Counseling and Monitoring of Unemployed Workers: Theory and Evidence from a Social Experiment

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Abstract

To stimulate the re-employment of unemployed workers, the Dutch local unemployment insurance agencies provide counseling and monitoring. We investigate the effect of this "active labor market policy" on the individual transition rate from unemployment to employment. We present a job search model with two search channels and endogenous search effort. This model provides theoretical background on the effects of providing counseling and monitoring. In the empirical analysis we use administrative data which are collected using a social experiment. Our reduced-form estimation results do not show a significant effect of counseling and monitoring on re-employment probabilities. According to our theoretical model this is caused by a shift from informal to formal job search mainly induced by the monitoring.

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1 Introduction

European labor markets display a low inflow into unemployment, a high average duration of unemployment, high benefits and long benefits entitlement (see Bean, 1994, and Layard, Nickell and Jackman, 1991, for surveys). In the past decades there has been a change in the public debate with respect to the benefits system. Whereas income support has always been the primary aim of the benefits system, there has recently been an increasing interest in stimulating re-employment of benefits recipients by so-called "active labor market policies". Examples of these are training and schooling programs, subsidized employment for youth and long-term unemployed workers, special public employment services, punitive benefit reductions for noncompliance to job search guidelines, etc. (see Grubb, 1999, for a survey on punitive benefit reductions and Heckman, LaLonde and Smith, 2000, for a survey on training and schooling programs).

In this paper we evaluate the effect of Counseling and Monitoring (C&M), which is an activity provided by the local unemployment insurance (UI) agencies.[1] It is provided to UI recipients with relatively good labor market prospects. C&M consists of monthly meetings with an employee of the local UI agency for a period of 6 months starting immediately after inflow into UI. During these meetings past job search activities are evaluated and a planning on the next period's job search activities is made. The main purpose of C&M is to reduce the duration of unemployment and consequently the total amount paid on UI benefits. An evaluation of C&M should therefore focus on the duration until exit to work and take place at the individual level.

For a theoretical investigation of the effect of C&M on the exit rate to work we use a job search model with multiple search channels and endogenous search effort. In economic literature many studies address the importance of distinguishing between various search channels (see Blau and Robins, 1990, Holzer, 1988, Koning, Ridder and Van den Berg, 1997, and Montgomery, 1991). We allow for formal and informal job search. Job search is considered as formal in case the worker applies for a job using formalized search methods like personnel advertisements and the public employment office. Informal search occurs when for example unemployed workers receive job offers through referral by an employed worker, a friend or a relative. We assume that C&M only concerns formal job

[1] Although the local UI agencies are mainly responsible for paying UI benefits, providing training, schooling, etc. are also their tasks. The public employment offices act as matching agents, not only to UI recipients, but also to welfare recipients and employed workers searching for (new) jobs.

search, either by increasing the efficiency of formal job search effort (or reducing the associate costs) or by closer monitoring of formal job search. The first effect can be considered as counseling, while the latter is monitoring. This job search model is used to guide interpretation on the results of the empirical analyses.

A similar type of policy in The Netherlands is analyzed by Gorter and Kalb (1996). Using a descriptive empirical analysis they find a positive but insignificant effect of C&M on the rate at which UI recipients find a job. The C&M investigated by Gorter and Kalb (1996) differs from the C&M studied in this paper both in the treatment and in the target population. Whereas we focus on monthly meetings at the UI agency, they investigate the effects of spending more time with the unemployed workers on top of regular monthly meetings. In practice the duration of the monthly meetings is extended in order to have a more intensive contact with the UI recipients. The target population of the C&M studied by Gorter and Kalb (1996) contains all UI recipients. The C&M studied in this paper is only provided to a subgroup of the UI recipients, i.e. UI recipients with good labor market prospects. In comparison to Gorter and Kalb (1996) we observe the exact level of the UI benefits, which is the most important determinant of the unemployment duration. However, they observe the wage in the job previous to UI. Although the wage in the job previous to UI is the most important determinant of the benefits level, the relation between these two variables is not always linear (see Subsection 2.1). Furthermore, Gorter and Kalb (1996) investigate the early-nineties when the Dutch economy was in a recession. Since that period the Dutch economy improved; the unemployment rate decreased and the number of vacancies increased. Finally, there have been some changes in the Dutch UI system in the mid-nineties. We return to this last issue when discussing the Dutch UI system.

For the U.K., Dolton and O'Neill (1996) find that C&M is a very efficient tool for increasing re-employment probabilities of long-term unemployed workers. The Restart program evaluated by Dolton and O'Neill (1996) consists of a set of six-monthly compulsory meetings during which advice on job search is provided (the first meeting takes place after an uninterrupted unemployment spell of 6 months). In addition, the unemployed workers are placed in contact with employers and training agencies. An important feature of Restart is that the unemployment benefits are reduced or suspended if individuals do not participate in the program (or do not search for jobs sufficiently). Meyer (1995) studies 5 US job search assistance programs (which do not offer any bonuses). These programs consist of several different combinations of services. In general, these programs are intense and they often include workshops on job search techniques. Most

of these programs decrease the UI entitlement period with around half a week. Although, the more intense the program is, the higher the individual exit rates to work are. Ashenfelter, Ashmore and Deschênes (1999) investigate the impact of stricter verification of job search behavior on the amount of UI benefits paid and the duration of collecting UI benefits. They do not find any significant effects of this type of monitoring. The target population in their study consists of all applicants for UI benefits in four U.S. states. These results show that in some cases C&M can be a very effective policy in reducing UI entitlement. The success of the policy depends on the intensity of the program and the target population.

Our data are from a social experiment, which simplifies the econometric evaluation. It is not necessary to apply advanced econometric techniques to reduce sample selection bias from nonrandom participation and we do not have to rely on instrumental variables or functional form assumptions to identify the treatment effect (see e.g. LaLonde, 1986). The participants in the experiment are not told in advance that the experiment is going on. Usually, these individuals would all have received C&M. However, none of the individuals in the control group complained about not receiving C&M. The setup ensures that the data do not suffer from initial nonrandom nonparticipation in the experiment and participants can not leave the experiment for any reason other than stopping collecting UI benefits. Over the last years the use of social experiments to evaluate active labor market policies has become more common. This has been particularly the case in Canada, the U.K. and the U.A. (see for example Ashenfelter, Ashmore and Deschênes, 1999, Card and Robins, 1998, Dolton and O'Neill, 1996, Eberwein, Ham and LaLonde, 1997, and Meyer, 1995). In The Netherlands this approach is relatively new (see Gorter and Kalb, 1996, for a policy evaluation using a social experiment).

In the empirical analysis of this paper we use a Mixed Proportional Hazard specification. The transition rate from unemployment to employment is allowed to depend on observed individual characteristics, on the elapsed unemployment duration, on unobserved determinants and on a variable indicating if the unemployed worker receives C&M. For the duration dependence we take a flexible piecewise constant specification. To estimate the model we have a sample of 394 unemployed workers who started collecting UI benefits between August 24 and December 2, 1998. The database contains information about them until they left the UI benefits system or until February 8, 1999, whichever occurred first.

In addition to the administrative database, we also have access to a written questionnaire. This questionnaire was sent to the participants after the experiment was completed. In the questionnaire the UI recipients were asked questions

about their job search behavior and their opinion on the local UI agency. The questions on the job search behavior mainly focused on the number of job applications and the job search channels used by the unemployed worker. The questions about the local UI agency differed between the treatment and control group. Both groups were asked if they experienced the activities of the local UI agency as being controlling and stimulating. The individuals in the treatment group were also asked questions about C&M. In particular, they were asked questions about how they experienced the specific components of C&M, checking job applications, providing information, etc. We try to match the answers to this written questionnaire to the administrative database and perform some formal analyses on the answers to the questions.

The outline of this paper is as follows. In Section 2 we give a detailed description of the Dutch UI system and we discuss the eligibility requirements for receiving UI and C&M. Section 3 presents the theoretical job search model that we use to interpret the results and Section 4 the reduced-form empirical model. In Section 5 we discuss the setup of the experiment, the unique administrative database used to estimate the model and the written questionnaire. In Section 6 we present the estimation results, we perform some sensitivity analyses and we do some formal analyses with the answers to the written questionnaire. Section 7 concludes.

2 Counseling and monitoring

2.1 Unemployment insurance

In this section we describe some institutional aspects of the Dutch UI system in the late-nineties. The aim of the Unemployment Law in The Netherlands is to insure employees against the financial consequences of unemployment. Excluded from this law are self-employed and civil servants who have an alternative arrangement. The current law insures around 70% of all workers and dates from January 1, 1987. On March 1, 1995 it has been reformed. It is not our intention to give a full and detailed description of this law. Instead, we explain the basic structure and we highlight aspects of the law that are relevant for our purpose. Given that the observation window of our database covers less than 6 months after inflow, we restrict attention to features that are important for that period.

If a worker, younger than 65 years, loses his job, he is entitled to UI benefits, provided that some conditions are fulfilled. The worker has to face a reduction in his original working hours of at least 5 hours per week, or half of his original

working hours if less than 10 hours per week, he should not get paid for this working hour reduction and he should be willing to accept a new job. Furthermore, the individual should have had a job for at least 26 weeks in the past 39 weeks prior to the start of the unemployment period. Those who fulfill these conditions are entitled to UI benefits. The level of the benefits is fully determined by the history of labor force attachment. The income levels of other household members and private assets do not matter for UI. There are two possible schemes of UI benefits, (*i*) wage-related benefits and (*ii*) short-period benefits.

To be entitled to wage-related benefits, the unemployed worker must have worked at least 52 days during each of 4 years out of the past 5 calendar years. The wage-related benefits start with a period of initial benefits. The level of the initial benefits equals 70% of the wage in the job previous to unemployment with a maximum of 305.96 guilders per day (two Dutch guilders roughly equal one U.S. dollar).[2] The exact duration of the entitlement period lies between 6 months and 5 years and depends on the employment history of the unemployed worker. For an entitlement period of 1 year, the unemployed worker must have had jobs for at least 10 years for an entitlement period of 5 years, 40 years of working is required. After the entitlement to initial benefits expires, the unemployed worker receives extended benefits for a period of 2 years if his age was under 57.5 years at the first day of unemployment and 3.5 years otherwise. The extended benefits level is equal to 70% of the minimum wage or 70% of the wage in the last job before unemployment, whichever is lower.

Individuals who do not meet the requirement for collecting wage-related benefits, receive short-period benefits. The duration of receiving short-period benefits is always 6 months. The level of short-period benefits is similar to extended benefits, 70% of the minimum wage or 70% of the wage in the last job, whichever was lower.

If during the UI entitlement period the household income of a UI recipient decreases below 'welfare level', the UI recipient may receive supplementary benefits to make up the difference.[3] This applies to both unemployed workers receiving wage-related benefits and short-period benefits. If, after the expiration of (either type of) UI benefits, the individual did not find a job, he may receive welfare benefits. These are means (household income) tested and related to what is considered to be the social minimum income.

According to the Unemployment Law, an unemployed worker has several obli-

[2]Actually, less than 5% of the inflow in our data set receives the maximum benefits.

[3]At the end of 1997 only 7.2% of the stock of UI recipients collected supplementary benefits (LISV, 1998).

gations in order to be entitled to UI benefits: he has to (*i*) prevent unnecessary job loss, (*ii*) take actions to prevent him from staying unemployed, so he has to search for a job and accept appropriate job offers, register as a job searcher at the public employment office, participate in education and training, etc., and (*iii*) keep the local UI agency informed about everything that is relevant to the payment of the UI benefits. If an unemployed worker does not comply to these rules, the local UI agency is authorized (not obliged) to apply a sanction to that worker. See Abbring, Van den Berg and Van Ours (1997) for a study on the effects of imposing sanctions on the exit rate to work. The administration of the UI system is organized at the level of the industry. There are 4 UI agencies that each represent a number of industries.

At the end of 1997, in The Netherlands there were 335.000 individuals collecting UI benefits. The Netherlands has 15.5 million inhabitants, of which 10.5 million are between 15 and 65 years old. Of those 6.8 million consist of the labor force and of those 438.000 are not working. In 1997 the inflow into UI was 486.000 and the outflow 531.700 individuals.

At the *intake meeting* of UI the individuals are classified into four types. The classification is such that the type I unemployed workers are considered to have the highest probability to find work, while the type IV unemployed workers have the lowest expected re-employment probabilities. The classification is based on individual characteristics such as work experience, age and education, and on some subjective measures such as expected job search behavior, flexibility, language skills and presentation skills. See Appendix A for a detailed description of the process of classification. In general, the type I unemployed workers are expected to have sufficient skills to find a job. The type II and III unemployed workers are considered not to have the skills to find work without any assistance. Therefore, these types of individuals are provided training and schooling. The type IV unemployed workers are the most disadvantaged and need more care. These individuals are often unable to work or not obliged to search for work (lonely parents with dependent children, drug addicts, etc.). In the inflow of unemployed workers into UI, 75% to 80% is classified as type I unemployed workers. In the stock of UI recipients, around 60% are type I unemployed workers. This indicates that indeed the type I unemployed workers have higher exit probabilities than other unemployed workers.

2.2 The treatment

Since April 1998 all local UI agencies are obliged to support type I unemployed workers in job search by providing C&M. One local UI agency has already been providing C&M for more than 5 years. During this period there have been some reforms in C&M. Also the target population changed over this period. In the beginning almost all UI recipients were eligible for receiving C&M. However, not all individuals in the target population actually received C&M. In particular, in periods in which the number of unemployed workers applying for UI benefits was high, only a limited number of individuals was provided with C&M. In its current form C&M is more standardized and all UI recipients eligible for C&M actually receive it. Excluded are individuals who know at the date of UI registration that they will start a new job within 3 weeks and type I unemployed workers collecting short-period benefits. C&M is a process of half a year. During this period the unemployed workers have a meeting at the local UI agency every 4 weeks.

The *intake meeting* of the C&M takes place within three days after the start of the payment of the UI benefits. This intake meeting takes around 45 minutes. The quality of application letters and the curriculum vitae is checked, the different channels through which work can be found are discussed and a planning is made about what the individual must do until the next meeting. Although the local UI agency can inform the unemployed worker about possible job entries, it is not allowed to act as an intermediate between unemployed workers and firms. Offering or pointing out specific vacancies to unemployed workers is the task of the public employment offices. Another important element of C&M is to stimulate the unemployed worker in frequently contacting the public employment offices. During this intake meeting it is stressed that a positive and active attitude toward job search is expected.

The *follow up meetings* take around 20 minutes and focus on applications to specific job vacancies and employers. During this meeting the planning of the previous meeting is evaluated and a planning for the next period is made. If the unemployed worker did not comply to the planning, he may be punished with a sanction in the form of a reduction of the UI benefits. The average sanction for insufficient job search is a 10% reduction of the UI benefits for a period of 2 months. However, both the magnitude and the duration of a benefit reduction may vary depending on the reason why the sanction has been imposed (see Abbring, Van den Berg and Van Ours, 1997). Additional to the C&M, the UI recipients have to send in weekly forms stating his current status regarding job search activities. This can be done by mail.

Providing C&M is relatively cheap. The Dutch National Institute for Social

Security pays the local UI agencies on average around 335.98 guilders for providing C&M. This amount is paid at the beginning of UI entitlement period and does not depend on the realized unemployment duration. However, each C&M meeting includes a check if the unemployed worker is still eligible for collecting UI benefits. Performing this check would otherwise costs on average around 38.61 guilders. So the Dutch National Institute for Social Security saves 38.61 guilders for each additional month that an individual collects UI benefits. For some reasons these amounts may vary between individuals and local UI agencies. The amounts mentioned above are the average realized amounts.

3 Theoretical analysis

3.1 Job search with endogenous search effort and multiple search channels

In this section we analyze the effects of C&M in a theoretical model of job search and unemployment duration. We start with a presentation of the basic model. In Subsections 3.2 and 3.3 we focus on the effects of counseling and monitoring, respectively.

The model is based on the standard job search model with an endogenous search intensity (see e.g. Mortensen, 1986). We generalize the model by allowing job offers to arrive through formal as well as informal search channels, each with its own associated structural parameters.

Consider an unemployed worker searching for a job. This individual can search along two search channels: the formal and the informal channel, which are denoted by subscripts 1 and 2, respectively. An amount of search effort $s_i \geq 0$ is devoted to search along channel i. This variable s_i, which is also called the search intensity for channel i, is to be chosen optimally by the unemployed worker. Job offers along search channel i arrive at the individual according to a Poisson process with rate $\lambda_i s_i$. A job offer along channel i is characterized by a random drawing from a channel-specific wage offer distribution F_i. Arrival times and wage offers are independent across channels and across time. For ease of exposition, we assume that F_1 and F_2 are continuous with a connected support on which the densities are positive. If a job offer arrives, the individual has to decide immediately whether to accept it or to reject it and continue searching. We do not allow for the possibility to reconsider job offers at a later stage. Furthermore, for ease of exposition, we assume that once a job is accepted, it will be kept forever, at the same wage. We thus exclude on-the-job-search and job loss. However, our

results are robust with respect to this.

For each channel i, the costs of search are taken to be a quadratic function $\frac{1}{2}c_i s_i^2$ of the search effort s_i. This is a common specification in both the theoretical and the empirical literature on search with endogenous search intensities (see the survey by Mortensen and Pissarides, 2000). Total search costs equal $\frac{1}{2}c_1 s_1^2 + \frac{1}{2}c_2 s_2^2$. In Subsection 3.3 we also consider alternative specifications for the costs functions. During unemployment, benefits b are received. Individuals maximize their expected discounted income over an infinite time horizon. The expected discounted income (or "value of search") and the discount rate are denoted by R and ρ, respectively.

We make the following assumptions on the structural determinants. First,

$$0 \ < \ \lambda_1, \lambda_2, \mathrm{E}_1(w), \mathrm{E}_2(w), c_1, c_2, b, \rho \ < \ \infty$$

where $\mathrm{E}_i(w)$ denotes the expected wage associated with job offer through search channel i (note that we do not require that $b \geq \frac{1}{2}(c_1 s_1^2 + c_2 s_2^2)$). Secondly, all structural determinants are assumed to be constant over time. This assumption is made for expositional convenience. We know from Subsection 2.1 that this assumption is incorrect for b. After expiration of the entitlement to "initial benefits", b drops to the level of the "extended benefits", and in a very late stage it may drop to the welfare level. However, the expected unemployment duration of an unemployed worker who is eligible for C&M is typically much shorter than the duration of entitlement to initial UI benefits. Van den Berg (1990) shows that if the exit rate to work is high and the moment at which b decreases is not very close, then the anticipation of the future decrease of b is very low, so, by approximation, the individual behaves as if b is constant.

It is straightforward to derive from Bellman's equation that R is the unique solution to

$$\rho R = \max_{s_1, s_2 \geq 0} \ b + \sum_{i=1}^{2} \ -\frac{1}{2}c_i s_i^2 + \lambda_i s_i \mathrm{E}_i \max\{\frac{w}{\rho} - R, 0\} \qquad (1)$$

(see Mortensen, 1986, and Albrecht, Holmlund and Lang, 1991), where the optimal search intensities are given by the values of s_1 and s_2 which maximize the right-hand side, and where the optimal job acceptance strategy is to accept if and only if the wage w exceeds ρR. This defines the unique reservation wage ϕ as $\phi = \rho R$. The optimal strategy of an unemployed worker can therefore be summarized by ϕ and the optimal search efforts s_1 and s_2. To proceed, it is useful to define

$$\overline{F}_i(w) = 1 - F_i(w), \qquad Q_i(x) = \int_x^\infty \overline{F}_i(w)dw$$

These are the survivor function and the surplus function associated with F_i. By partial integration,

$$\frac{Q_i(x)}{\overline{F}_i(x)} = \mathrm{E}_i(w - x | w > x)$$

which is positive and finite for every x. This equation can be used to rewrite (1),

$$\phi = \max_{s_1, s_2 \geq 0} \; b + \sum_{i=1}^{2} \; -\frac{1}{2}c_i s_i^2 + \frac{\lambda_i s_i}{\rho} Q_i(\phi) \tag{2}$$

For a given ϕ, the optimal search effort s_i follows from the first order condition

$$s_i = \frac{\lambda_i}{\rho c_i} Q_i(\phi) \qquad i = 1, 2 \tag{3}$$

Because all components on the right-hand side are positive and finite, the individual devotes a positive and finite amount of effort to each search channel. Note that the above equation implies that the marginal search costs equal the marginal benefits of search along a given search channel. If we substitute the optimal search effort into (2), we obtain a particularly useful expression for the optimal reservation wage in terms of the structural determinants,

$$\phi = b + \sum_{i=1}^{2} \frac{\lambda_i^2}{2\rho^2 c_i} Q_i^2(\phi) \tag{4}$$

By substituting this into (3), we obtain expressions for s_i in terms of the structural determinants. This completes a recursive system of equations for the optimal strategy. Note from the above expression for ϕ that $0 < b < \phi < \infty$.

The rate θ_i at which individuals find a job through a given search channel i equals the product of the rate at which job offers arrive through this channel and the acceptance probability of such job offers,

$$\theta_i = \lambda_i s_i \overline{F}_i(\phi) = \frac{\lambda_i^2}{\rho c_i} Q_i(\phi) \overline{F}_i(\phi)$$

The transition rate from unemployment to employment θ equals the sum of these rates over both search channels

$$\theta = \sum_{i=1}^{2} \frac{\lambda_i^2}{\rho c_i} Q_i(\phi) \overline{F}_i(\phi) \tag{5}$$

Note that due to the stationarity, this transition rate does not depend on elapsed unemployment duration or any other measure of time. In the remainder we focus on this transition rate and investigate the possible ways in which C&M might affect this exit rate.

Note that the optimal reservation wage and the channel-specific and total transition rates from unemployment to employment depend on λ_i and c_i solely by way of λ_i^2/c_i. This implies that with data on reservation wages, unemployment durations, and post-unemployment wages, it is in general not possible to identify both λ_i and c_i. Moreover, the comparative statics effects of an increase in the efficiency of a search channel on ϕ, θ_i and θ are qualitatively equivalent to the comparative statics effects of a decrease in the search costs associated with that channel.

3.2 The theoretical effect of counseling

We assume that counseling is intended to facilitate search along the formal channel. There are a number of reasons why the efficiency of search along the formal channel may increase as a result of counseling. For example, the case worker at the UI agency may help to improve the application letters and the curriculum vitae, employers provide information to the case worker about vacancies to which the unemployed worker can apply, the case worker makes appointments for the unemployed worker at the public employment office, etc. In general, search along the formal channel can be facilitated by way of an increase of λ_1 or a decrease of c_1. We are interested in the effect of this on θ. For ease of exposition, and without loss of generality, we focus on the effect of λ_1 on θ assuming that c_1 is constant.

There is a substantial theoretical literature on the comparative statics effect of a job offer arrival rate on the exit rate out of unemployment. This literature assumes constant search intensities and is concerned with a single search channel. In that case, the job offer arrival rate has two opposite effects on the exit rate out of unemployment (and therefore on the expected duration of unemployment). First, there is a positive effect on the exit rate because of the increased rate at which offers arrive. Secondly, there is a negative effect because of the increased selectivity of the searcher in face of this increased opportunity to leave unemployment (the reservation wage increases, and as a result the acceptance probability decreases). The sign and magnitude of the net effect depend on other variables affecting the optimal strategy of an unemployed individual (like the wage offer distribution and the subjective rate of discount) and therefore the sign of the

net effect is ambiguous. The most general comparative statics results are in Van den Berg (1994), who shows that the effect is positive under very weak restrictions on the shape of the wage offer distribution. In this subsection, we extend these results to a setting with endogenous search intensities and multiple search channels.

In the model with endogenous search intensities and a single search channel, the parameter λ also affects the optimal search intensity. This may give an additional boost to the actual rate at which offers arrive. At first sight this may suggest that in such a model the effect of λ on θ is positive under weaker conditions than in the model with fixed search effort. However, the fact that the search intensity increases also implies that the worker can be even more selective with respect to the offers that arrive. In case of two search channels, the parameter λ_1 affects both search intensities and both channel-specific acceptance probabilities, thus complicating matters even further.

In the remainder we assume that the optimal ϕ lies within the support of both wage offer distributions $F_i(\cdot)$, so that $0 < \overline{F}_i(\phi) < 1$, thereby excluding trivial comparative statics cases.

Consider a wage offer distribution F, and define the associated function ψ as follows:

$$\psi(w) = \frac{f(w)}{1 - F(w)}$$

for all w in the support of F. This is of course the hazard rate associated with the distribution F. For small dw the expression $\psi(w)dw$ can be interpreted as the probability that a wage offer is in the interval $[w, w + dw)$ if it is given that this wage offer exceeds w. In order to avoid confusion with the hazard rate associated with the unemployment duration distribution, we will call ψ the *failure rate* of F. Concerning the shape of ψ, all the insights from the literature on hazard rates of duration distributions carries through. For example, if F has a fat right tail then $\psi(w)$ decreases for large w. See Van den Berg (1994) for a detailed discussion.

Now consider the following restriction on a wage offer distribution F,

Condition A *The expression $w\,\psi(w)$ increases in w, for every w in the support of F.*

Van den Berg (1994) shows that this is a weak restriction on probability distributions for non-negative random variables, in particular for random variables that are related to income variables. For example, it is satisfied by all distributions in the exponential, beta, Weibull, gamma, log-normal, Pareto, Generalized Beta-2,

Singh-Maddala, F, and log-uniform families, the families of logistic, normal, t, and extreme value distributions that are truncated from below at or above zero, and the family of uniform distributions for which the lower point of support is non-negative. As a result, all families of distributions generally used to model wage offer distributions in job search models and other income-related distributions satisfy Condition A.[4] We now proceed to present results for our model.

Proposition 1 *If $F_1 = F_2$ and if F_1 satisfies Condition A, then $d\theta/d\lambda_1 > 0$. In addition, $d\phi/d\lambda_1 > 0, ds_1/d\lambda_1 > 0, ds_2/d\lambda_1 < 0, d\theta_1/d\lambda_1 > 0$ and $d\theta_2/d\lambda_1 < 0$.*

Proof. See B. We should note that $F_1 = F_2$ and Condition A are by no means necessary to obtain $d\theta/d\lambda_1 > 0$.

If formal job search effort becomes more efficient, the optimal reservation wage increases. A higher value of λ_1 improves the present value of the unemployed worker and therefore he becomes more selective concerning the wages offered. If formal job search becomes more efficient, individuals also substitute informal job search effort into formal job search effort. It turns out that, under the conditions of 1, the rate at which the individual leaves unemployment by way of the formal (informal) channel increases (decreases), and that the first effect dominates in the total exit rate out of unemployment.

One may wonder whether $F_1 = F_2$ is a reasonable assumption. We examine this from an empirical and a theoretical perspective. First, let us examine the empirical evidence. Koning, Van den Berg and Ridder (1997) use labor force survey data from The Netherlands to test whether the wage offer distributions are different between the formal and informal search channel. They do not reject the null hypothesis of equality. Using other Dutch data, Lindeboom, Van Ours and Renes (1994) find that informal wage offers have a relatively large acceptance probability, which suggests that the left tail of F_2 is thinner than of F_1, or that wages found along the informal channel are on average higher than those found along the formal channel. This difference in acceptance probability is also found for the U.S. by Holzer (1988).

The theoretical literature suggests that there may be reasons to suspect that F_2 dominates F_1, that is, wages found along the informal channel are on average higher than those found along the formal channel. Mortensen and Vishwanath (1994) develop an equilibrium search model with a formal and an informal search channel and fixed search intensities. In this model, employed workers also search

[4] Van den Berg (1994) shows that the effect of the job offer arrival rate on the exit rate out of unemployment is positive in his model if the wage offer distribution satisfies Condition A.

on the job for jobs with higher wages, so that in equilibrium firms paying high wages also have a relatively large workforce. If a worker finds a job by way of referral by currently employed workers, then the probability of getting an offer of a particular firm is proportional to the size of that firm. If a worker finds a job by way of formal applications to vacancies then the sampling of firms is uniform. Hence, informal search generates higher wage offers in equilibrium.

One may wonder to what extent the results in Proposition 1 are actually sensitive to the assumption that $F_1 = F_2$. It is not difficult to show that if F_1 and F_2 are different then still $d\phi/d\lambda_1 > 0, ds_1/d\lambda_1 > 0, ds_2/d\lambda_1 < 0, d\theta_1/d\lambda_1 > 0$, and $d\theta_2/d\lambda_1 < 0$. However, it is more difficult to establish under which conditions the over-all effect $d\theta/d\lambda_1$ is still positive. Intuitively it is clear that if F_2 has a very large amount of probability mass around to ϕ whereas F_1 does not, so that the corresponding densities at ϕ satisfy $f_2(\phi) >> f_1(\phi)$, then the over-all effect may be negative. In such a case, the increase in λ_1 increases the present value and therefore the reservation wage ϕ, but as a result a large number of informal job offers become unacceptable, and the exit rate out of unemployment may decrease. Simulations show that this may occur even if F_1 and F_2 belong to the same family of distributions (e.g. exponential distributions) and both satisfy Condition A. Of course, two exponential distributions may be very different from each other, and indeed it seems from the simulations that F_2 must be concentrated around ϕ whereas F_1 must have most probability mass in its right tail, in order to obtain $d\theta/d\lambda_1 < 0$. Invariably, in such cases, F_1 strongly dominates F_2.[5] But this goes against all the empirical and theoretical evidence (which suggests that $F_1 = F_2$ or F_2 dominates F_1). We therefore conclude that any differences in practice between F_1 and F_2 are not expected to result in a negative sign of $d\theta/d\lambda_1$.

3.3 The theoretical effect of monitoring

We assume that the monitoring in C&M concerns the formal job search effort s_1 but not the informal search effort. The local UI agency can check the number of times the UI recipient responds on a job advertisement, the number of application letters written, subscription at public employment offices, etc. It is for the local UI agency much more difficult to measure how often an individual asks friends and relatives about job openings. When providing C&M the monitoring effort of the UI agency therefore focuses on search along the formal channel. Specifically, the agency imposes a minimum search effort (or threshold value) devoted to formal job search denoted by s_1^*.

[5]This can also be shown to hold if search intensities are exogenous.

Full compliance can be achieved by perfect monitoring of formal job search effort or by a sufficiently severe punishment of noncompliance. In practice, the most common punishment in case of noncompliance is a sanction, which is a temporary benefit reduction (see Abbring, Van den Berg and Van Ours, 1997). In the subsequent sections of this paper we show that monitoring is actually regarded to be quite intensive, and that sanctions are virtually absent among the individuals who receive C&M. We therefore simply assume that there is no noncompliance.

It is clear that if the optimal formal job search effort s_1 in the unrestricted case lies above this threshold value, then the individual will not change his behavior, so monitoring does not have any effect. We focus on the more interesting case in which the required effort is higher than the optimal effort in the absence of monitoring. Note that due to this deviation from the unrestricted optimum, the marginal returns to formal job search effort are lower than the marginal costs.

In this case, the optimal strategy can be summarized merely by ϕ and s_2. The optimal reservation wage ϕ now follows from

$$\phi = b + \frac{\lambda_1 s_1^*}{\rho} Q_1(\phi) - \frac{1}{2} c_1 s_1^{*2} + \frac{\lambda_2^2}{2\rho^2 c_2} Q_2^2(\phi) \tag{6}$$

instead of equation (4). It can be shown that the restriction on s_1 is binding if and only if the solution of (6) is smaller than the solution of (4). In that case,

$$s_1^* > \frac{\lambda_1}{\rho c_1} Q_1(\phi)$$

and the first derivative of ϕ with respect to s_1^* equals

$$\frac{d\phi}{ds_1^*} = \frac{\lambda_1 Q_1(\phi) - \rho c_1 s_1^*}{\rho + \lambda_1 s_1^* \overline{F}_1(\phi) + \frac{\lambda_2^2}{\rho c_2} Q_2(\phi) \overline{F}_2(\phi)}$$

The optimal reservation wage thus decreases if the agency increases the binding minimum required formal job search effort. The intuition for this result is that being unemployed becomes less attractive because unemployed workers are forced to make more search costs than they would want to. And therefore they are willing to accept jobs with lower wages.

The optimal s_2 given ϕ still satisfies equation (3). The transition rate from unemployment to work now equals

$$\theta = \lambda_1 s_1^* \overline{F}_1(\phi) + \frac{\lambda_2^2}{\rho c_2} Q_2(\phi) \overline{F}_2(\phi)$$

instead of equation (5). It follows immediately that θ is larger than in the regime without monitoring. From equation (3) it follows immediately that $ds_2/ds_1^* < 0$, so the amount of informal job search effort is larger than in the regime without monitoring. This is plausible. If a binding minimum effort s_1^* is imposed then the individual's present value decreases, so the marginal return of searching along the informal channel increases, and this prompts an increase in the marginal costs (and search effort) of using the latter channel. An increase in formal and informal job search effort and a decrease in the reservation wage affect the exit rate to work in the same way.

We summarize these results in the following proposition,

Proposition 2 *If total search costs are additive in the search costs per channel, then the imposition of a binding minimum required search effort along the formal channel has a positive effect on θ. In addition, the effect on ϕ is negative, and the effects on s_1, s_2, θ_1, and θ_2 are positive.*

This result suggests that monitoring of the formal job search behavior of unemployed workers has a positive effect on the rate at which they find work. The unemployed workers will not voluntarily participate in a monitoring scheme with a binding minimum search effort, whereas they will do so in a counseling scheme that increases λ_1. This is because monitoring scheme decreases the expected present value of being unemployed whereas the counseling scheme does not. A combination of the two schemes may be attractive to the unemployed workers, especially if the monitoring focuses on the increase in search effort that is voluntarily made because of the increase in λ_1.

Note that in this subsection we do not need to make assumptions on F_1 versus F_2. Also, we do not need to impose Condition A from Subsection 3.2. However, it turns out that the specification of total search costs as a function of s_1 and s_2 is important for the above result. With a specification that is additive in the channel-specific costs, a change in the effort along one channel does not have a direct effect on the marginal costs of the use of the other channel. The only reason for why s_2 changes in response to a change in the required value of s_1 is that the latter affects the reservation wage.

To see the importance of this, consider an alternative specification with

$$c(s_1, s_2) = \frac{1}{2}c(s_1 + s_2)^2$$

with $0 < c < \infty$. This specification entails that the marginal costs of making a search effort s_i along channel i depend directly on the actual amount of effort

along the other channel. In practice, this may be plausible. For example, the efforts along the two channels may be regarded as very similar activities.

To make the basic point, it suffices to consider the special case with $\lambda_1 = \lambda_2 (=: \lambda)$ and $F_1 = F_2 (=: F)$, which is convenient from an expositional point of view. In this case,

$$\rho R = \max_{s_1, s_2 \geq 0} \; b - \frac{1}{2} c(s_1 + s_2)^2 + \lambda(s_1 + s_2) \mathrm{E} \max\{\frac{w}{\rho} - R, 0\} \tag{7}$$

replaces equation (1), with again $\phi = \rho R$. It follows that the optimum search intensities satisfy

$$s_1 + s_2 = \frac{\lambda}{\rho c} Q(\phi) \tag{8}$$

but the optimum values of the separate search intensities s_i are undetermined. Any combination of $s_1 \geq 0$ and $s_2 \geq 0$ such that $s_1 + s_2$ satisfies (8) is optimal.

Suppose that the individual levels of s_1 and s_2 are determined outside the model, and suppose that the agency again imposes a binding minimum search effort devoted to formal job search denoted by s_1^*, so s_1^* exceeds the level of s_1 in the unrestricted case. Then search effort along the formal channel increases to s_1^*, but this is compensated for by a decrease in the effort s_2 along the informal channel, such that $s_1 + s_2$ remains constant. As a result, *nothing* happens to ϕ and θ. Increased monitoring is ineffective due to effort substitution in another dimension.

Proposition 3 *Consider the model where total search costs are convex in the sum of the channel-specific search intensities. The imposition of a binding minimum required search effort along the formal channel has no effect on θ. In addition, the effect on ϕ is zero, the effects on s_1 and θ_1 are positive, and the effects on s_2 and θ_2 are negative.*

In fact, there is a strong analogy to the principal-agent literature with multi-tasking (see for an overview Milgrom and Roberts, 1992 and Pendergast, 1999). A setting where workers perform multiple tasks is studied by Holmstrom and Milgrom (1991). In case the employer are only capable of monitoring a single task, they show that contracts based on performance in this single task are inefficient.

4 A reduced-form model for the individual exit rate to work

It is useful to start this subsection with a brief outline of the type of data we have. Our database consists of individuals who started collecting UI benefits between August 24 and December 2, 1998 in two cities in The Netherlands. For each individual we know the precise duration of the spell of UI, unless there was right-censoring at the end of the observation period, which is February 8, 1999. We also observe the exit destination, which is employment in 87.5% of the cases. The most observed other exit destination is becoming ill (8.9%), other possibilities are: leaving the city, prison or not accepting suitable work. There is no systematic difference in how often these other exits occur in the treatment (receiving C&M) and the control (not receiving C&M) group. Exit to such destinations is treated as independent right-censoring of the duration until exit to work. We do not have information about what happens afterwards. Because we do not have any information on wages, reservation wages and job offers, we can not estimate the job search model presented in the previous subsection.

The empirical model we use is similar to the common used hazard rate models (see for example Lancaster, 1990). Consider individuals receiving UI benefits for t units of time. We assume that differences in transition rates from unemployment to work can be characterized by the observed individual characteristics x, an indicator function for being in the treatment group z, the unobserved characteristics v and the elapsed UI duration itself. We assume x and z to be constant and v to be independent of x. Because we study a social experiment v is by definition independent of z.

The transition rate from UI to work at t conditional on x, z and v is denoted by $\theta(t|x,z,v)$ and is assumed to have the familiar Mixed Proportional Hazard (MPH) specification

$$\theta(t|x,z,v) = \lambda(t)\exp(x'\beta + z\delta + v) \tag{9}$$

in which $\lambda(t)$ represents the individual duration dependence and δ denotes the effect of C&M. Let t be the realized duration when leaving to employment. The conditional density function of $t|x,z,v$ can be written as

$$f(t|x,z,v) = \theta(t|x,z,v)\exp\left(-\int_0^t \theta(s|x,z,v)ds\right)$$

Let $G(v)$ be the distribution function of the unobserved characteristic v. The density function of t conditional on x and z equals

$$f(t|x,z) = \int_v f(t|x,z,v)dG(v)$$

It is straightforward to derive the individual contributions to the likelihood function from this density function. The use of a flow sample of UI spells means that all spells are observed from the start, so that we do not have any initial condition problems. The right-censoring in the data is exogenous and is therefore solved in a straightforward manner within the hazard rate framework.

For the duration dependence function and the distribution function of the unobserved heterogeneity we take the most flexible specification used to date. We take $\lambda(t)$ to have a piecewise constant specification,

$$\lambda(t) = \exp\left(\sum_{j=1,2,\ldots} \lambda_j I_j\,(t)\right)$$

where j is a subscript for time intervals and $I_j(t)$ are time-varying dummy variables that are one in consecutive time intervals. Note that with an increasing number of time intervals any duration dependence pattern can be approximated arbitrarily closely. By now it is well known that duration dependence specifications with only one parameter (like a Weibull specification) are overly restrictive (see e.g. Lancaster, 1990).

We take the distribution function of the unobserved heterogeneity to be discrete with unrestricted mass point locations. We take v to have a limited number of points of support $(v_1, \ldots, v_n)$ with associated probabilities $p_1, \ldots, p_n$, where $0 \leq p_i \leq 1$, for all $i = 1, \ldots, n$ and $p_n = 1 - p_1 - \ldots - p_{n-1}$. Note that discrete mixture distributions are attractive from a computational point of view.

5 The data

5.1 The experiment

The scale of the social experiment is modest. The experiment concerns all type I unemployed workers, who started collecting UI benefits between August 24 and December 2, 1998 at two local offices of one particular UI agency. The experiment ended on February 8, 1999. Only individuals who already know at the beginning of their UI entitlement period that they will start a new job within 3 weeks are excluded from the experiment, as they are not entitled to C&M. The local offices are in two of the largest cities of The Netherlands. In the remainder we simply refer to these cities as City 1 and City 2. The inflow into UI at these local offices is relatively large and both local offices have a reputation of providing high quality C&M. This latter point implies that the effect of C&M is particularly high

for UI recipients registered at these local UI agencies compared to UI recipients registered elsewhere.

In the initial setup of the experiment individuals would be randomly assigned to 5 groups. The first group would be the control group and the individuals in the other groups would all receive C&M. After the experiment ended one of the 4 'treatment' groups would be chosen randomly to construct the final database together with the control group. The final database, which would be evaluated would thus approximately count the same number of individuals who received C&M as individuals who did not receive it. The main purpose of this setup was to avoid that the local UI agencies would give special attention to the individuals in the treatment group, which would bias the results of the experiment. As mentioned in Subsection 2.2 the local UI agencies get paid for providing C&M and are therefore eager to get a positive evaluation of C&M. However, because the inflow of type I unemployed workers into UI was too small, the initial setup was not followed. In practice, 50% of the inflow was assigned to the treatment group and the control group. All individuals were included in the final database.

During the UI intake meeting, the employee of the local UI agency establishes if the UI recipients is eligible for receiving C&M. An independent agency then decides based on a series of random numbers realized in SPSS before the start of the experiment whether this unemployed worker is selected in the treatment group or the control group. At this stage the independent agency only knows the unique ID-number of the individual. Individuals selected in the treatment group have to show up at an intake meeting of C&M within 3 days. The unemployed workers in the control group only communicate with the local UI agency by way of sending in written forms stating the current status of their job search activities.

At the local UI agency in City 2, the experiment was not performed completely as prescribed. At the first intake meeting not all the eligibility criteria for receiving C&M were checked. In particular, some type II unemployed workers entered the experiment. The type II unemployed workers who were selected into the treatment group were identified as being a type II unemployed worker at the intake meeting of C&M and were excluded from the experiment. If such an individual was selected into the control group, it was not noted that the UI recipient should not have participated in the experiment. Because in City 2 a share of individuals in the treatment group was excluded during the experiment, also the individuals in the control group were checked again on the eligibility criteria. This excluded also a share of the control group from the experiment. However, it cannot be completely ruled out that there are type II unemployed workers left in the control group. Because on average type II unemployed workers

have worse labor market skills and therefore have longer expected spells of unemployment (see Subsection 2.1), the estimated effect of C&M might be slightly upwards biased.

5.2 Descriptive statistics

The database contains administrative information on 394 individuals who participated in the experiment. All information on events is daily, i.e. we observe the exact day of inflow into and outflow out of UI.[6] The latter is only observed if it occurred before the moment at which the experiment ended and the database was constructed. All spells which were not finished by this date are right-censored. Also spells having other destination states than employment are considered as right-censored.Because we have administrative data, the empirical analyses do not suffer from selective nonresponse or attrition from the database. However, we do not observe multiple unemployment spells per individual.

The inflow into UI is larger in City 2 than in City 1. The database includes 249 individuals living in City 2 and 155 individuals living in City 1. To get an indication of the local labor market conditions, we briefly discuss some socioeconomic characteristics of both cities. These are collected in 1997. In both cities slightly more than 60% of the population participates in the labor force and of the labor force around 10% is registered as being unemployed. The main difference between these cities is the percentage of immigrants (or their children). In City 1 20% of the population consists of immigrants, while this is more than 40% in city 2.

More individuals were selected into the treatment group than in the control group, 205 individuals received C&M and 189 were excluded from C&M. Figure 1 presents the survivor function (Kaplan-Meier estimate) of the individuals in the treatment group and in the control group. There is hardly any difference between the two lines during the first 14 weeks of the spell of unemployment. After that the survivor function decreases faster for the individuals in the treatment group, indicating that in this period UI recipients who receive C&M have higher reemployment probabilities. However, in the later periods the graph is only based on a few observations. This makes it difficult to draw conclusions from this figure. To investigate if the unemployment durations of the individuals receiving C&M

[6]As mentioned in Subsection 2.1 UI recipients are not always full-time unemployed, i.e. they may have lost only part of their working hours and still work for the remaining hours. Therefore, the relevant events are the start of the period of collecting UI benefits and the end of this period. However, we simply refer to this period of collecting UI benefits as unemployment and to UI recipients as unemployed workers.

differ from the unemployment durations of the individuals in the control group, we performed a nonparametric test. The log-rank test statistic equals 0.62. Since this test statistic has a standard normal distribution, it implies that we can not reject the null hypothesis that the exit rates to work are similar for UI recipients in the treatment group and in the control group.

In the empirical analyses we use the values of the explanatory variables x at the moment of inflow. Because of the administrative character of the database, the number of variables in the database is limited. For example we do not have any information on profession and the level of education. Except for the city of residence and receiving C&M or not, we observe the standard personal characteristics, gender, age and household situation (being single or living together with a partner). In addition, we observe if the individual has ever received UI benefits before. Furthermore, we know the benefits level per day and the number of days per week the unemployed worker is eligible for collecting UI benefits. This latter variable is the original weekly working hours reduction divided by 8 (the number of working hours per day). Finally, we observe if the local UI agency imposed a sanction on the UI recipient. We do not have any information on the reason why the sanction was imposed or the size and the duration of the sanction. In the database 3.4% of the individuals who received C&M got a sanction imposed and 2.6% of the individuals who did not receive C&M.

Table 1 provides some statistics of the data set. Of the UI recipients who received C&M 52% exit to work before February 8, 1999, while 47% of the control group found a job. Since some of the individuals were "exposed to the risk" of finding work since the end of August 1998, while others entered only in the beginning of December 1998, it is difficult to draw conclusions from this number. Nevertheless, we can get a first impression by comparing such probabilities for different groups. In most cases, for each group of individuals with a particular characteristic, the UI recipients in the treatment group are more likely to find work. Furthermore, males, unemployed workers who collected UI benefits before and single living individuals have higher exit probabilities than their counterparts, although the differences are small. Individuals who exit to work are on average younger, receive higher benefits per day and receive these benefits for more days per week. But again the difference are small. There does not seem to be much difference in exit probabilities between individuals living in City 1 and in City 2.

The decision to include an individual into the treatment of control group is based on random numbers. To check the randomization we estimate a probit model for being being assigned to the treatment or to the control group. As exogenous variables we use the explanatory (individual) characteristics mentioned

above. Table 2 provides the parameter estimates. Only the individual's household situation has a significant effect on the probability of being in the treatment group. This is caused by an unequal share of the unemployed individuals in the control group who are living in City 2 and are not single. In the previous subsection we mentioned that there might be some problems with the randomization at the local UI agency in City 2. However, there is no relation between the individual's household situation and being a type I or a type II unemployed worker (see Appendix A).

5.3 Background information from a written questionnaire

In this subsection we discuss the results from a written questionnaire which was sent to all participants after the experiment was completed. Because the questionnaire was sent out before the final check on the database was carried out, more individuals received the questionnaire than there are individuals in the final database (see Subsection 5.1). In total 500 UI recipients received the questionnaire. The response rate was 33%, 79 individuals in the treatment group answered and 88 individuals in the control group. We have tried to match the individuals who answered the questionnaire to the individuals in the (administrative) database. To do so we used information on the month of birth, the city of residence, gender, having received C&M, having collected UI benefits before, the current labor market status and the day of starting collecting UI benefits. Due to a large fraction of item nonresponse on these subjects, we only succeeded for 49 unemployed workers in the treatment group and 55 individuals in the control group.

The survey included questions on how the unemployed workers experienced C&M, the number of job applications, the search channels used and the activities of the local UI agencies. The questionnaire was primarily intended to gather additional information on the behavior of UI recipients during the period of collecting UI benefits and on C&M. So it does not include any questions about what occurred after leaving the UI benefits system, for example about the accepted job. In the remainder of this subsection we summarize the answers and relate these to the theoretical model presented in Section 3. In Subsection 6.3 we discuss the most important results of more formal analyses on the answers. For each case, we consider both the 'full' sample of all respondents in the questionnaire and the 'matched' sample of those respondents that could be linked to individuals in the administrative database.

We start by focusing on how the individuals in the treatment group experi-

ence C&M. The individuals were given a list of potential elements of the C&M meetings. They were asked to report which elements were discussed during their meetings at the local UI agency. Table 3 gives this list and shows how the elements were reported by the UI recipients. The most frequently reported elements are "making agreements on the number of future job application" and "providing information about the UI benefits system". Other elements that are relatively often mentioned are "discussing the labor force history of the UI recipient and his education", "discussing the labor market prospects" and "checking the actual job applications". These are elements that can be considered more as controlling than as stimulating. Since "suggestions concerning job search activities" is only mentioned by less than half of the respondents, monitoring seems to be more important than counseling.

Now let us consider the answers to the questions on how the UI recipients experience the activities of the local UI agency. Both the individuals in the treatment group and the control group was asked whether or not they agreed that the activities of the local UI agency are (*i*) controlling, (*ii*) motivating, (*iii*) contributing to earlier re-employment and (*iv*) administrative. On each of these four topics, they had to say if they (*i*) disagree very much, (*ii*) disagree, (*iii*) neither disagree nor agree, (*iv*) agree, or (*v*) agree very much. There is not very much difference in the answers given by the UI recipients in the treatment and control group. Around 70% in both groups agree (or agree very much) that the activities of the local UI agency are controlling, while around 45% find that these activities motivate job search. However, in both groups only 20% of the respondents actually think that the activities of the local UI agency contribute to an earlier re-employment. Finally, 75% of the individuals agree that the local UI agency's activities are administrative. To summarize, the UI recipients find that the activities of the public employment offices are mostly controlling and administrative and less motivating and stimulating.

Now we turn to the actual job search behavior. The questionnaire included a question on the number of application letter written. Since only the total number was asked, we can not distinguish between application letters written in response to personnel advertisements, open application letters, etc. The application letters thus concerns both formal and informal job applications. On average, individuals in both groups made about 21 job applications (until finding a job or the moment they answered the questionnaire). This implies that there is not very much difference in the total amount of job search effort of the UI recipients in the treatment and control group. However, the individuals differ by way of the job search channels they use. Another question in the survey involved the job search

channels used by the UI recipients. The individuals were asked to report from a list of possible job search channels which channels they had actually used during their spell of collecting UI benefits. In Table 4 we show this list and how often the different job search channels were used by the UI recipients in the control and the treatment group. The individuals in the treatment group make more use of all formal job search channels such as public employment offices, (commercial) employment agencies, the local UI agency and job advertisements in newspapers.[7] Informal job search channels like open application letters and search through friends and relatives, are more often used by the unemployed workers who did not receive C&M. Providing C&M to UI recipients seems to stimulate the use of formal job search at the cost of informal job search. In the treatment group around 95% of the individuals used at least one formal job search channel, while this is only 85% in the control group. On the other hand, almost 80% of the UI recipients in the control group used at least one informal job search channel against around 55% in the treatment group.

If we write these results in terms of our theoretical job search models, the main findings are summarized by (i) C&M increases formal job search at the expense of informal job search, s_1 increases, while s_2 decreases, (ii) the activities of the local UI agency focus more on controlling formal job search effort s_1 than on stimulating it for example by increasing λ_1 or decreasing c_1, and (iii) the activities of the local UI agency do not increase the transition rate from unemployment to employment, θ is unaffected.

6 Estimation results

6.1 Parameter estimates for the duration model

In this section we discuss the results of our empirical analysis. Subsection 6.2 presents some sensitivity analyses with respect to the parameter estimates and in Subsection 6.3 we present the estimation results of the analyses of the written questionnaire.

The parameters of the empirical model are estimated using the method of Maximum Likelihood. We take the unit of time to be one week. The piecewise constant duration dependence is specified in terms of 4 weeks and we normalize by taking $\lambda_1 = 0$. We allow the unobserved heterogeneity distribution to have two

[7]Because the individuals in the control group do not receive C&M, they do not have access to some of the information of the local UI agency. However, only 3 individuals in the treatment group report that they applied to a job using information from the local UI agency.

points of support. Hence, we estimate the parameters λ_t $(t = 2, \ldots, 5)$, δ, v_1, v_2, p_1 and β, where β is a vector of 8 parameters (not including an intercept). Table 5 presents the parameter estimates. We do not find any dispersed unobserved heterogeneity. During the optimization of the loglikelihood function both points of support converged to a single point. The computed standard errors of all other parameters are conditional on this.

The main parameter of interest is δ, which represents the effect of C&M on the exit rate to work. The estimated value of δ is positive, 0.063, but it is not significantly different from 0. Providing C&M to UI recipient raises the individual transition rate to employment only with approximately 6% $(= \exp(0.063) - 1)$, suggesting that in its current setup C&M is not a very useful labor market policy for stimulating re-employment. For the individuals in our database providing C&M reduces the average expected duration of collecting UI benefits with around 25 days with an estimated standard error of 61 days[8], while the average median of this duration reduces with approximately 15 days (standard error is 36 days).[9]

In the theoretical model of Section 3, we considered two possible consequences of C&M. We shortly discuss how the empirical results fit into this framework. Counseling causes an increase in the exit rate to work. Since we only find a small and insignificant effect on re-employment, the counseling may not be the dominant factor in C&M. This is confirmed by the answers to the written questionnaire discussed in Subsection 5.3. The activities of the local UI agency were experienced more as controlling than as stimulating. In case of an additive search costs function, the predicted effect of monitoring on re-employment is also positive (if the required formal job search effort exceeds the optimal effort). In Subsection 3.3, we already argued that such a costs function may not be realistic. The al-

[8]The standard errors are computed using the delta method.

[9]Due to the piecewise constant specification of the duration dependence, the density function of the length of a spell of collecting UI benefits is only specified for the length of the observation period. To compute the expected duration of collecting UI benefits we have to rely on extrapolation of the duration dependence function. This is also necessary for the median duration, as for some UI recipients the estimated probability of leaving unemployment within the observation period is low. We have assumed that the duration dependence function remains constant after the observation period expired and equal to the last estimated duration interval. Note that there is a relative large decrease in duration dependence before the last interval. Therefore, extrapolation causes that the exit rates remain low after 20 weeks, which affects the difference in the expected duration and in the median duration upwards. Also note that the standard error of the estimated value of last duration interval is relatively large. Finally, note that we implicitly assumed that the effect of C&M is constant during the spell of collecting UI benefits. This implies that the effect also does not change when the treatment period expires after 6 months.

ternative specification of the costs function we considered, generated a perfect substitution between formal and informal job search effort. The re-employment probabilities than remain unchanged. This suggests that monitoring is the most important component of C&M.

The observation period is relatively short. Without any additional assumption, we can only estimate the duration dependence during the first 20 weeks. In this period the pattern of duration dependence is hump-shaped. After the first duration interval of 4 weeks, we observe a significant increase and from the second interval onwards we find that the hazard rate is slightly decreasing. The duration dependence significantly differs from being flat, λ_i equals 0 for all $i = 1, \ldots, 5$. The Likelihood Ratio test statistic on joint significance is equal to 11.42. Since the null hypothesis restricts 4 parameters $(\lambda_2, \ldots, \lambda_5)$, we reject it at the 5% significance level. Obviously, there are some factors like for example stigmatization and discouragement which affect the re-employment probabilities already in an early stage of unemployment.

Now let us turn to the covariate effects on the transition rate to employment. Only the level of the daily UI benefits has a significant effect on individual exit rates. UI recipients who receive daily benefits of around 162 guilders have the highest re-employment probabilities. This is approximately the median of the daily benefits level of the UI recipients in our dataset and it is just below the average benefits level. According to the job search theory as given in Section 3, a higher benefits level increases the reservation wage, as it reduces the punishment of being unemployed. And as a result of the increase in the reservation wage, the re-employment probabilities decrease. However, the benefits level at the early stage of UI depends mainly on the wage in the job previous to unemployment (see Subsection 2.1). Because wage is a reflection of the productivity of the worker, the benefits level most likely depends on the worker's productivity. Because high productivity workers are more attractive to employers, these workers have higher exit rates to work. Our database does not include any other variable which can be used as a measure of productivity. Therefore, the benefits level also picks up some of the effects of differences in productivity between workers, which explains why we do not find that the exit rate to work is strictly decreasing in the benefits level.

None of the other covariates has any significant effect. And according to the Likelihood Ratio test they are also not jointly significant (the test statistic equals 9.22). Additional to the current covariates, we also tried to include squared versions of log age and the number of days receiving UI benefits per week. Both these additional variables hardly affected the optimal value of the loglikelihood

function. Although not having any significant impact on transition rates from unemployment to employment, we shortly discuss the covariate effects of the other explanatory variables. Gender and marital status seem to be the less important covariates in the transition rate to employment. The other covariates are quantitatively slightly more important. The re-employment probabilities for the unemployed workers living in City 2 are smaller than for unemployed workers in City 1, which reflects the differences in local labor market conditions between these cities. As mentioned in Subsection 5.2 the socioeconomic characteristics are slightly in favor of City 1. The exit rates to work are higher for younger individuals and UI recipients who collected for UI benefits before. This indicates that job search experience is more important than stigmatization due to having experienced earlier UI spells. The remaining covariate effects relate to the UI benefits. Individuals who only receive benefits for a few days per week have a lower transition rate to work. These individuals only lost a low number of working hours, because either they worked a limited number of hours or they stayed employed for the remaining hours. In the first case these individuals are again most likely searching for part-time jobs as they probably prefer these over full-time jobs. Either finding a full-time job is easier than finding a part-time job, or individuals preferring part-time jobs have some unobserved characteristics which decrease the re-employment probabilities. If the UI recipients are still employed for the remaining hours, job search is more complicated and thus again exit rates are lower.

The costs associated with providing C&M are relatively low, while the daily UI benefits level in The Netherlands is high. The costs of providing C&M consist only of initial costs paid at the beginning of the unemployment duration. The benefits consist of reduced UI benefits payment and the costs the local UI agency has to make every 4 weeks for checking if the unemployed worker is still eligible for collecting UI benefits. The local UI agency only has to perform this check if the individual does not receive C&M (see Subsection 2.2).[10] In general, for C&M to be cost effective the average duration of UI entitlement only needs to decrease with around two days. Performing a cost-benefit analysis of C&M requires the computation of the mean of the UI entitlement period. As mentioned earlier, to compute the mean it is necessary to specify the complete distribution function of the length of a spell of collecting UI benefits. Therefore, we assume that (i) the pattern of the duration dependence remains constant after the last time interval,

[10] We thus neglect some indirect costs and benefits, such as the overhead costs of the local UI agency, additional tax payments over post-unemployment earnings and spillover effects for example due to displacement of other workers.

(*ii*) the effect of C&M is constant during the spell of collecting UI benefits (also after the treatment ends after 6 months) and (*iii*) the level of the UI benefits level remains constant during unemployment (as noted in Subsection 2.1 the level of the benefits decreases once during the period of collecting UI benefits and the entitlement period is limited). Under these assumptions the average expected costs minus the benefits over all individuals equals -1990 guilders (with a standard error computed using the delta method of 5124 guilders). The assumptions made on the extrapolation beyond the observation period are arbitrary. If we replace for example the second assumption by there is no effect of C&M anymore after the treatment period expires, the average expected costs minus the benefits equals -124 guilders (standard error 633 guilders). Although in both cases the average expected benefits are higher than the average expected costs, the results seem to be extremely sensitive to the assumptions made on the extrapolation. The question arises to which extend the choices on extrapolation are responsible for this positive cost-benefit analysis.

We use an alternative approach, we compare the average expected costs and the expected benefits until some given length of the unemployment duration (i.e. some given moment of right-censoring). As long as we choose this duration until right-censoring within the length of the observation period, we do not have to make arbitrary assumptions on the extrapolation. We have computed for each UI recipients in our data set the difference between the expected costs and the expected benefits for each moment right-censoring between 0 and 20 weeks (the observation period).[11] Figure 2 shows for every duration until right-censoring in the observation period the average expected difference between the costs and the benefits over all UI recipients. The figure shows that if the duration until right-censoring increases 19 weeks and 4 days, the average expected benefits of providing C&M are higher than the expected costs. Because UI recipients are entitled to collecting UI benefits for at least 6 months and the local UI agencies

[11]Let T denote the moment of right-censoring. Let c_0 be the initial costs and b the unemployment benefits. Furthermore, at the unemployment durations $t_1, t_2, \ldots$ the local UI agency has to check whether the unemployed worker is still eligible for receiving UI benefits, which costs c_1. These costs only have to be made if the individual does not receive C&M. If $f_t(t)$ and $f_c(t)$ denote the density functions of the length of an unemployment spell t of individuals who receive C&M and who do not receive C&M respectively, than the difference between the expected costs and the expected benefits until right-censoring at T is given by

$$c_0 + \int_0^T bt(f_t(t) - f_c(t))dt + bT(F_c(T) - F_t(T)) - \sum_{i=1,2,\ldots} c_1(1 - F_c(t_i))I(t_i < T)$$

where $I(t_i < T)$ is the indicator function being 1 if $t_i < T$ and 0 otherwise.

provide C&M for a period of 6 months (see Section 2), C&M can be considered as cost effective. Most UI recipients are entitled for a longer period than 6 months to UI benefits and the effect of C&M does not completely disappear after the local UI agency stops providing it. Recall that C&M also includes for example improving application letters. From a cost-benefit point of view, providing C&M can be considered as successful. However, the confidence interval becomes very fast large. The average expected benefits are not significantly larger than the average expected costs.

6.2 Sensitivity analyses

In this subsection we examine the sensitivity of the parameter estimates with respect to the model specification. In particular we focus on the estimates of the effect of C&M. The estimated values of the other parameter do not change much from those reported in the previous subsection.

First of all we ignore the Mixed Proportional Hazard rate model and estimate a probit model on whether or not an exit to work is observed within some fixed period after starting collecting UI benefits. Choosing this approach creates some problems caused by right-censored spells. We simply exclude spells that are right-censored earlier than the length of the fixed period. For a fixed period of 12 weeks the parameter estimates are presented in Table 6. We excluded 24 observations due to early right-censoring. The parameter estimates turned out not to be very sensitive to decreases in the length of the fixed period. However, beyond 12 weeks the number of 'early' right-censored spells increases fast with the length of the fixed period. Again, the estimated effect of C&M is positive and insignificant. Also the estimated covariate effects do not differ much from those presented in the previous subsection.

Next, we estimate separate Mixed Proportional Hazard rate models for the UI recipients in the treatment and in the control group. Table 7 shows the parameter estimates. Note that we added 12 parameters compared to the model estimated in the previous subsection. Since the Likelihood Ratio test statistic equals 7.72, we can not reject the null hypothesis of jointly insignificance of the additional parameters. A closer look at the parameter estimates learns that the estimated models differ mainly in the duration dependence and the covariate effects of being female, age and marital status. In the following we take a closer look at these differences.

We return to the estimation results of the baseline model as the point of departure. We relax the assumption that the effect of C&M has a constant and

permanent effect from the beginning of UI entitlement period onwards. There are some reasons to believe why this effect may vary over the unemployment duration. For example, it may take some time before C&M becomes effective, the impact of the monthly follow-up meetings have differs from the impact of the intake meeting and providing C&M stops if the unemployed worker still received UI benefits after 6 month. To account for duration effects, we allow δ to depend on the unemployment duration. Because the follow-up meeting take place every 4 weeks, we let δ to have a piecewise constant specification with time intervals of 4 weeks. Table 8 gives the parameter estimates of $\delta_{0-4}, \ldots, \delta_{17+}$. The effect of C&M is negative during the first interval and increases until the third interval. After that the effect decreases again, but it remain positive. The parameter estimates are never significantly different from 0. And the Likelihood Ratio test shows that they are also not jointly significant. Although, the estimated values differ between duration intervals, these results do not provide any evidence that the effect of C&M varies over the unemployment duration.

To allow that the effect of C&M to differ between UI recipients, we specify $\delta = \delta(x) = x'\gamma$. We include in the vector x an intercept and the covariates whose impact differed the most in the above described separate models for unemployed workers in the treatment and control group. These covariates were being female, age and marital status. The parameter estimates of this specification are given in Table 9. It turn out that all covariate effects are insignificant and they are also jointly insignificant. We also tried including other combinations of covariates in x, but no combination turned out to be significant. Some more attention should be paid to the characteristics the city of residence and having collected UI benefits before.

The social experiment had been carried out at local offices of one particular UI agency in City 2 and City 1. Although the guidelines for providing C&M are the same for all offices, it might be the case that there are still small differences between the C&M provided in both cities. Also the local labor market conditions may affect the effect of C&M. Furthermore, recall from Subsection 5.1 that in City 2 the experiment was not performed completely as prescribed and that therefore the estimated effect of C&M in City 2 might be biased upwards. Table 10 presents the parameter estimates for the model in which we allow δ to be different for UI recipients living in City 2 and in City 1. The estimated value of δ for City 1 in much higher than for City 2, but the difference is still insignificant. This contradict the prediction that the in City 2 the estimated effect would be slightly biased upwards. We can not reject the null hypothesis that the effect of C&M differs between City 2 and City 1.

Finally, UI recipients who collected UI benefits before, might also have received C&M before. Thus some unemployed workers who are selected into the control group, may still profit from C&M provided to them during a previous period of collecting UI benefits. The estimated effect of C&M on these individuals might therefore be slightly downward biased. To account for this we allow the effect of C&M to depend on having collected UI benefits before. The parameter estimates of this specification are provided in Table 11. The results show that unemployed workers who experienced a period of collecting UI benefits before profit more from receiving C&M than new UI recipients. However, again we can not reject the null hypothesis that the effect of C&M actually differs between these types of UI recipients.

6.3 Formal analyses on the written questionnaire

In this subsection we present some formal analyses on the data from the written questionnaire discussed in Subsection 5.3. In particular, we do some analyses using both the full sample of respondents and the matched sample. Due to item nonresponse the number of UI recipients in the analyses is not always similar. In the estimation of the exit rate to work, we did not find any unobserved heterogeneity. Since, all heterogeneity between UI recipients is captured by differences in the set of observed characteristics, we do not worry about selectivity in the answers to the questionnaire.

We first focus on how UI recipients experience the activities of the local UI agency. The UI recipients were asked how much they agreed that the activities of the local UI agency were controlling. The same question was asked about the activities being motivating. We estimate a bivariate multinomial probit model for the degree at which the UI recipients agree on both question.[12] The parameter estimates are presented in Table 12 for the matched sample and in Table 13 for the full sample. For the matched sample the effect of C&M on the outcomes is very close to 0. For the full sample the effect of C&M on both outcomes is positive, but insignificant. This means that UI recipients who receive C&M experience the activities of the local UI agency as more controlling and also more motivating

[12]The bivariate multinomial probit model has the following structure. Let y_1^* and y_2^* be latent variables specified as

$$y_i^* = x'\beta_i + \varepsilon_i \qquad i = 1, 2$$

The observed variable $y_i = k$ if $a_{k-1} < y_i^* \leq a_k$, for $k = 1, 2, \ldots, 5$, where $a_0 = -\infty$ and $a_5 = \infty$. Here, $y_i = 1$ means the respondent very much disagrees, 2 means he disagrees, etc. Finally, we let ε_1 and ε_2 both be standard normal distributed with correlation ρ.

than UI recipients who do not receive C&M. Recall from Subsection 5.1 that the control group only communicates with the local UI agency by sending written form stating their current labor market activities.

Next we consider the individual job search behavior. First we focus on the total number of job applications and then on the job search channels used by the UI recipients. We estimate a Poisson count model for the number of job applications during the UI entitlement period.[13] Because for estimation of the model it is necessary to observe the duration of collecting UI benefits, we can only estimate the model with the matched sample. Table 14 shows the parameter estimates. All parameter estimates are highly significant. C&M has a positive effect on the number of job applications. However, if we exclude UI recipients who apply on average for more than 5 jobs per week from the database, the effect of C&M on the number of job applications becomes negative. Choosing this threshold only excludes 6 individuals (3 from the treatment and 3 from the control group). This shows that the parameter estimates are highly sensitive to outliers in the data.

Finally, we turn to the job search channels used by the UI recipients. We distinguish between formal and informal job search channels and estimate a bivariate multinomial probit model for the number of formal and informal job search channels used. The 3 formal job search channels we distinguish are: (1) public employment office / local UI agency, (2) commercial employment agencies and (3) personal advertisements. We distinguish 2 informal job search channels: (1) open application letters and (2) job search through friend and relatives. Particularly important in this model is the correlation coefficient ρ. Since all UI recipients report using at least one job search channel, UI recipients who do not use informal job search channels must use at least one formal job search method and vice versa. Therefore, ρ is expected to be negative. In Table 15 we present the estimation results obtained with the matched sample and in Table 16 those obtained with the full sample. In both cases C&M stimulates the use of formal job search methods at the costs of informal job search methods.

[13] Let S denote the number of job applications and t the duration of collecting UI benefits until exit to work or right-censoring. The Poisson count model is specified as

$$\Pr(S = s|t, x) = \exp(-t\exp(x'\beta + z\delta))\frac{(t\exp(x'\beta + z\delta))^s}{s!}$$

where x are the individual characteristics and z an indicator function for receiving C&M. The data are not sufficiently informative for adding duration dependence. Furthermore we could not find any dispersed and significant unobserved heterogeneity, also not when correlating it with the unobserved heterogeneity in the transition rate to work (see equation (9)).

The results above do not contradict the predictions of the theoretical analysis. The respondents to the questionnaire experience the activities of the local UI agency both as controlling and motivating. Furthermore, unemployed workers who receive C&M substitute informal job search effort into formal job search effort. According to the theoretical analysis, these results can be explained by both counseling and by monitoring. Because the effect of C&M on the number of job applications is very sensitive to outliers in the data, it is difficult to draw conclusions from the analysis. Based on only the analyses above, we can not assign the changes in behavior to counseling or to monitoring.

In their study of the Restart program, Dolton and O'Neill (1995) find that the (positive) effect of C&M is mainly caused by an increase in the job offer arrival rate. Their empirical results indicate that the reservation wage remains unaffected. However, they do not distinguish different job search channels and neither do they allow for endogenous job search effort. It is thus not possible to assign this result to either an increase in search efficiency λ or a mandatory increase in search effort s.

7 Conclusions

In The Netherlands, the local UI agencies provide C&M to unemployed workers with relatively good labor market prospects. The main purpose of providing C&M is to stimulate re-employment and reduce the total amount paid on UI benefits. To investigate the effects of C&M on the exit rate to work we have used administrative data collected using a social experiment. The empirical results show that providing C&M does not have a significant effect on the individual transition rate to employment. From our theoretical model and comparison to other studies it follows that there are two main reasons why the C&M provided in this paper is not a successful labor market policy. First, the population of unemployed workers who receive C&M consists of UI recipients with relative good labor market prospects and second, the program does not provide sufficient assistance.

The theoretical model shows that monitoring only stimulates the exit rate to work if it forces individuals to devote more than the optimal job search effort. Because the UI recipients have good labor market prospects, the optimal job search effort is already sufficiently high. Therefore, monitoring does not stimulate the re-employment probabilities (see Ashenfelter, Ashmore and Deschênes, 1999, who find the same empirical result).

The success of counseling is mainly dependent on the intensity of the assis-

tance provided to the unemployed worker. Most programs evaluated by Meyer (1995) include job search workshops of several hours or even days. These programs decrease the duration of UI dependence by around half a week. Particularly successful was the Nevada Claimant Placement Program which conducted weekly interviews and eligibility checks and coordination between the UI office and the state's employment service. This programs reduced the average duration of receiving UI benefits with more than 3 weeks.

Counseling is more effective if the individual has worse labor market prospects. Dolton and O'Neill (1996) find that counseling increases the re-employment of benefit recipients, who already experienced an uninterrupted period of unemployment of 6 months. Also Gorter and Kalb (1996) find a positive effect, actually their estimated effect on the exit rate to work is twice as large as the effect estimated in this paper. This is consistent with the prediction that the success of C&M depends on the intensity of the program and the participants labor market prospects. The policy studied by Gorter and Kalb (1996) was more intense than the C&M studied in this paper. And they considered the early-nineties when Dutch economy was in a recession. During that period the labor market prospects were worse for all unemployed workers.

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A Classification of the unemployed workers

Four types of unemployed workers are distinguished at the start of an unemployment spell.[14] The classification is used as a tool to tune the services of the unemployment agency to the needs of the unemployed worker, with the main purpose to decrease the expected duration of collecting unemployment benefits. The process of classification first occurs at the moment of applying for benefits. At the registration the type of the unemployed worker is determined. However, the type may change over the period of being unemployed.

The classification of an individual depends on his distance to the labor market, i.e. his expected duration of unemployment. The unemployed workers who are considered to have the highest re-employment probabilities are classified as type I unemployed workers, while the type IV unemployed workers have the longest expected unemployment durations. In general, type I unemployed workers are expected to have sufficient skills to find work. The type II and III unemployed workers are considered not to have the skills to find work without any assistance. Therefore, these unemployed workers are provided training and schooling. The type IV unemployed workers are the most disadvantaged and need more care. These individuals are often unable to work or not obliged to search for work (lonely parents with dependent children, drug addicts, etc.). The classification depends not only on objective measures, also the (subjective) opinion of the employee of the unemployment agency is important. The scheme which is used to determine the type of the worker consists of three steps.

In the first step is determined whether or not the individual is actually unemployed and a member of the labor force. A worker is a member of the labor force if he is (*i*) legally allowed to stay in The Netherlands, (*ii*) between 16 and 65 years old, and (*iii*) not disabled. Furthermore, in this step some unemployed workers who do not have a formal obligation to search for work actively, are classified as type IV. This are individuals who meet one of the following criteria: (*i*) being older than 57.5 years, (*ii*) having a dependent child under 5 years old, (*iii*) being unemployed due to weather conditions, and (*iv*) working less due to a reduction of the hours within the full-time working week.

The second step determines a score for the unemployed worker. This score is based on three items and is expected to be a measure of the individual labor

[14]The classification of unemployed workers is not particular to individuals receiving UI benefits. Also all other unemployed workers, for example those collecting welfare benefits, are classified into the same four types. In some cases even employed workers are classified, for example if their contract expires in the near future, if they work part-time and look for a full-time job or even if they are just looking for another job.

market prospects. For each of the three items, which we discuss below, the unemployed workers get a score of 1, 4, 6 or 8 points. The first item on which the unemployed workers are evaluated is their profession. Based on some measure of the tightness of the labor market for individuals with the same profession, the score on the first item is determined. In this measure also the age of the unemployed worker and the geographical region in which he lives are taken into account. More points are given for better labor market prospects. In case an unemployed worker has more than one profession, the profession with the highest score is used.

The second item concerns eduction and work experience. We distinguish three groups of unemployed workers, low-skilled job losers, high-skilled job losers and school leavers.[15] School leavers are individuals who entered unemployment immediately after full-time education. The number of points they get depends on their highest completed education. School leavers who dropped out of high school before completing the education get 6 point if they are capable of performing low-qualified work, otherwise they only get 1 point. School leavers who did not drop out early get 8 points if they completed an additional education after high school, 6 point for completing a high school education of 5 or 6 years and 4 point for finishing a 4-year high school education. The low-skilled job losers get 4 points if they did not work in the past 3 years, 6 point if they have some work experience in the past 3 years, but not in the last years and they get 8 points if there work experience is recent. The points for the high-skilled workers with a relevant education or more than 3 years of work experienced are distributed in the same way. Finally, high-skilled workers with less than 3 years of work experience and without a relevant education get 6 points if their work experience is recent, 4 points if they have worked in the past 3 years, but not in the past years and in any other case they get only 1 point.

The third item concerns some other characteristics of the unemployed worker. The employee of the unemployment agency has to judge the individual on job search behavior, flexibility, language skills, presentation skills and responsibility. He has to decide on how the unemployed workers scores on the combination of these skills and gives 8, 6, 4 or 1 points accordingly.

In the third step it is checked if there are any serious interferences to work for the unemployed worker. These interferences can be psychological, physical or

[15]Here, high and low-skilled does not depend on the level of education, but on the type of work these unemployed workers have performed. In general, an unemployed worker who performed high-skilled work is also expected to search for high-skilled work regardless of his education.

social. A common occurring reason of interferences is drug or alcohol addiction, but also taking care of sick family members can be a possible reason. The unemployed workers who have such interferences are classified as type IV. If there are no interferences, the classification is based on the number of points scored in step two. The individuals who score 18 points or more are the type I unemployed workers. Unemployed workers who score less than 18 point have to show up for a next meeting. During this meeting it is decided if the unemployed worker is type II or type III.

B Proof of Proposition 1

To derive $d\theta/d\lambda_1$ we only need to consider the equations (4) and (5). Since we are only interested in the sign of $d\theta/d\lambda_1$, we may normalize $c_1 = c_2 = 1$ without loss of generality. Define a new parameter λ as follows,

$$\lambda := \sqrt{\lambda_1^2 + \lambda_2^2}$$

After substituting $F := F_1 = F_2, c_1 = c_2 = 1$, and the above λ into the equations (4) and (5), we obtain

$$\phi = b + \frac{\lambda^2}{2\rho^2} Q^2(\phi) \tag{10}$$

$$\theta = \frac{\lambda^2}{\rho} Q(\phi)\overline{F}(\phi) \tag{11}$$

These are equations for the reservation wage and the exit rate out of unemployment in a model with a single search channel. The derivative of θ with respect to λ_1 has the same sign as the derivative of θ with respect to the parameter λ defined above. So, the assumption that $F_1 = F_2$ allows us to reduce the complexity of the model by reformulating it as a model with a single channel.

By totally differentiating equation (10) with respect to λ we obtain,

$$\frac{d\phi}{d\lambda} = \frac{\lambda Q^2(\phi)}{\rho^2 + \lambda^2 Q(\phi)\overline{F}(\phi)} > 0.$$

By differentiating equation (11) with respect to λ, and by substituting $d\phi/d\lambda$, we obtain,

$$\frac{d\log\theta}{d\lambda} = \frac{1}{\lambda\overline{F}(\phi)} \cdot \frac{1}{\rho^2 + \lambda^2 Q(\phi)\overline{F}(\phi)} \cdot \left[2\rho^2\overline{F}(\phi) + \lambda^2(\overline{F}(\phi))^2 Q(\phi) - \lambda^2 f(\phi)Q^2(\phi)\right]$$

where f is the density of F. Note that $0 < \overline{F}(\phi) < 1$. Clearly, $d\theta/d\lambda > 0$ if and only if the term in square brackets is positive. Now, use equation (10) to substitute ρ from the term in square brackets. As a result, $d\theta/d\lambda > 0$ if and only if

$$\frac{Q(\phi)\overline{F}(\phi)}{\phi - b} > f(\phi)Q(\phi) - (\overline{F}(\phi))^2$$

As $\phi > b$, sufficient for this is that

$$\frac{Q(\phi)\overline{F}(\phi)}{\phi} > f(\phi)Q(\phi) - (\overline{F}(\phi))^2 \tag{12}$$

Now define

$$\mu(x) = \mathrm{E}(w|w > x)$$

which is the conditional mean function associated with F. There holds that

$$\mu(x) = \frac{Q(x)}{\overline{F}(x)} + x$$

By substituting this for Q in (12) we obtain

$$\frac{\mu(\phi) - \phi}{\phi} > \frac{f(\phi)}{\overline{F}(\phi)}(\mu(\phi) - \phi) - 1$$

Note that the right-hand side equals $\mu'(\phi) - 1$. Consequently, the inequality can be written as

$$\frac{d\log\mu(x)}{d\log x} < 1 \quad \text{at } x = \phi.$$

As is shown in Van den Berg (1994), Condition A implies that this inequality is satisfied for all x in the support of F. This completes the proof of $d\theta/d\lambda > 0$.

To show that $ds_1/d\lambda_1 > 0$ we need to use the original model equations in the main text. This result then follows from straightforward differentiation and elaboration. The signs of the other derivatives mentioned in Proposition 1 follow trivially.

C&M	yes		Total	no		Total
Exit to work observed	**yes**	**no**		**yes**	**no**	
Individual characteristics						
Male	56%	44%	126	53%	47%	112
Female	46%	54%	79	47%	53%	77
Age	35	37		35	38	
	(7.8)	(8.0)		(8.7)	(9.1)	
Collected UI before	59%	41%	46	49%	51%	51
New client	50%	50%	159	46%	54%	138
Single	59%	41%	100	45%	55%	71
Not single	46%	54%	105	48%	52%	118
Number of days per week collecting UI	4.5	4.2		4.5	4.1	
	(0.78)	(0.94)		(0.72)	(1.1)	
UI benefit per day	170	169		176	161	
	(59)	(68)		(57)	(74)	
City 1	54%	46%	78	49%	51%	77
City 2	51%	49%	127	51%	49%	112
Mean UI duration	7.9	–		7.1	–	
	(4.4)			(4.8)		
Total	52%	48%	205	47%	53%	189

Explanatory note: The table shows how individuals with a certain characteristic are distributed over the four groups defined by whether a transition from unemployment insurance to work is observed and whether counseling and monitoring is provided to the unemployed worker. The columns with 'Total' give the total number of individuals in the sample with a certain characteristic who receive counseling and monitoring or not. For the individual characteristics at which 'Total' is missing, the mean of the subsamples are given with the standard errors in parentheses.

Table 1: Some characteristics of the dataset.

Intercept		
α	0.19	(1.22)
Individual characteristics		
Female	0.019	(0.15)
log Age	−0.094	(0.30)
Collected UI before	−0.19	(0.15)
Not single	−0.29	(0.14)
Number of days per week UI	−0.028	(0.10)
log Benefits per day	0.096	(0.23)
City 2	0.055	(0.14)
Loglikelihood	-269.23	
Number of observations	394	

Explanatory note: Standard errors in parentheses.

Table 2: Estimation results of the probit model for being assigned to the treatment group or to the control group.

	Full sample	Matched sample
Making agreements on the number of future job applications	64	39
Providing information about the UI benefits system	61	39
Discussing the labor market history and education	52	33
Checking actual job applications	50	30
Discussing labor market prospects	46	27
Suggestions concerning job search activities	33	21
Written confirmation of agreements	24	12
Offering training and schooling	10	4
Other topics	1	0
Number of respondents	78	49

Table 3: Number of respondents in the treatment group who experience a certain element as being part of the C&M meetings.

	Full sample		Matched sample	
	Treatment group	Control group	Treatment group	Control group
Formal job search channels				
Public employment office	17	9	10	4
Commercial employment agencies	22	18	12	11
Local UI agency	3	0	3	0
Job advertisements	28	35	19	22
Total	42	40	25	24
Informal search channels				
Open application letters	21	28	15	17
Friends and relatives	10	19	8	12
Total	23	38	16	21
Number of respondents	44	48	26	27

Explanatory note: Total is the total number of respondents who used at least one of the job search channels (formal or informal) mentioned above it.

Table 4: Job search channels used by the UI recipients in the treatment and control group

	Exit hazard θ	
Effect of C&M		
δ	0.063	(0.15)
Intercept		
v	−26.4	(12.4)
Duration dependence		
λ_1	0	
λ_2	0.50	(0.19)
λ_3	0.20	(0.22)
λ_4	0.076	(0.25)
λ_5	−0.39	(0.40)
Individual characteristics		
Female	−0.0072	(0.17)
log Age	−0.56	(0.36)
Collected UI before	0.25	(0.17)
Not single	−0.011	(0.16)
Number of days per week UI	0.19	(0.14)
log Benefits per day	9.56	(4.85)
log Benefits per day (squared)	−0.94	(0.48)
City 2	−0.20	(0.16)
Loglikelihood	-792.17	
Number of observations	394	

Explanatory note: Standard errors in parentheses.

Table 5: Estimation results of the basic model.

Effect of C&M		
δ	0.091	(0.14)
Intercept		
v	−18.2	(10.1)
Individual characteristics		
Female	−0.019	(0.15)
log Age	−0.51	(0.33)
Collected UI before	0.26	(0.16)
Not single	0.015	(0.15)
Number of days per week UI	0.036	(0.12)
log Benefits per day	7.75	(3.95)
log Benefits per day (squared)	−0.76	(0.39)
City 2	−0.23	(0.15)
Loglikelihood	-242.40	
Number of observations	370	

Explanatory note: Standard errors in parentheses. Excluded are those UI recipients who have an unemployment spell that is right-censored within 12 weeks.

Table 6: Probit model for the exit to work observed within 12 weeks after starting receiving UI benefits.

	With C&M Exit hazard θ		Without C&M Exit hazard θ	
Intercept				
v	-22.7	(15.5)	-34.8	(21.2)
Duration dependence				
λ_1	0		0	
λ_2	0.59	(0.26)	0.43	(0.27)
λ_3	0.42	(0.30)	-0.0093	(0.33)
λ_4	0.24	(0.34)	-0.041	(0.37)
λ_5	-0.27	(0.49)	-0.50	(0.68)
Individual characteristics				
Female	-0.22	(0.25)	0.14	(0.24)
log Age	-0.30	(0.51)	-0.72	(0.52)
Collected UI before	0.34	(0.23)	0.14	(0.25)
Not single	-0.25	(0.23)	0.22	(0.24)
Number of days per week UI	0.15	(0.18)	0.19	(0.24)
log Benefits per day	8.14	(6.05)	12.7	(8.34)
log Benefits per day (squared)	-0.82	(0.60)	-1.22	(0.81)
City 2	-0.33	(0.23)	-0.11	(0.24)
Loglikelihood	-428.96		-359.35	
Number of observations	205		189	

Explanatory note: Standard errors in parentheses.

Table 7: Estimation results for separate models for the group of UI recipients receiving C&M and control group of UI recipients.

	Exit hazard θ	
Effect of C&M		
δ_{0-4}	-0.12	(0.28)
δ_{5-8}	0.034	(0.24)
δ_{9-12}	0.29	(0.33)
δ_{13-16}	0.18	(0.41)
δ_{17+}	0.14	(0.81)
Intercept		
v	-26.3	(12.4)
Duration dependence		
λ_1	0	
λ_2	0.42	(0.27)
λ_3	-0.030	(0.32)
λ_4	-0.084	(0.36)
λ_5	-0.53	(0.70)
Individual characteristics		
Female	-0.013	(0.17)
log Age	-0.56	(0.36)
Collected UI before	0.25	(0.17)
Not single	-0.016	(0.16)
Number of days per week UI	0.20	(0.14)
log Benefits per day	9.54	(4.85)
log Benefits per day (squared)	-0.93	(0.48)
City 2	-0.21	(0.16)
Loglikelihood	-791.63	
Number of observations	394	

Explanatory note: Standard errors in parentheses.

Table 8: Estimation results of the model allowing for duration dependence in the effect of counseling and monitoring.

	Exit hazard θ	
Effect of C&M		
δ	-0.46	(2.24)
Female	-0.18	(0.33)
log age	0.24	(0.67)
Not single	-0.45	(0.32)
Intercept		
v	-27.3	(12.4)
Duration dependence		
λ_1	0	
λ_2	0.51	(0.19)
λ_3	0.21	(0.22)
λ_4	0.095	(0.25)
λ_5	-0.37	(0.40)
Individual characteristics		
Female	0.076	(0.23)
log Age	-0.64	(0.49)
Collected UI before	0.24	(0.17)
Not single	0.23	(0.23)
Number of days per week UI	0.18	(0.14)
log Benefits per day	9.99	(4.86)
log Benefits per day (squared)	-0.98	(0.48)
City 2	-0.22	(0.16)
Loglikelihood	-790.58	
Number of observations	394	

Explanatory note: Standard errors in parentheses.

Table 9: Estimation results of the model allowing the effect of counseling and monitoring to depend on the household situation of the UI recipient.

	Exit hazard θ	
Effect of C&M		
City 1	0.13	(0.24)
City 2	0.017	(0.19)
Intercept		
v	-26.5	(12.4)
Duration dependence		
λ_1	0	
λ_2	0.50	(0.19)
λ_3	0.20	(0.22)
λ_4	0.077	(0.25)
λ_5	-0.39	(0.40)
Individual characteristics		
Female	-0.012	(0.17)
log Age	-0.57	(0.36)
Collected UI before	0.25	(0.17)
Not single	-0.012	(0.16)
Number of days per week UI	0.19	(0.14)
log Benefits per day	9.60	(4.87)
log Benefits per day (squared)	-0.94	(0.48)
City 2	-0.14	(0.22)
Loglikelihood	-792.09	
Number of observations	394	

Explanatory note: Standard errors in parentheses.

Table 10: Estimation results of the model allowing the effect of counseling and monitoring to depend on the city in which the UI recipient lives.

	Exit hazard θ	
Effect of C&M		
δ	-0.012	(0.18)
Collected UI before	0.28	(0.33)
Intercept		
v	-26.4	(12.4)
Duration dependence		
λ_1	0	
λ_2	0.50	(0.19)
λ_3	0.20	(0.22)
λ_4	0.085	(0.25)
λ_5	-0.37	(0.40)
Individual characteristics		
Female	-0.0088	(0.17)
log Age	-0.56	(0.36)
Collected UI before	0.10	(0.24)
Not single	-0.0083	(0.16)
Number of days per week UI	0.19	(0.14)
log Benefits per day	9.56	(4.86)
log Benefits per day (squared)	-0.94	(0.48)
City 2	-0.21	(0.16)
Loglikelihood	-791.79	
Number of observations	394	

Explanatory note: Standard errors in parentheses.

Table 11: Estimation results of the model allowing the effect of counseling and monitoring to depend on whether the individual received UI benefits before.

	Controlling		Motivating	
Effect of C&M				
δ	−0.097	(0.27)	0.053	(0.26)
Individual characteristics				
log UI duration	−0.084	(0.20)	−0.11	(0.18)
Female	−0.10	(0.32)	−0.48	(0.31)
log Age	1.47	(0.74)	0.46	(0.67)
Collected UI before	0.37	(0.35)	−0.20	(0.42)
Not single	−0.070	(0.29)	0.42	(0.31)
Number of days per week UI	0.084	(0.28)	0.094	(0.30)
log Benefits per day	7.42	(5.08)	0.98	(9.34)
log Benefits per day (squared)	−0.76	(0.50)	−0.18	(0.91)
City 2	0.17	(0.32)	0.15	(0.27)
Correlation				
ρ	−0.099	(0.15)		
Threshold values				
a_1	21.94	(13.11)	1.02	(23.81)
a_2	22.15	(13.41)	1.52	(23.81)
a_3	22.73	(13.44)	2.13	(23.82)
a_4	24.26	(13.46)	3.63	(23.83)
Loglikelihood	-263.67			
Number of observations	102			

Table 12: Estimation results for the bivariate multinomial model for how the UI recipients experience C&M. The estimation results are based on the matched sample of respondents.

	Controlling		Motivating	
Effect of C&M				
δ	0.16	(0.20)	0.11	(0.18)
Individual characteristics				
Female	−0.22	(0.20)	−0.20	(0.21)
log Age	0.78	(0.43)	0.39	(0.40)
Collected UI before	0.22	(0.21)	−0.15	(0.21)
City 2	0.083	(0.19)	0.069	(0.19)
Correlation				
ρ	0.11	(0.85)		
Threshold values				
a_1	1.11	(1.55)	0.21	(1.48)
a_2	1.85	(1.55)	0.79	(1.47)
a_3	2.47	(1.58)	1.43	(1.47)
a_4	3.81	(1.60)	2.71	(1.48)
Loglikelihood	-434.70			
Number of observations	156			

Explanatory note: Standard errors in parentheses.

Table 13: Estimation results for the bivariate multinomial model for how the UI recipients experience C&M. The estimation results are based on the full sample of respondents.

	Job application hazard θ		Job application hazard θ	
Effect of C&M				
δ	0.11	(0.015)	−0.17	(0.032)
Intercept				
α	3.60	(1.01)	−1.10	(1.06)
Individual characteristics				
Female	0.14	(0.017)	0.17	(0.026)
log Age	0.33	(0.041)	0.085	(0.071)
Collected UI before	0.24	(0.025)	0.27	(0.032)
Not single	−0.079	(0.017)	−0.0020	(0.025)
Number of days per week UI	−0.12	(0.016)	−0.042	(0.027)
log Benefits per day	−2.58	(0.39)	0.036	(0.41)
log Benefits per day (squared)	0.36	(0.038)	0.041	(0.041)
City 2	−0.056	(0.016)	0.035	(0.029)
Loglikelihood	4199.35		2828.76	
Number of observations	87		81	

Explanatory note: Standard errors in parentheses. The first estimation results are based on the answers of all respondents in the matched sample. The second estimation results are obtained while the UI recipients who on average applied for more than 5 jobs per week were excluded.

Table 14: Estimation results for the Poisson count model of the number of job applications during the period of collecting UI benefits.

	Formal job search		Informal job search	
Effect of C&M				
δ	0.14	(0.46)	−0.26	(0.52)
Individual characteristics				
log UI duration	0.17	(0.62)	0.42	(0.41)
Female	−0.27	(0.62)	0.15	(0.79)
log Age	−0.15	(0.98)	−0.66	(1.03)
Collected UI before	0.82	(0.47)	0.31	(0.61)
Not single	−0.13	(0.55)	−0.077	(0.53)
Number of days per week UI	0.082	(0.58)	−0.013	(0.46)
log Benefits per day	7.63	(9.10)	−7.12	(11.31)
log Benefits per day (squared)	−0.78	(0.90)	0.79	(1.13)
City 2	−0.41	(0.58)	−0.45	(0.56)
Correlation				
ρ	−0.099	(0.23)		
Threshold values				
a_1	16.92	(22.34)	−17.94	(28.36)
a_2	18.72	(22.39)	−16.34	(28.29)
a_3	20.10	(22.41)		
Loglikelihood	-99.17			
Number of observations	55			

Explanatory note: Standard errors in parentheses.

Table 15: Estimation results for the bivariate multinomial probit model for the number of formal and informal job search channels used by the UI recipient.

	Formal job search		Informal job search	
Effect of C&M				
δ	0.34	(0.29)	−0.64	(0.28)
Individual characteristics				
Female	−0.25	(0.29)	−0.21	(0.29)
log Age	0.41	(0.53)	0.026	(0.68)
Collected UI before	−0.036	(0.27)	−0.25	(0.29)
City 2	−0.080	(0.27)	−0.24	(0.31)
Correlation				
ρ	−0.015	(0.19)		
Threshold values				
a_1	0.23	(1.97)	−1.01	(2.48)
a_2	1.65	(2.00)	0.59	(2.48)
a_3	2.90	(2.01)		
Loglikelihood	-178.02			
Number of observations	87			

Explanatory note: Standard errors in parentheses.

Table 16: Estimation results for the bivariate multinomial probit model for the number of formal and informal job search channels used by the UI recipient.

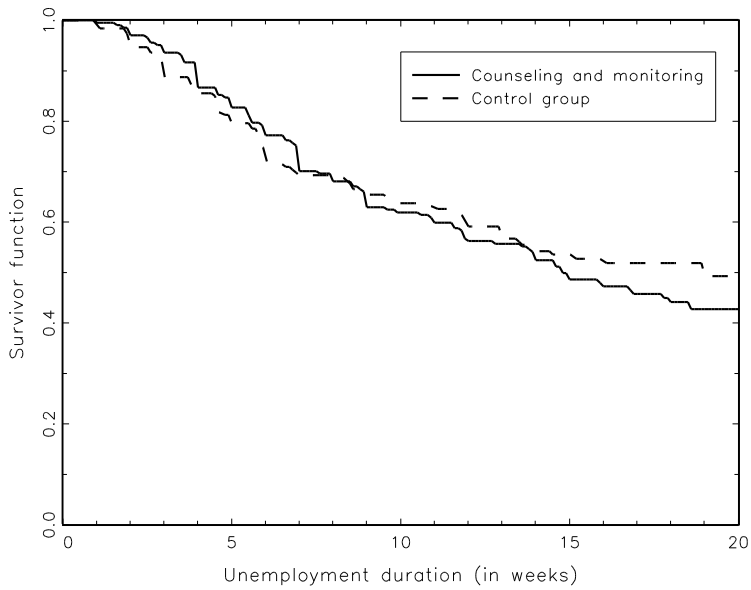

Figure 1: Kaplan-Meier estimate of the survivor function to work for individuals with and without counseling and monitoring.

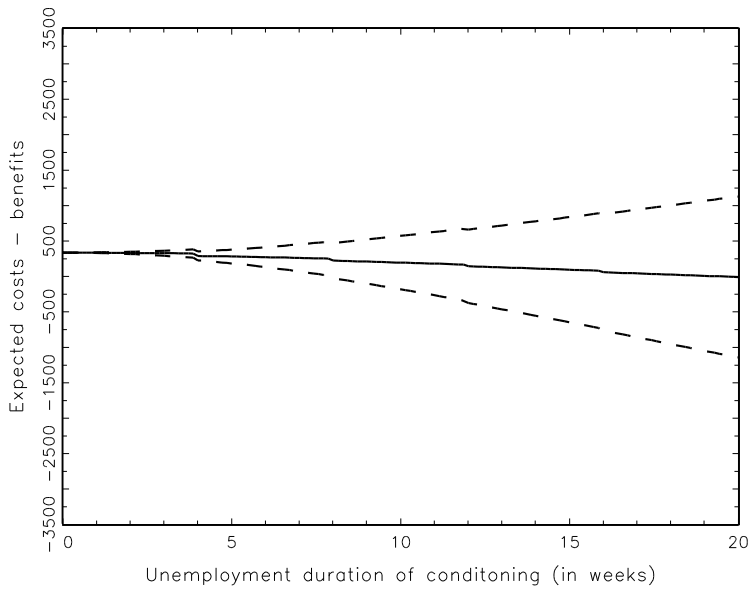

Figure 2: The difference between the expected costs and the expected differences until some given unemployment duration (the dotted lines show the pointwise confidence interval).