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How changes in benefits entitlement affect the duration of unemployment

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Abstract

This paper investigates the disincentive effects of the potential duration of unemployment insurance (UI) benefits. The disincentive effects are identified by exploiting changes in the UI system in Slovenia, which involved substantial reductions in the potential benefit duration and had characteristics of a "natural experiment". We find that the change had a positive effect on the exit rate out of unemployment - both to employment and to other destinations - at various durations of unemployment spells and for many categories of unemployed workers.

Keywords: Unemployment Insurance, potential benefit duration, job finding rates

JEL-codes: C41, H55, J64, J65

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1 Introduction

In theory, disincentive effects of unemployment insurance (UI) relate both to the level of the benefits (relative to the expected wage) and the potential benefit duration (PBD). A high level of benefits makes job search less expensive and therefore has a negative effect on search intensities and a positive effect on reservation wages of unemployed workers, which leads to long durations of unemployment. Long PBD have similar effects. The existence of a finite maximum duration of benefits introduces non-stationarity in job search. As the unemployed worker approaches benefit expiration the search intensity goes up and the reservation wage goes down, thus increasing the job finding rate. At the point of benefit expiration the job finding rate may jump up or down (Mortensen, 1977). Once the benefits have expired the job finding rate remains constant.

Empirical studies confirm the disincentive effects of UI.[1] Early studies find that the elasticity of unemployment duration with respect to the level of benefits ranges from 0.1 to 1.0 (Atkinson and Micklewright, 1991). Recent studies are also in this range. Bennmarker et al. (2004) for example find for Sweden an elasticity of around 0.6, while Roed and Zhang (2003) estimate elasticities for Norway of around 0.95 for males and around 0.35 for females. For the effect of the PBD similar estimates are available. Katz and Meyer (1990) for example estimate for the US that one week increase PBD increases the average duration of the unemployment spells of UI recipients by about 1 day. Also based on an analysis of US data Card and Levine (2000) report a disincentive effect of about 0.5 day per additional week of PBD. Lalive and Zweimüller (2004) find a disincentive effect of about 0.4 day for Austrian benefit recipients. The PBD not only affects the duration of unemployment but also the pattern of the exit rate. Many studies find a sharp increase in the exit rate out of unemployment just before benefits expire.[2] Several explanations have been put forward to explain such spikes. Mortensen (1977) provides a theoretical explanation based on a job search model with household production. If non-market time and market goods used in the household production process are substitutes the job finding rate shifts down after benefit expiration.[3] Other suggested explanations are strategic timing of job starting dates

[1] See Atkinson and Micklewright (1991) for an overview of theoretical and empirical evidence and Lalive et al. (2004) for a recent overview of empirical studies.

[2] Katz and Meyer (1990), Card and Levine (2000), and Addison and Portugal (2004) find such "spikes" for US benefit recipients. Carling, Edin, Harkman and Holmlund (1996) find spikes for Sweden, not only in the job finding rate but also in the exit rate from unemployment to labor market programs. Roed and Zhang (2003) finds end-of-benefit spikes for Norway, and Lalive and Zweimüller (2004) and Lalive, Van Ours and Zweimüller (2004) for Austria.

[3] If non-market time and market goods are complements there is an upward shift.

and the existence of an implicit contract between unemployed workers and their previous employers to be hired around the traditional time of benefit expiration (Card and Levine, 2000).

This paper contributes to the empirical literature on UI benefits by providing a detailed explanation of how exit rates out of unemployment are affected by changes in PBD. In order to investigate how the PBD affects the exit rate out of unemployment one cannot simply compare individuals with different PBD because the labor market behavior of these individuals may differ for other reasons.[4] To establish the effect of the PBD exogenous variation is needed. For that purpose, we analyze the effects of the 1998 reform of the unemployment benefit system in Slovenia. This reform drastically reduced the potential duration of unemployment benefits. Because this reduction was not uniform for every category of worker it is possible to distinguish between effects related to the PBD reduction and effects caused by other potential determinants of unemployment duration, i.e. changes in the state of the labor market and policy changes concerning improved employment services offered to, and monitoring of, benefit recipients. We exploit the "natural experiment" character of the reduction in potential benefit duration and find that it had a positive effect on the exit rate out of unemployment, both to employment and to other destinations. This conclusion applies at various durations of unemployment spells and for many categories of unemployed workers. We also identify clear spikes in the exit rate out of unemployment in the month when unemployment benefits expire.

The paper is set-up as follows. In the next section we give the details of the 1998 change of the Slovenian UI system. Section 3 presents our data and explanatory variables. In Section 4 we present the results of an explorative analysis while Section 5 discusses the results of the analysis where we use hazard rate models to identify the effects of PBD. Section 6 concludes.

2 The 1990 change of the Slovenian UI system

Slovenia is a small country with about 2 million inhabitants and an unemployment rate of 6-7% since 1995. Slovenia is a former part of Jugoslavia that became independent in 1991 and joint the EU in 2004. Similar to OECD countries, Slovenia provides income support

[4]Card and Levine (2000) for example argue that US studies on the effect of longer UI benefits on the duration of UI spells is based on differences across states, which is partly related to recessions and endogenous policy responses. Therefore, the effect of longer UI-benefits on the duration of UI-spells in US studies may be overstated.

to the unemployed via a social insurance program consisting of a combination of unemployment insurance and unemployment assistance (UA). The program covers the majority of employed persons, irrespective of industry or occupation (the most notable exception are the self-employed). Under employment insurance, the benefits have been earnings related and the duration of entitlement is contingent on the length of work experience, with predetermined maximum and minimum levels. Benefits under UA are means-tested and offered to those who exhausted their eligibility to UI, and selected groups of other workers who do not qualify to unemployment insurance benefits. Benefits are mostly financed by the budget, with token contributions paid by employers and workers.

Faced by an increasing trend in the number of unemployed, including UI recipients and long-term unemployed, Slovenia in October 1998 reformed its unemployment benefit system. Arguably the most significant change was the reduction of the potential duration of benefits. Under the new system, the length of the UI entitlement period was shortened roughly by half for most groups of recipients. Before the reform, for example, workers with 5–10 years of work experience were eligible to 9 months, and workers with 10–15 years of experience to 12 months of benefits; in contrast, after the amendments, both groups of workers have been eligible only to 6 months of benefits. But a notable feature of the reform was the different treatment of different groups of beneficiaries - a trait we take advantage of in testing the effects of the reform.

The amendments also called for improvements in employment services offered to benefit recipients and introduced other measures aimed at speeding their reemployment. They introduced obligatory preparation of a re-employment plan for benefit recipients and more frequent contacts between counsellors and recipients. Furthermore, the amendments broadened the definition of the suitable job (after 4 months, unemployed may be offered worse-paying jobs or jobs requiring substantial commute) and introduced stiffer sanctions for refusal of job offers. Moreover, the amendments called for stricter monitoring of continuing eligibility. Benefit recipients had to make themselves accessible for contacts by employment office counsellors several hours per day and a new inspection – a special arm of employment offices – was introduced. The task of inspectors is to check whether benefit recipients are in fact unemployed (among others, by paying home visits to UB recipients), and whether they actively search for a job.

Simultaneously with restricting access to UI benefits, the amendments made participation in active labor market programs more accessible and attractive. Public works participants were given a status of regular workers, thus enabling them to access many fringe benefits (such as vacation and pension coverage). A hiring program reimbursing employers for the payment of social security contributions was strengthened by broadening the target groups (to include long-term unemployed, first-time job-seekers, older workers,

and recipients of unemployment benefits) and increasing the amount of reimbursement. And in the wake of the introduction of amendments, the government spent more on active labor market policies: the expenditures on these policies as a share of GDP increased from 0.40 percent in 1998 to 0.52 percent in 1999.

3 Data, "twin groups" and variables

3.1 Data

The introduction of amendments to the UI law in 1998 had an influence on the inflow from employment to unemployment. The reduction in the potential duration of UI made it less attractive for workers to be unemployed. This caused a higher than 'usual' inflow into unemployment just before the new UI law was introduced, and a lower than 'usual' inflow into unemployment right after the new UI law was introduced (see for details Van Ours and Vodopivec (2004)). Apparently for some workers it was possible to influence the time at which they entered unemployment. To avoid biased estimates in our empirical analysis due to selectivity in the inflow into unemployment we took two periods of inflow that were not affected by this behavior. More specifically we used an inflow sample over the period August 1, 1997 – July 31, 1998 and an inflow sample over the period January 1, 1999 – December 31, 1999 (with censoring on December 31, 2001). Because both inflow samples cover a year of inflow we do not have to worry about seasonal differences in the composition of the inflow.

The data set we used concerns registered unemployed. For each spell, it contains starting and ending date of registered unemployment spell, destination of exit, and the information on the receipt of unemployment insurance benefits (starting and ending date of the eligibility and actual ending date of the receipt). Personal and family characteristics of recipients are also included. The data provides exceptionally rich and high quality information. First, they provide a complete coverage – all registered unemployed in the selected period were included. For the analysis, we selected a random sample of about 6 percent of spells. Second, being of administrative nature, the information is free of problems typically faced by the survey data (such as non-response and interviewer bias). Third, the information at our disposal not only covers the whole, not just the covered part of the unemployment spell, but it also contains accurate information about the timing of transitions from unemployment to employment. In contrast to many studies using administrative data on unemployment spells where information about the job-finding date is based on unreliable reporting of unemployed workers themselves (as they have little

incentive to do so), we have independent information about the start of post-unemployment job reported by employers.

After removing individuals for which there is incomplete information we have information about 9,196 males and 10,853 females (See Van Ours and Vodopivec (2004) for details). Table 1 gives an overview of the unemployment dynamics in these samples. The table distinguishes the cumulative outflow probability to a job, to other destinations and total outflow after 3, 6, 9, and 12 months of unemployment, before and after the change of the unemployment benefits law. As shown for example the cumulative probability to have found a job within 6 months before the change in the benefit law was 45.8% for males. After the change in law this was 51.0%. Such an increase also occurs for other destinations. Here, the cumulative outflow probability after 6 months was 3.3% before the benefits change, and 12.0% after the benefits change. The increase in outflow probabilities occurs for males and females, at every durations and for both destinations of the outflow from unemployment. It may have to do with the reduction of the PBD, the change in the state of the labor market and the effect of other policy changes or the combination of these factors. To distinguish the effects of the reduction of the PBD from the other effects we create "twin groups".

3.2 Formation of "twin groups"

One feature worth exploiting in setting up the empirical analysis is the fact that the change in the Slovenian benefit law introduced different rules for different groups of unemployed. We therefore form five "twin groups" of benefit recipients. In each group, some unemployed started to collect benefits before the change of the law and some after the change, but the groups were formed so that - in the absence of the change of the law - all members of a group would be entitled to the same potential benefit duration. Because some of the recipients in a group registered after the change of the law, they in fact faced much reduced duration of entitlement. The five groups shown are different in terms of previous work experience, age, or both.[5] For all such groups, 'old' and 'new' benefit entitlements are presented in Table 2. The first group has limited work experience (up to 18 months) and it is also the only group of which the potential benefit duration has not changed - it was kept at 3 months. For the second group, which has a work experience of 1.5-5 years, the maximum benefit duration has been reduced from 6 to 3 months. All the other groups are also confronted

[5]This paper uses information about workers with working experience up to 20 years. There are 5 of these groups. See for information about groups with more work experience Van Ours and Vodopivec (2004).

with a reduction of the maximum benefit duration. Implicitly, as indicated in Table 2, the formation of groups is also strongly correlated with age. The older workers are, the more work experience they have and the longer their potential benefit duration when they loose their job.

From an empirical point of view it is not easy to establish how potential benefit duration affects the job-finding rate due to correlation between several personal characteristics. Individuals that are entitled to longer potential benefit durations have more work experience and are therefore usually older. So, the fact that individuals with longer potential benefit durations find jobs at a slower rate can be attributed not only to the longer duration of their benefit entitlement, but also to their higher age or the length of work experience. To disentangle these two effects we need variation in potential benefit duration across individuals uncorrelated with work experience or age. The Slovenian change in unemployment law provides such variation because potential benefit duration was reduced conditional on particular requirements concerning work experience (and age). If the reduction had been uniform we would still have a problem, because over time labor market conditions might change (as a consequence of business cycle, for example). It would be difficult if not impossible to disentangle the effect of the reduction in potential benefit durations from the effect of the change in labor market conditions. Here, too, the change in Slovenian benefit law is helpful because for some workers the potential benefit durations did not change. Information about these workers can be used as reference point because changes in their job-finding rate can be attributed to changes in labor market conditions only. The identifying assumption, which allows us to isolate the effect of the reduction in potential benefit duration, is that the relative effect of changes in labor market conditions on the job-finding rate is the same for all categories of workers.

By way of illustration Table 3 presents cumulative exit probabilities - after 6 and 12 months of unemployment - distinguished by destination for the different groups of unemployed. As shown for the first group of males of which the benefit entitlements has not changed, 54% finds a job within 6 months before the change of the law while 56% finds a job after the change of law. This could mean that there is a small effect of the cycle. Or, it could mean that the effect of the business cycle is compensated by a change in the composition of the group of unemployed. In other words: a deterioration of the labor market may have been compensated by an increase in the average quality of the unemployed workers. In the empirical analysis below we will account for possible changes in quality of unemployed workers by using individual data. For the sake of argument we assume that the change in average job-finding probability after 6 months is caused by the effect of the cycle.

For the second group of males of which the potential benefit duration has been reduced

from 6 months to 3 months there is an increase of job-finding rate after 6 months from 51 to 58%. So, the increase due to cycle and reduction of PBD is 7%. Since the effect of the cycle is 2%, the difference of 5% must be due to the reduction of the potential benefit duration. The bottom part of Table 3 shows the outcomes of the difference of differences exercises (for males and for females).

The second column of Table 3 shows similar patterns for the 12 months job-finding probability. For the categories of workers with short potential benefit duration the main effect seems to occur in the first 6 months of unemployment. For the categories of workers with longer potential benefit duration the positive effect on the job-finding rate remains. The other columns show similar results for other exits and for the total outflow from unemployment. The difference of differences exercise shows that there are potentially substantial effects of the reduction of PBD on the outflow from unemployment.

3.3 Definition of variables

In the analysis we distinguish between job-finding and other exits. The destination "to job" is defined by administrative records as exit to private or public employment with or without the mediation of employment offices, including self-employment. The other exits include exits to active labor market programs. As in Table 3, the analyses are done separately for males and females to account for possible differences in labor market behavior. In addition to this distinction by gender the effect of the following personal characteristics are taken into account:

- Age: continuous variable
- Education: dummy variables, Education2 = elementary school, Education3 = vocational school, Education4 = high school or more, reference group = unfinished elementary school
- Family situation: dummy variables, Family1 = 1 dependent family member, Family2 = more than 1 dependent family member, reference group = no dependent family members
- Ill health: Dummy variable derived from information obtained by employment office councilors from interviews with benefit recipients
- Previous working experience: represented by eligibility groups dummy variables: 1.5–5 years, 5–10 years, 10–15 years, 15–20 years, reference group = less than 1.5 years

- Shift in PBD: dummy variables: 6 to 3 months, 9 to 6 months, 12 to 6 months, 18 to 9 months; reference group = PBD remained unchanged

These personal characteristics are expected to affect the exit rates in various ways, which will be discussed in more detail below. Furthermore, we investigated to what extent there is an effect of a change in business cycle/labor market conditions. For this we use a dummy variable related to the year of inflow into unemployment; i.e. dummy variables for 1999 where the reference group refers to individuals becoming unemployed in the period July 1, 1997 - June 30, 1998. We refer to this variable as "After the change of law". Note that our identifying assumption is that the effect of the labor market conditions is the same for every worker, in particular for every entitlement group. Since the reference entitlement group did not face a change in entitlement period, the coefficient of the "After the change of law" dummy variable is identified through this group.

4 Explorative analysis – Survival functions

4.1 Stylized facts

Figure 1 shows the outflow from unemployment for the various groups in our sample. Presented are the survival probabilities as a function of the unemployment duration (in months). For each of the five groups there is a separate graph representing the survival probabilities before and after the change in the UI law. For all groups the survival probabilities after the change in the UI law are smaller than before indicating that after the change in the UI law unemployed leave unemployment more quickly. Figure 3a illustrates the effect of the change in labor market conditions since for this group the potential benefit duration has not changed. Here the two lines are not very far apart indicating that there is only a small effect of changing labor market conditions. For all the other groups there is a substantial difference between the two lines indicating that the reduction in potential benefit period stimulated the outflow from unemployment. Another obvious pattern comparing the different groups is the positive relationship between potential benefit duration and survival probability. Groups a long potential benefit durations have a high survival probability. Finally, for many groups there is a substantial drop in the survival probability in the month when benefits expire.

4.2 Explorative analysis

In order to get an idea about the effects of the reduction of PBD without imposing too much structure in the empirical model we performed a number of logit analyses on the probability to leave unemployment within a particular time period.

$$\Pr(t < t_r) = \frac{e^{x'\gamma}}{1+e^{x'\gamma}} \qquad \Pr(t \geq t_r) = \frac{1}{1+e^{x'\gamma}} \tag{1}$$

where t refers to the completed duration of unemployment, t_r to a threshold (3, 6, 9, or 12 months), x is a vector of explanatory variables and γ a vector of parameters. The parameters are estimated using the method of Maximum Likelihood and are shown in Table 4.

We only discuss the results for males because the effects for females are by and large the same. As shown the state of the labor market ("after the law") has a positive effect on the outflow probabilities. Age, education, and having dependent family members have negative effects, although these effects are not significantly negative for each of the outflow probabilities. Ill health has a significant negative effect for each of the outflow probabilities. Experience has a non-linear negative effect on the outflow probability although again it is not always significantly different from zero.

The main variables of interests, the variables that indicate the effects of the reduction in PBD are positive but not always significantly different from zero. The probability to leave unemployment within 3 months is only affected by the reduction in PBD from 6 to 3 months and not by other reductions. The PBD reduction to 3 months moves the spike in the exit rate and this apparently causes the overall effect to be significant. Indeed, the reduction of the PBD to 6 months has a significant effect on the probability to leave unemployment within 6 months, while the PBD reduction to 9 months has a significant effect on the probability to leave unemployment within 9 months. In the unemployment period where the worker receives a benefit under the old system but not under the new law there may be compensating effects. In this period after the change in law there is an incentive to find a job quickly because benefits have expired but before the change of law there may be an incentive to search harder because benefits have almost expired. In conclusion, the logit estimates indicate that the reduction in PBD increased the outflow from unemployment, but in order to understand more of the mechanisms involved we need to analyze a more detailed model of unemployment dynamics. This is what we do in the next section.

5 Hazard rate models

5.1 Stylized facts

In order to get a more detailed description of the way in which the reduction of PBD affects unemployment dynamics we analyze hazard rates, i.e. exit rates out of unemployment. Figure 2 presents monthly exit rates out of unemployment before and after the change of the UI law for all five groups. For the first group there is a clear spike in the exit rate out of unemployment after three months, the time when benefits expire. For the second group there are two spikes in the exit rate out of unemployment; one spike at 3 months which has to do with the drop of the unemployment benefit replacement rate from 70% to 60% and one spike at 6 months which has to do with the expiration of the unemployment benefits. Also for the other groups there are clear spikes at 3 months and the time of benefit exhaustion. In Figure 3 the job finding rates before and after the change of the UI law are presented. These are very similar to the total exit rates out of unemployment, which has to do with other exit rates being relatively small.

5.2 Modeling changes in PBD

In Figure 4 we compare the job finding rate of two identical unemployed workers A and B that differ only in terms of their PBD ($T_A < T_B$). There are two reasons why job finding rate of worker A may differ from worker B. First, worker A is likely to have a higher job finding rate over the unemployment spell up to T_A because his benefits expire sooner. This is the pre-expiration effect of a shorter PBD, indicated with δ_1. Second, worker A is likely to have a higher job finding rate between T_A and T_B because worker A has his benefits have expired and he has a stronger incentive to find a job.[6] This is the post-expiration effect of the reduction in PBD, indicated with δ_2. Beyond T_B the job finding rate of both workers is likely to be the same.[7] In the analysis presented in the previous subsection we cannot distinguish between the two effects, nor can we establish how large the effect of the expiration spike is. To distinguish between these effects we use hazard rate models (see Van den Berg (2001) for a recent overview). The job finding rate at unemployment duration t

[6] If there is a spike in the job finding rate just before benefits expire it could be that at this point the job finding rate of worker B is higher.

[7] For the moment, we ignore a potential difference in entitlement effect: because conditional on other characteristics the value of his job because of the longer PBD worker B may be more eager to find a job.

conditional on observed variables x is assumed to have the following specification

$$\theta_e(t \mid x) = \lambda(t) \exp(x'\beta) \tag{2}$$

where β is a vector of parameters and λ represents individual duration dependence, which is modelled in a flexible way by using step functions:

$$\lambda(t) = \exp(\Sigma_k \mu_k I_k(t) + \delta_{1j} I_j(t) + \delta_2 I_p(t) + \delta_3 I_s(t)) \tag{3}$$

where k (= 1,..,N) is a subscript for duration interval and I_j = (1,2,3) is an indicator referring to the length of the period after the reduction of the PBD (j=3,6,9), I_p is an indicator of the duration period after benefit expiration, and I_s is an indicator for the month of benefit expiration ($s = 3, 6, 9, 12, 18$). Furthermore, the μ-parameters measure the pattern of duration dependence and the δ-parameters indicate the incentive effects, the δ_1 measure the pre-expiration effect, δ_2 measures the post-expiration effect and δ_3 indicates the size of the spike in the month of benefit expiration. Note that we can identify δ_1 because of the "natural experiment" character of the change in the benefit law. The reduction of the PBD is exogenous to the job finding process. Therefore, we can compare similar individuals before and after the change of law. Note also that we can identify δ_2 because benefits expire at different durations of unemployment. If they would all expire at one particular duration we could not distinguish the post-expiration effect from duration dependence. The same holds for the spike. We can identify the spike because it occurs at different unemployment durations. If not, we could not distinguish the spike from the effect of duration dependence.[8]

The conditional density function of the completed unemployment duration t_e that ended in a transition towards a job can be written as

$$f(t_e \mid x) = \theta(t_e \mid x) \exp(-\int_0^{t_e} \theta(s \mid x) ds) \tag{4}$$

Since we analyze an inflow sample the log-likelihood L of the model is rather straightforward, consisting of two components

$$L = d\Sigma log(f) + (1 - d)\Sigma log(1 - F) \tag{5}$$

where F is the distribution function of f and d is a dummy variable with a value of 1 if the observation refers a worker that found a job and a value of 0 if the worker is still unemployed or left unemployment for other reasons. The transition rate to other

[8]Also not that because of the δ parameters duration dependence is different for different individuals, so the specification is a non-proportional hazard type.

destinations $\theta_n(t \mid x)$ can be modelled similarly. Then, those that have found a job are assumed to have a right-censored duration with respect to the exits to other destinations. Note that we can estimate the parameters of the job finding rate and the exit rate to other destinations separately because they are assumed to be independent.[9]

5.3 Parameter estimates

The parameters of the model are estimated separately for males and females using the method of Maximum Likelihood and presented in Table 5. Many of the parameters representing the incentive effects are significantly different from zero. Only the coefficient attached to the indicator of a reduction of the PBD from 6 to 3 months does not differ significantly from zero in the job finding rate. The similar parameter in the exit rate to other transitions does differ significantly from zero. Apparently, the reduction to 3 months provides the unemployed with insufficient time to find a job more quickly. The outflow from unemployment is stimulated but only through other destinations, i.e. active labor market policy programs. The other PBD reductions have significant effects both on the job finding rates and the transition rates to other destinations. There are also clear post-benefit expiration effects. When an unemployed workers looses his/her benefits the outflow out of unemployment increases, both through higher job finding rates and through higher exit rates to other destinations. Finally, the parameter estimates show clear spikes in the month unemployment benefits expire.

Neither for males nor for females there seems to be an effect of changing labor market conditions on the job-finding rate (insignificant "after change of law" effects), but there is an effect on the exits to other destinations. Perhaps this has to do with the change of active labor market policies that made it easier for unemployed workers to enter labor market programs.

Other results are also interesting. Age has a negative effect on the exit rate out of unemployment, both through job finding and other exits. Education does not have a significant for males while for females the highest educational category has a significantly higher exit rate than other educational categories. For males higher educated workers have a lower exit rate to other destinations, while for females the opposite is the case. The effect of family conditions is different for males and females. Males with dependent family members have a higher job finding rate than males without dependent family members. Females dependent family members have a lower job finding rate than other females. Apparently dependent family members are a stimulus for males to leave unemployment more quickly

[9] Below we will investigate the validity of this assumption.

while for females having dependent family members is a handicap. Bad health is reducing the exit rate out of unemployment substantially. Work experience has a positive effect on the job finding rate, while it does not affect the exits to other destinations.

The pattern of duration dependence of the exit rates is different for job finding rates and exit rates to other destinations. There is negative duration dependence for the job finding rates[10] and positive duration dependence for the exit rates to other destinations. Apparently, as the unemployment spell proceeds it becomes increasingly difficult to find a job while it is easier to leave unemployment for other reasons.

5.4 Sensitivity analysis

5.4.1 Testing for unobserved heterogeneity

In order to investigate the sensitivity of the parameter estimates for model specifications we performed a number of sensitivity analyses. First, we expanded the model by introducing unobserved heterogeneity v in the job finding rate, and u in the exit rate to other destinations. Then, the transition rates have the following specification:[11]

$$\theta_e(t \mid x, v) = \lambda_e(t) \exp(x'\beta_e + v)$$

$$\theta_n(t \mid x, u) = \lambda_n(t) \exp(x'\beta_n + u) \tag{6}$$

where the β's are vectors of parameters and as before the λ's have a piecewise constant specification. The unobserved components (random effects) are assumed to follow a discrete distribution with four points of support p_1, p_2, p_3, and p_4

$$Pr(v = v_a, u = u_a) = p_1 \quad Pr(v = v_a, u = u_b) = p_2$$

$$Pr(v = v_b, u = u_a) = p_3 \quad Pr(v = v_b, u = u_b) = p_4 \tag{7}$$

in which the discrete distribution is supposed to have a multinomial logit specification with $p_i = \frac{e^{\alpha_i}}{\Sigma_{i=1}^{4} e^{\alpha_i}}$, i=(1,..,4), and $\alpha_4 = 0$ is used for normalization. The conditional density functions of the completed durations until job finding or exiting to other destinations can be written as

$$f_e(t_e \mid x, v) = \theta_e(t_e \mid x, v) \exp(-\int_0^{t_e} \theta_e(s \mid x, v) ds) \tag{8}$$

[10]Note that for males in the job finding rate there is a peak in the third month. This peak could have to do with the replacements rate dropping from 70% to 60% after three months. For females we do not find a similar effect.

[11]Note that in this case the vector x does not contain a constant.

$$f_n(t_n \mid x,u) = \theta_n(t_n \mid x,u)\exp(-\int_0^{t_n} \theta_n(s \mid x,u)ds) \tag{9}$$

and we remove the unobserved components by taking expectations:

$$f(t_e,t_n \mid x) = E_v E_u[f_e(t_e \mid x,v).f_n(t_n \mid x,u)] \tag{10}$$

The parameters are again estimated with the method of maximum likelihood and presented in Table 6. As shown for males we were able to identify three points of support for the distribution of unobserved heterogeneity. Conditional on the observed characteristics there is a group of male unemployed covering 97% that has a positive job finding rate and a positive transition rate to other destinations. Furthermore, the is a group of 1.4% that has a positive job finding rate but a zero transition rate to other destinations. The remaining group of 1.6% has zero exit rates both to a job and to other destinations. Given that the first group is so large, there is a positive correlation between the unobserved components of both exit rates.[12] From a comparison of the parameter estimates of Table 5 and Table 6 it is clear that the introduction of unobserved heterogeneity hardly affects the other parameter estimates. So, our main conclusions concerning the incentive effects of the reduction in PBD remain unchanged.

As Table 6 shows also for females we can find three point of support in the distribution of unobserved heterogeneity. The distribution is somewhat different than for males but here too the other parameter estimates hardly change.[13]

Another issue we investigated was the specification of duration dependence. In stead of using quarterly and half-yearly duration intervals for longer unemployment durations we used monthly duration intervals up to 2 years. This gave more detailed information about the pattern of duration dependence, but did not affect the estimates of the relevant parameters, i.e. the incentive effects.

Moreover, we examined whether age has a non-linear effect on the job-finding rate and the exit rate to other destinations. We replaced age as a continuous variable by dummy variables representing age categories of 5 years. This did not change the parameter estimates much and had no effect on the relevant benefit duration variables.

[12] We also estimated a model with independent exit rates in a MPH framework. A Likelihood Ratio Test indicates that we cannot reject correlation between the error terms. The LR-test statistic is 17.8, which is highly significant since the 95% critical χ^2-value for 1 degree of freedom is 3.4.

[13] The LR-test statistic when comparing models with and without correlation of the unobserved components is 19.8, again indicating the presence of correlation between unobservables.

5.4.2 Simulations

To give an idea about the size of the effects of the change of the law, we calculated the difference in exit rates before and after the change of the law for selected groups of unemployed workers. The reference group is male individuals, 30 years old, with no education, no dependent family members, of good health, and having a work experience of 5–10 years. This implies that the reference group had a 12-month benefit entitlement before and a 6-month benefit entitlement after the change of the law. The effects are dramatic (Table 7). Before the change of the law, 44 percent of individuals in the reference group found a job within 6 months of the start of their unemployment spell, and 6 percent left unemployment for other reasons. The corresponding percentages after 12 months are 59.4 (exit to employment) and 13.4 (exit for other reasons). After the change of the unemployment benefit law the exit rates out of unemployment strongly increased: 52.4 percent of individuals in the reference group found a job within 6 months of the start of their unemployment spell (8.4 percentage points increase in comparison to the before-the-change period), and 15.1 percent left unemployment for other reasons (9.1 percentage points increase in comparison to the before-the-change period). The overall probability for this group to have left unemployment after 6 months thus increased from 50 percent in the period before the law changed to 67.5 percent after the change. Faster exit from unemployment after the change of the law is shown also by comparing job-finding rates 12 months into unemployment spells; after 12 months about 65 percent has found a job and 21 percent has left unemployment for other reasons. The increase in outflow probabilities indicates an implicit elasticity of the exit rate with respect to the PBD of 0.9–1.0.

Table 7 also shows simulation results for 40 years old individuals, with other characteristics being the same as the reference group. In comparison to the younger group, job-finding probabilities for this group decrease, but a substantial increase of this probability due to the change in the unemployment law remains. Similarly, Table 7 shows simulation results for individuals of bad health but otherwise possessing the same characteristics as the reference group. In this case, the exit probabilities are substantially lower, and the effect of the change in unemployment benefit law much smaller. Finally, Table 7 shows the simulation results if the reference person is a female instead of a male. Then, both the job finding rates and the exit rates to other destinations are substantially smaller. Whereas of the male reference persons after the change in the UI law within 6 months 67.5 percent has left unemployment for the female reference persons this is only 53.2 percent.[14]

[14]Here, the implicit elasticity of the exit rate with respect to the PBD ranges from 0.8 to 1.1.

6 Conclusions

The above analysis identified important and sizeable disincentive effects of the unemployment insurance system. First, we identified clear spikes at the point of benefit exhaustion. Second and perhaps most persuasively, the job-finding probability of most groups of recipients whose benefit entitlement was reduced by the change of the law strongly increased while remaining virtually unchanged for recipients whose entitlement period did not change. Third, after benefit expiration the job finding is substantially higher than before (excluding the spike in the month of benefit expiration). The paper also finds similar effects on the exit rate out of unemployment to other destinations, including active labor market programs. This confirms the ability of policymakers to attract benefit recipients to active labor market programs. Increased intensity employment services and monitoring also might have contributed to this development.

Can we attribute more effective job-search activity to increased job-search efforts of recipients, facing shorter duration of benefit entitlement? Conceivably, the same effects could had been achieved by more intense employment services provided to the unemployed and stricter monitoring in the period after the change of the law. The fact that job-finding rate has not changed for the group of recipients whose entitlement period did not change, however, speaks in favor of the interpretation that the reduction of the job-finding rate was produced primarily by increasing job-search efforts of recipients themselves. If, however, the efforts of employment offices after the change of the law have been targeted on recipients with longer durations, employment offices, too, could be credited with helping to increase the job-finding rate.

What lessons, then, can be learned from the Slovenian change of the unemployment benefit law? The law was certainly effective encouraging the benefit recipients to leave unemployment, contributing, most likely, to shortening of their unemployment episodes, thus reducing the severity of the moral hazard induced by the unemployment benefit system. These positive developments have to be weighted against possible additional hardship created by the curtailment of benefit entitlement, as well as worse quality of post-unemployment jobs in terms of their stability, type of appointment, and precariousness. A thorough assessment of the legislative changes would have to probe into these issues as well - an important area for future research.

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Table 1 Outflow to job and to other destinations before and after the 1998 change of law, by duration of unemployment; males and females (%)[a)]

	Before change of law			After change of law			Increase of outflow		
Duration	Job	Other	Total	Job	Other	Total	Job	Other	Total
Males									
$\leq$ 3 months	28.7	1.2	29.9	31.2	5.3	36.5	2.5	4.1	6.6
$\leq$ 6 months	45.8	3.3	49.1	51.0	12.0	63.0	5.2	8.7	13.9
$\leq$ 9 months	54.9	5.5	60.4	59.4	15.7	75.1	4.5	10.2	14.7
$\leq$ 12 months	61.6	8.2	69.8	63.5	18.1	81.6	1.9	9.9	11.8
Females									
$\leq$ 3 months	21.8	1.3	23.1	25.5	6.5	32.0	3.7	5.2	8.9
$\leq$ 6 months	35.8	3.2	39.0	42.0	13.9	55.9	6.2	10.7	16.9
$\leq$ 9 months	45.7	5.6	51.3	50.7	18.4	69.1	5.0	12.8	17.8
$\leq$ 12 months	53.5	8.4	61.9	55.7	21.0	76.7	2.2	12.6	14.8

[a)] The calculations are based on samples of 9,196 males and 10,853 females.

Table 2 Requirement for and potential duration of UI benefits before and after the 1998 change of law

Entitlement Group	Experience (years)	Max benefit duration (months) Before	After	Age group[a)]
1	0-1.5	3	3	19-29
2	1.5-5	6	3	21-30
3	5-10	9	6	23-35
4	10-15	12	6	27-39
5	15-20	18	9	32-43

[a)] The age boundaries are determined by the presence of at least 100 observations for a particular year of age.

Table 3 Probability to leave unemployment within 6 and 12 months before and after the 1998 change of law, by entitlement group; males and females(%)

Males	PBD	Found a job after		Other exits after		Total after	
Group	(months)	6 months	12 months	6 months	12 months	6 months	12 months
1.	Before - 3	54	70	8	12	62	82
	After - 3	56	67	13	18	69	85
	Difference	2	-3	5	6	7	3
2.	Before - 6	51	67	3	9	54	76
	After - 3	58	69	12	18	70	87
	Difference	7	2	9	9	16	11
3.	Before - 9	47	66	3	8	50	74
	After - 6	51	61	14	21	65	82
	Difference	4	-5	11	13	15	8
4.	Before - 12	43	62	3	8	46	70
	After - 6	51	63	11	18	62	81
	Difference	8	1	8	10	16	11
5.	Before - 18	39	50	2	5	41	55
	After - 9	42	58	9	17	51	75
	Difference	3	8	7	12	10	20
Difference of differences males							
	2.-1.	5	5	4	3	9	8
	3.-1.	2	-2	6	7	8	5
	4.-1.	6	4	3	4	9	8
	5.-1.	1	11	2	6	3	17
Difference of differences females[a)]							
	2.-1.	3	2	0	-2	3	0
	3.-1.	5	0	2	3	7	3
	4.-1.	11	6	2	2	13	8
	5.-1.	6	14	-1	3	5	17

[a)] The underlying numbers for females are not shown and are available on request.

Table 4 Logit model parameter estimates probability to leave unemployment; males and females[a)]

	Probability to leave unemployment			
Males	$\leq$ 3 months	$\leq$ 6 months	$\leq$ 9 months	$\leq$ 12 months
After change of law	0.14 (1.4)	0.38 (3.5)*	0.33 (2.6)*	0.34 (2.4)*
Age/10	-0.33 (5.0)*	-0.44 (7.2)*	-0.59 (9.2)*	-0.66 (9.6)*
Education2	-0.21 (2.0)*	-0.06 (0.6)	0.03 (0.3)	-0.03 (0.3)
Education3	-0.31 (3.2)*	-0.18 (1.8)	-0.02 (0.2)	-0.02 (0.2)
Education4	-0.51 (4.9)*	-0.43 (4.2)*	-0.30 (2.7)*	-0.29 (2.4)*
Family1	0.03 (0.5)	0.13 (2.0)*	0.13 (1.9)	0.15 (2.0)*
Family2	0.02 (0.3)	0.12 (2.0)*	0.10 (1.6)	0.12 (1.8)
Ill health	-1.36 (12.2)*	-1.57 (17.6)*	-1.70 (20.0)*	-1.81 (21.8)*
Experience 1.5-5 years	-0.56 (4.2)*	-0.23 (1.8)	-0.12 (0.9)	-0.22 (1.4)
Experience 5-10 years	-0.24 (2.3)*	-0.33 (3.2)*	-0.24 (2.1)*	-0.16 (1.2)
Experience 10-15 years	-0.28 (2.4)*	-0.33 (2.9)*	-0.44 (3.7)*	-0.10 (0.8)
Experience 15-20 years	-0.05 (0.3)	-0.22 (1.6)	-0.32 (2.3)*	-0.33 (2.2)*
Incentive effects				
PBD 6 to 3 months	0.58 (3.5)*	0.31 (1.9)	0.28 (1.5)	0.39 (1.8)
PBD 9 to 6 months	0.10 (0.7)	0.28 (1.9)	0.30 (1.9)	0.19 (1.0)
PBD 12 to 6 months	0.17 (1.2)	0.34 (2.4)*	0.59 (3.8)*	0.32 (1.8)
PBD 18 to 9 months	0.09 (0.7)	0.08 (0.6)	0.50 (3.2)*	0.64 (3.7)*
Constant	0.77 (3.9)*	1.86 (9.8)*	2.75 (13.5)*	3.36 (15.0)*

Table 4 continued

Females	Probability to leave unemployment ≤ 3 months	≤ 6 months	≤ 9 months	≤ 12 months
After change of law	0.26 (2.8)*	0.43 (4.8)*	0.40 (4.2)*	0.48 (4.4)*
Age/10	-0.18 (3.0)*	-0.30 (5.3)*	-0.36 (6.4)*	-0.44 (7.4)*
Education2	-0.06 (0.4)	-0.07 (0.6)	-0.08 (0.6)	-0.08 (0.6)
Education3	-0.23 (1.7)	-0.20 (1.5)	-0.23 (1.8)	-0.11 (0.8)
Education4	-0.06 (0.4)	-0.01 (0.0)	0.06 (0.5)	0.22 (1.7)
Family1	-0.15 (2.7)*	-0.19 (3.5)*	-0.21 (3.8)*	-0.19 (3.2)*
Family2	-0.14 (2.4)*	-0.19 (3.6)*	-0.26 (4.8)*	-0.18 (3.3)*
Ill health	-2.04 (10.6)*	-1.86 (14.6)*	-1.89 (17.2)*	-1.89 (19.0)*
Experience 1.5-5 years	-0.33 (2.8)*	-0.10 (1.0)	0.03 (0.3)	0.09 (0.7)
Experience 5-10 years	-0.26 (2.5)*	-0.34 (3.7)*	-0.04 (0.5)	0.02 (0.2)
Experience 10-15 years	-0.26 (2.3)*	-0.41 (4.1)*	-0.33 (3.3)*	-0.09 (0.8)
Experience 15-20 years	-0.17 (1.2)	-0.28 (2.4)*	-0.25 (2.1)*	-0.30 (2.4)*
Incentive effects				
PBD 6 to 3 months	0.36 (2.5)*	0.10 (0.7)	0.13 (0.9)	-0.02 (0.1)
PBD 9 to 6 months	0.07 (0.5)	0.25 (2.0)*	0.25 (1.9)	0.10 (0.7)
PBD 12 to 6 months	0.25 (1.9)	0.51 (4.2)*	0.56 (4.4)*	0.23 (1.6)
PBD 18 to 9 months	0.19 (1.4)	0.24 (1.9)	0.60 (4.6)*	0.61 (4.3)*
Constant	-0.20 (0.9)	0.97 (4.8)*	1.60 (7.8)*	2.09 (9.7)*

[a)] Samples of 9,196 males and 10,853 females; absolute t-statistics in parentheses; a * indicates significance at a 95% level.

Table 5 Parameter estimates PH models; males and females

	Males		Females	
	To job	To other	To job	To other
Incentive effects				
PBD reduced to 3 months	0.00 (0.0)	0.40 (2.1)*	-0.03 (0.4)	0.46 (3.0)*
PBD reduced to 6 months	0.18 (3.4)*	0.82 (7.4)*	0.23 (4.3)*	0.93 (9.8)*
PBD reduced to 9 months	0.27 (4.1)*	0.89 (6.9)*	0.36 (5.7)*	0.99 (8.9)*
After benefits expiration	0.53 (10.2)*	0.70 (7.1)*	0.43 (8.8)*	0.92 (10.2)*
End of benefits spike	0.82 (16.7)*	1.14 (11.2)*	0.91 (18.9)*	1.16 (13.0)*
After change of law	-0.07 (1.7)	0.20 (3.2)*	-0.05 (1.6)	0.21 (4.2)*
Characteristics				
Age/10	-0.37 (9.9)*	-0.24 (3.6)*	-0.33 (9.7)*	-0.13 (2.4)*
Education2	0.01 (0.1)	-0.22 (2.2)*	0.04 (0.5)	0.37 (2.9)*
Education3	0.05 (0.9)	-0.44 (4.6)*	0.04 (0.5)	0.05 (0.4)
Education4	-0.09 (1.4)	-0.51 (5.1)*	0.19 (2.3)*	0.36 (2.9)*
Family1	0.09 (2.5)*	-0.02 (0.3)	-0.06 (2.0)*	-0.08 (1.6)
Family2	0.10 (3.0)*	-0.11 (1.7)	-0.10 (3.4)*	-0.09 (1.9)
Ill health	-1.33 (22.0)*	-1.29 (14.4)*	-1.52 (20.1)*	-1.25 (13.5)*
Experience 1.5-5 years	0.07 (1.5)	-0.02 (0.3)	0.08 (1.8)	0.12 (1.7)
Experience 5-10 years	0.20 (3.9)*	-0.07 (0.7)	0.13 (2.9)*	0.04 (0.6)
Experience 10-15 years	0.30 (5.0)*	0.07 (0.6)	0.22 (4.0)*	0.04 (0.4)
Experience 15-20 years	0.38 (4.9)*	-0.08 (0.6)	0.35 (4.9)*	-0.08 (0.7)

Table 5 continued

	Males		Females	
	To job	To other	To job	To other
Duration dependence				
Duration Month 2	0.08 (1.7)	0.20 (1.2)	-0.03 (0.7)	0.32 (2.5)*
Duration Month 3	0.20 (4.0)*	0.39 (2.5)*	-0.20 (3.6)*	0.30 (2.3)*
Duration Month 4	0.06 (1.0)	0.99 (6.8)*	-0.24 (4.3)*	0.63 (5.0)*
Duration Month 5	0.00 (0.1)	0.88 (5.8)*	-0.18 (3.3)*	0.61 (4.7)*
Duration Month 6	-0.23 (3.7)*	0.67 (4.0)*	-0.40 (6.4)*	0.33 (2.3)*
Duration Months 7-9	-0.46 (8.1)*	0.97 (6.8)*	-0.49 (8.9)*	0.63 (5.0)*
Duration Months 10-12	-0.63 (9.3)*	1.21 (7.9)*	-0.55 (8.8)*	0.69 (5.0)*
Duration Months 13-18	-0.79 (11.3)*	1.21 (7.9)*	-0.84 (12.6)*	0.73 (5.3)*
Duration Months 18+	-1.74 (20.4)*	0.96 (6.0)*	-1.51 (19.8)*	0.62 (4.5)*
Constant	-4.83 (43.2)*	-7.43 (33.3)*	-5.09 (40.0)*	-8.37 (37.9)*
–Loglikelihood	45,453.4	15,567.4	51,682.5	22,303.5

[a)] Samples of 9,196 males and 10,853 females; absolute t-statistics in parentheses; a * indicates significance at a 95% level.

Table 6 Parameter estimates MPH models; males and females

	Males		Females	
	To job	To other	To job	To other
Incentive effects				
PBD reduced to 3 months	-0.05 (0.7)	0.28 (1.5)	-0.13 (1.7)*	0.22 (1.5)
PBD reduced to 6 months	0.12 (2.0)*	0.68 (5.2)*	0.12 (2.1)*	0.66 (6.6)*
PBD reduced to 9 months	0.22 (3.2)*	0.81 (5.9)*	0.27 (4.0)*	0.79 (6.6)*
After benefits expiration	0.51 (9.8)*	0.60 (5.4)*	0.41 (8.3)*	0.77 (8.5)*
End of benefits spike	0.81 (16.5)*	1.11 (10.7)*	0.91 (18.9)*	1.14 (12.8)*
After change of law	0.02 (0.5)	0.38 (3.4)*	0.09 (2.1)*	0.58 (8.2)*
Characteristics				
Age/10	-0.36 (8.8)*	-0.26 (3.3)*	-0.32 (7.9)*	-0.10 (1.6)
Education2	-0.01 (0.1)	-0.27 (2.7)*	-0.04 (0.4)	0.25 (1.5)
Education3	0.04 (0.6)	-0.49 (5.1)*	-0.01 (0.1)	-0.02 (0.1)
Education4	-0.10 (1.5)	-0.55 (5.4)*	0.13 (1.4)	0.30 (1.8)
Family1	0.09 (2.4)*	-0.02 (0.3)	-0.07 (2.3)*	-0.09 (1.7)
Family2	0.09 (2.7)*	-0.12 (1.9)	-0.09 (2.8)*	-0.06 (1.1)
Ill health	-1.44 (20.6)*	-1.55 (14.5)*	-1.72 (19.5)*	-1.70 (15.3)*
Experience 1.5-5 years	0.08 (1.6)	-0.02 (0.2)	0.12 (2.6)*	0.17 (2.2)*
Experience 5-10 years	0.22 (4.3)*	-0.03 (0.3)	0.18 (3.8)*	0.09 (1.1)
Experience 10-15 years	0.31 (5.1)*	0.09 (0.7)	0.27 (4.8)*	0.10 (1.1)
Experience 15-20 years	0.38 (4.8)*	-0.10 (0.6)	0.40 (5.4)*	-0.05 (0.4)

Table 6 continued

	Males		Females	
	To job	To other	To job	To other
Duration dependence				
Duration Month 2	0.09 (1.8)	0.20 (1.3)	-0.03 (0.6)	0.33 (2.5)*
Duration Month 3	0.21 (4.2)*	0.40 (2.6)*	-0.17 (3.2)*	0.31 (2.3)*
Duration Month 4	0.07 (1.2)	1.02 (7.0)*	-0.23 (4.1)*	0.67 (5.2)*
Duration Month 5	0.02 (0.4)	0.92 (6.1)*	-0.19 (3.3)*	0.66 (5.1)*
Duration Month 6	-0.21 (3.3)*	0.73 (4.4)*	-0.37 (5.9)*	0.41 (2.9)*
Duration Months 7-9	-0.43 (7.5)*	1.04 (7.1)*	-0.46 (8.3)*	0.72 (5.6)*
Duration Months 10-12	-0.58 (8.5)*	1.31 (8.2)*	-0.50 (7.8)*	0.84 (6.1)*
Duration Months 13-18	-0.69 (9.8)*	1.38 (8.3)*	-0.73 (10.9)*	0.99 (7.1)*
Duration Months 18+	-1.38 (11.9)*	1.47 (7.0)*	-1.03 (10.8)*	1.41 (9.5)*
First masspoint	-4.85 (40.6)*	-7.36 (30.7)*	-5.12 (36.0)*	-8.39 (32.9)*
Second masspoint	$-\infty$	$-\infty$	$-\infty$	$-\infty$
Probability parameters				
α_1	4.09 (28.1)*		3.35 (37.0)*	
α_2	-0.18 (0.0)		1.03 (1.9)	
α_3	$-\infty$		$-\infty$	
Implied probabilities (%)				
p_1	97.0		88.2	
p_2	1.4		8.7	
p_3	0.0		0.0	
p_4	1.6		3.1	
–Loglikelihood	60982.5		73,867.8	

[a)] Samples of 9,196 males and 10,853 females; absolute t-statistics in parentheses; a * indicates significance at a 95% level.

Table 7 Simulation results; cumulative probability to leave unemployment (%)

	Before change of law PBD = 12 months			After change of law PBD = 6 months			Difference		
Duration	Job	Other	Total	Job	Other	Total	Job	Other	Total
Reference person[a)]									
$\leq$ 6 months	44.0	6.0	50.0	52.4	15.1	67.5	8.4	9.1	17.5
$\leq$ 12 months	59.4	13.4	72.8	65.1	21.3	86.4	5.7	7.9	13.6
If age = 40									
$\leq$ 6 months	33.2	5.3	38.5	41.1	14.0	55.1	7.9	8.7	16.6
$\leq$ 12 months	47.4	13.1	60.5	54.6	21.6	76.2	7.2	8.5	15.7
If ill health									
$\leq$ 6 months	14.6	2.2	16.8	19.4	6.5	25.9	5.8	4.3	9.1
$\leq$ 12 months	22.9	6.5	29.4	29.6	11.8	41.4	6.7	5.3	12.0
If female									
$\leq$ 6 months	32.6	3.4	36.0	43.2	10.0	53.2	10.6	6.6	17.2
$\leq$ 12 months	50.8	7.5	58.3	58.6	15.1	73.7	7.8	7.6	15.4

[a)] A reference person is male, 30 years of age, has no education, 5–10 years of work experience, no dependent family members, and is in good health. Note that before the change in the benefit law this person was entitled to 12 months of unemployment benefits, while after the change of law this was 6 months. The simulations are based on the parameter estimates presented in Table 6.

Figure 1: Survival in unemployment, before and after the change of law; distinguished by entitlement group

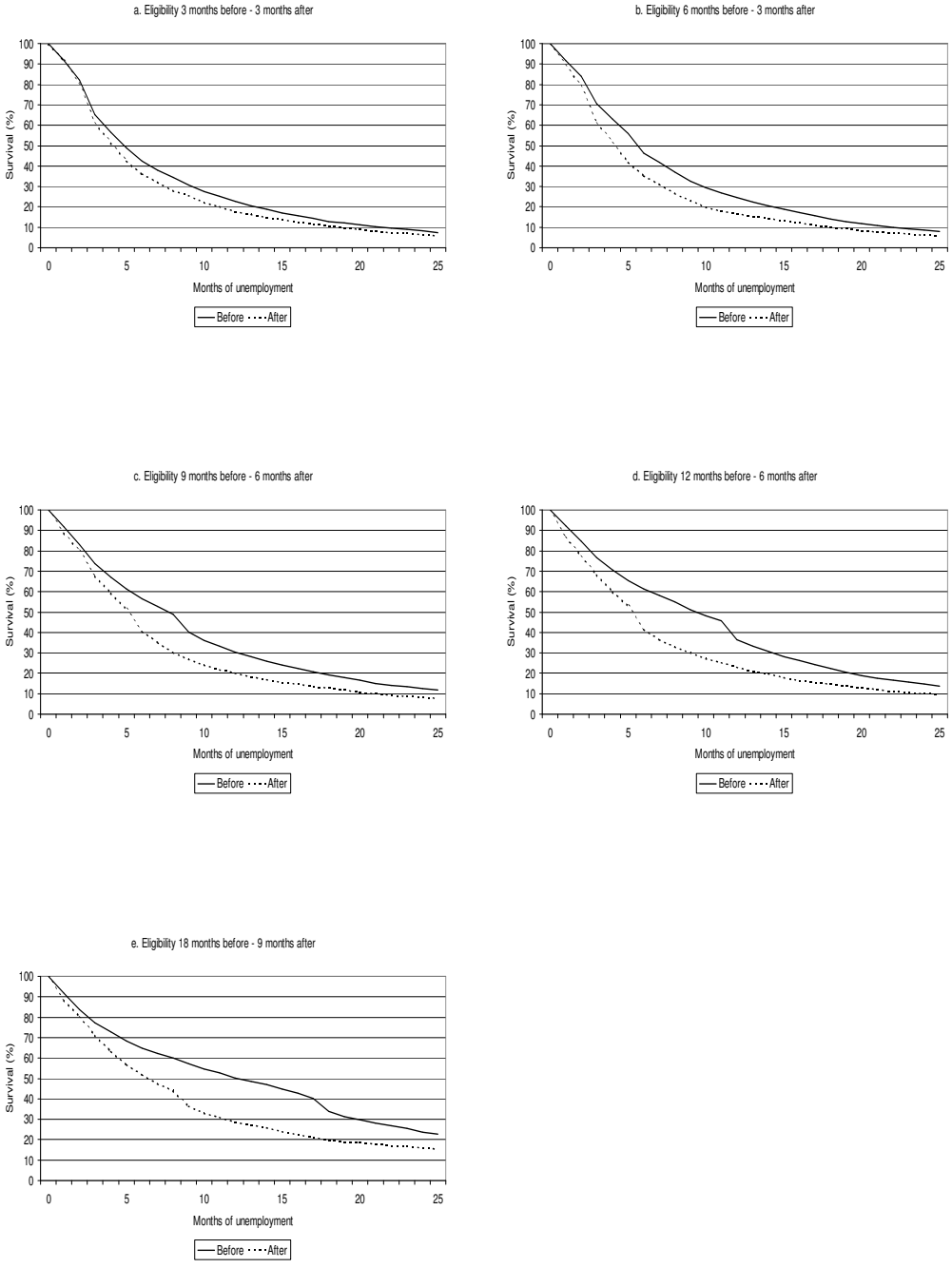

Figure 2: Monthly exit rates from unemployment, before and after the change of law; distinguished by entitlement group

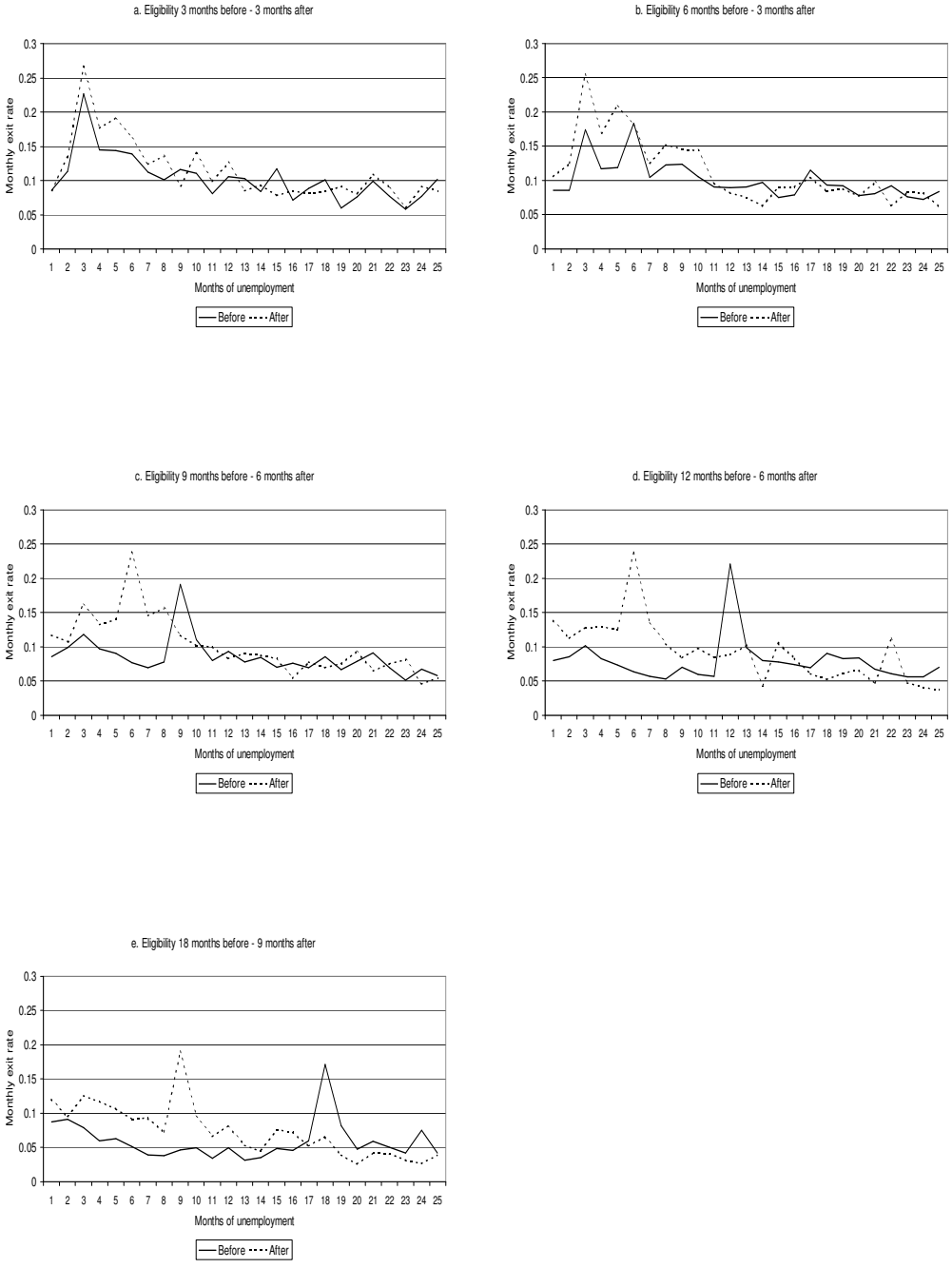

Figure 3: Monthly job finding rates, before and after the change of law; distinguished by entitlement group

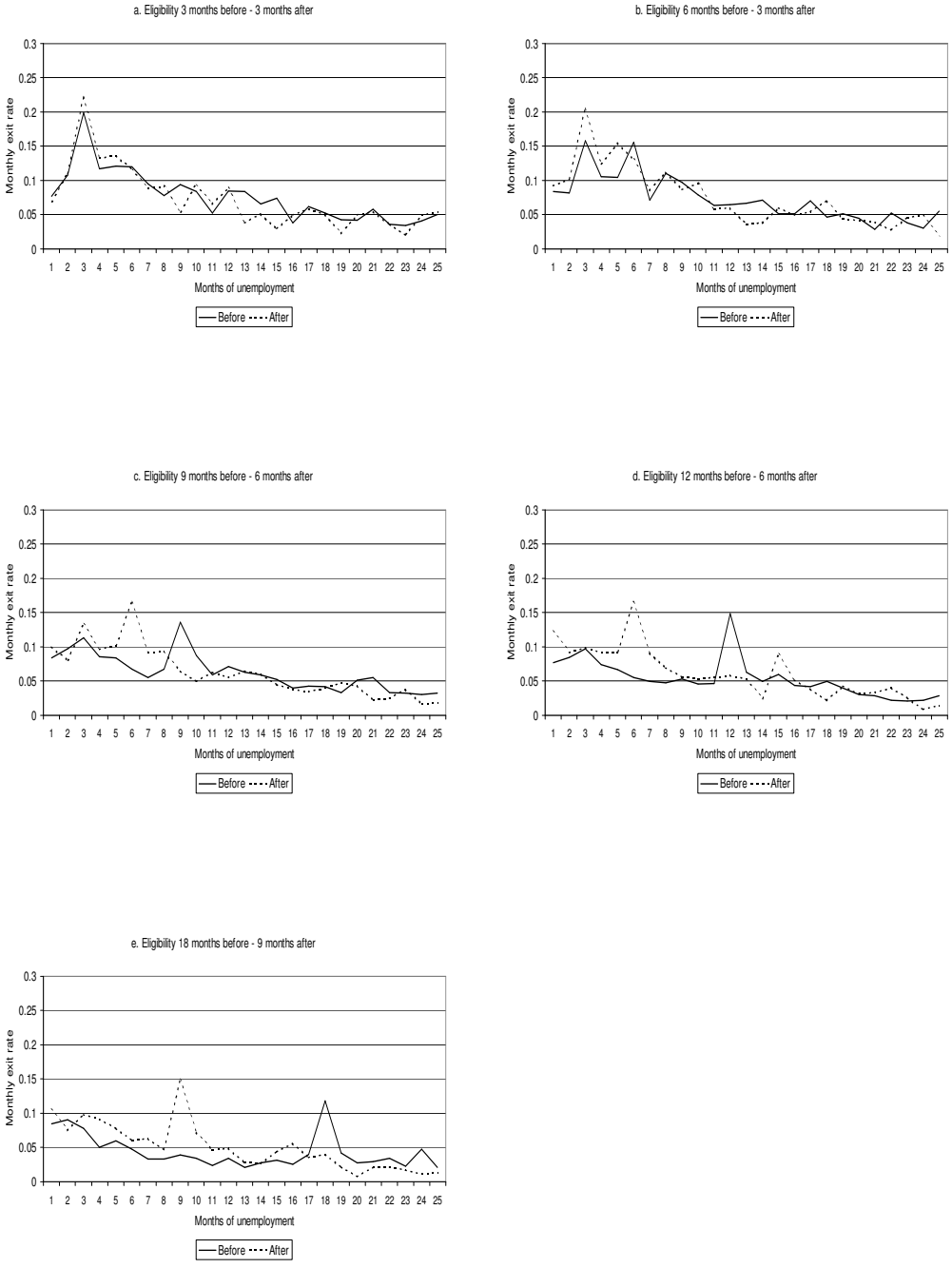

Figure 4: Changes in PBD and the job finding rate; pre-expiration and post-expiration effects