal of Economics*, 134(2):557–598, 2019.