Displaced workers and the effects of outplacement and severance pay

By Wiljan van den Berge[*]

I use a dataset with social plans from firms from the Netherlands covering 8,751 displaced workers to estimate the effects of outplacement and severance pay on a displaced worker's probability of moving from job to job, the hazard rate and the quality of the subsequent job. I find that both severance pay and outplacement are not associated with a higher average probability of moving from job to job or a higher exit rate out of unemployment for those who do experience an unemployment spell. However, outplacement does seem to be effective for elderly workers in reducing unemployment durations. In addition I find (i) that severance pay is associated with a slightly higher exit rate out of unemployment on average, which likely indicates a selection effect, and (ii) little evidence of average effects of either outplacement or severance pay on subsequent job quality, except for a positive effect of outplacement on the wages of younger workers.

Job displacement, defined as the involuntary loss of one's job due to economic factors, is sometimes accompanied by re-employment services offered by the employer. Especially during economic downturns, when the incidence of job displacement increases sharply, such services can play an important role in helping workers in their transition to a new job. A prominent form of this type of support is outplacement, generally offered by private agencies. Outplacement aims to help workers who have been given notice in the transition from one job to another without an intervening spell of unemployment. While outplacement is rare in some countries – e.g. France and Spain – it is very common in others, such as the Netherlands and Belgium. Nevertheless, little is known about how these services operate and even less about how effective they are. It is therefore not surprising that the in the recent *Employment Outlook* the OECD suggests that this is an important area for further research (OECD, 2013).

In this study I attempt to answer the question of the effectiveness of outplacement by examining its effect on unemployment duration and subsequent job quality. Since there is no data available from outplacement agencies, I draw upon a sample of social plans agreed upon between labor unions and firms facing mass layoffs in the Netherlands. These firms often offer outplacement services and financial arrangements – such as severance pay – to workers who will be laid off. These arrangements are detailed in social plans. The major advantage of using this sample is that I have information on the entire package that workers were offered when given notice, so that I can take into account the effects of elements other than outplacement, most notably severance pay. Hence, this sample will allow me to estimate the effects of both outplacement and severance pay on the unemployment duration and subsequent job quality of workers who are laid off.

Job search theory predicts that outplacement will have an ambiguous effect on the exit rate out of unemployment (the hazard rate). It will make job search more efficient, which will increase the hazard rate. But, because of the increased number of job offers, workers could become more selective, which will decrease the hazard rate. Van den Berg (1994) shows that

for most of the distributions that are frequently used for wage-offer distributions the expected effect of outplacement on the hazard rate is positive.[1] Severance pay only has an effect on the hazard rate if unemployed workers face liquidity contraints. In this case, it will decrease the hazard rate (see Card, Chetty and Weber (2007) for a model).

There have been very few studies into the causal effects of outplacement. Arellano (2007, 2009) finds that outplacement decreases the hazard rate, but increases the wage in the subsequent job, indicating that the reservation wage effect dominates the search efficiency effect. The related literature on Active Labor Market Policies (ALMP) finds generally small positive or no effects of programs similar to outplacement (Card, Kluve and Weber, 2010; Thomsen, 2009).[2] Van den Berg and Van der Klaauw (2006) find no average effects of counseling and monitoring on the hazard rate of those who just became unemployed and are in other respects similar to those in outplacement. They do find positive effects for elderly workers.

Card, Chetty and Weber (2007) find that severance pay in Austria reduces job-finding hazards in the first 20 weeks by around 10%. Uusitalo and Verho (2010) examine a Finnish reform, where severance pay was replaced by increased unemployment benefits. They find that job-finding hazards are reduced, but also that this was mostly due to the increase in daily allowances rather than the loss of severance pay.

In section I I discuss what outplacement exactly consists of and the role it plays within the Netherlands and some other European countries. I continue to discuss the institutional context of terminations in the Netherlands. In section II I present my sample of social plans and the sample of displaced workers. In section III I present my empirical strategy. I estimate the effects of outplacement and severance pay on the probability of moving from job to job, the hazard rate, unemployment duration and subsequent job quality. In section IV I discuss my results and I conclude with some policy implications and recommendations for further research in section V.

I. Institutional context of outplacement

In this section I outline the institutional context of outplacement, starting with a discussion of a typical outplacement program and the role outplacement plays in labor markets in the Netherlands and other European countries. Since the data that I use consist of social plans and the associated displaced workers, I also discuss the institutional structure of Dutch termination law and the role of outplacement and severance pay in the case of mass layoffs.

A. What is outplacement?

Outplacement is a combination of services offered by private companies that help a worker who has been given notice find a new job as quickly as possible. Outplacement is aimed at helping people transition from their current job to a new job, without an intervening spell of unemployment. In this respect outplacement is different from the services frequently offered by public employment services, since they aim at helping people who are already unemployed make the transition to a job.

An outplacement program typically consists of the following elements

- Psychological support aimed at helping the employee cope with being displaced.

---

[1] Van den Berg and Van der Klaauw (2006, 904-6) show that in a model with a formal and an informal search channel, job search assistance will lead to an unambiguous increase in the hazard rate.

[2] But keep in mind that ALMP are generally aimed at the (long-term) unemployed. In addition, there could be threat effects that are absent in outplacement (Black et al., 2003; Graversen and van Ours, 2008).

- Self-evaluation aimed at understanding what the employee wants and what he or she can do.

- Simple training, such as short (one or two day) courses on for example the use of computer software, or in applying for a job.

- Starting to apply for a job, where the initiative is with the job-seeker, but where the outplacement bureau offers support in job search and with applying (e.g. De Cuyper et al. (2008)).

The focus of the program is generally accommodated to the specific needs and wants of the worker. For example, for high-educated workers the focus might be more on the coaching elements, whereas for low-educated workers the focus might be more on the support with applying for a job. Note that the outplacement agency generally doesn't try to match a job-seeker with a specific employer and, apart from some simple courses, outplacement also doesn't try to retrain the employee. The goal is rather to support the displaced worker and prepare her for the labor market, so that she is able to find a fitting job as quickly as possible.

Outplacement agencies are usually hired by firms who have to lay off some workers, be it through individual layoffs or mass layoffs. The outplacement program typically starts a couple of months before the worker is actually displaced, so that it can help with a smooth transition to a new job.

B. Outplacement and public job-to-job support within Europe

While outplacement is widely used in the Netherlands, and is also quite common in the United Kingdom and Germany, only Belgium has made it a systematic part of their policy.[3]

In the Netherlands the private market for outplacement is substantial. A 2011 survey by the trade organization for companies that deal with various types of job and job-transition support estimates that outplacement bureaus had a gross turnover of about 35 million euros, with most of it coming from firms that hire outplacement services for supporting their displaced workers. The survey also estimates that about 9,300 outplacement programs were started in 2011 (OVAL, 2012).

Belgium is the only country where outplacement is a systematic part of public policy. As of December 2007 employers must offer outplacement to every displaced worker 45 years or older. The fine for not complying is 1,800 euros.[4] In 2009 this obligation was extended to all employees involved in a mass layoff. Displaced workers are also obliged to accept the outplacement offer, unless they are able to find a job within 14 days.

Unfortunately, there has been no treatment evaluation study into outplacement in Belgium. Jacobs and De Cuyper (2013) are the only ones who have looked at gross effects of outplacement on the probability of finding a job. They found that around 60% found a job after outplacement in 2010 and 70% of them still held that job in 2012, whereas 20% already went to another job.

Other European countries can be divided in those that have mostly public arrangements for job-to-job support, such as the *Arbeitsstiftungen* in Austria (Winter-Ebmer, 2001), the Rapid Response Service in the UK (Borghouts-van de Pas, 2012, 118-145) and transition foundations

---

[3]It is also common with corporate layoffs in the USA. A survey for The Wall Street Journal estimates that more than two-thirds of 265 employers with layoffs from 2007 to 2009 used outplacement services, at an average cost of $3,589 per employee (The Wall Street Journal, 2009).

[4]Interestingly, the average price for outplacement services has been driven down to the same level as the fine. Part of the reason is the increased competition following the new laws, but another reason is that firms would otherwise simply prefer to pay the fine (De Cuyper et al., 2008, 52).

in Sweden (Borghouts-van de Pas, 2012, 98-102) and those that have no substantial private or public provisions, such as Spain or France.

Now that we have some idea of what outplacement consists of and the role it plays within various labor markets in Europe, I will focus on the Dutch institutional background for the remainder of this section. My data derives from mass layoffs accompanied by a social plan in the Netherlands, so it is important to consider the system of Dutch termination law.

C.   *Institutional background: Dutch termination law*

In the Netherlands every planned termination of an employee by an employer has to be requested beforehand. The employer can choose between three possible routes:

1) Request the cantonal judge to end the labor agreement.

2) Request a license to terminate at the public employment service UWV.

3) End the labor agreement by mutual consent.

If a request is rejected by the cantonal judge the employer can always ask UWV, and vice versa. The cantonal judge and UWV routes are most common and used about just as much.

The cantonal judge is the only one who can allocate severance pay and they use the so-called cantonal judge formula (*kantonrechtersformule*, henceforth KRF). The formula consists of three elements that determine the level of severance pay.

A. weighted number of years of tenure with the firm.

B. gross monthly wage.

C. correction factor.

These factors are multiplied to arrive at the level of severance pay. Every year of tenure until the age of 40 has a weight of 1, every year from 40 to 50 has a weight of 1.5 and every year later than age 50 has a weight of 2.[5]

Mass layoffs

The *wet melding collectief ontslag* (1976) defines a mass layoff as laying off at least 20 employees within a period of three months for economic reasons. The employer has to present advance notice to both the relevant labor unions and UWV.

Employers are not free to determine who will be laid off. Since March 2006 the so-called reflection principle (*afspiegelingsbeginsel*) determines who will be laid off. The goal is to have a good reflection of the personnel file in the case of mass layoffs. Conditional upon similar positions, employees are divided in five age brackets (15 − 24, 25 − 34, 35 − 44 and 55 − 64 years) and the number of employees that will be laid off from each bracket is dependent on the number of employees the firm has in each bracket. Finally, tenure considerations are applied to these brackets, so that those who came in last are the first to leave in each age bracket.

Employers do have some leeway, since they can deviate from the reflection principle if the person to be laid off has a smaller chance of finding a job than a colleague, if the person is indispensable or if the person is seconded at a different company and that company doesn't want to lose him or her.

---

[5]Since 2009 these weights have been lowered, but my data is on displaced workers from 2003 to 2007.

Mass layoffs should be checked in advance by UWV. However, if the involved unions confirm that the layoffs are indeed due to economic reasons, UWV will only check whether the reflection principle is applied correctly and whether there are possibilities for replacement. Note that UWV only checks whether all the rules of mass layoffs have been applied correctly. The actual act of laying off the employees can still be through either cantonal judge or UWV routes.

While the cantonal judge and UWV routes are still most popular, ending agreements by mutual consent has become more popular because it offers employers a way around the stringent rules of mass layoffs – i.e. the reflection principle and tenure rules –, since they don't have to notify UWV. This flexibility comes at a cost however, since ending by mutual consent usually involves a relatively high level of severance pay.

<div align="center">SOCIAL PLANS</div>

In the context of mass layoffs, employers and labor unions often decide on a social plan to deal with the consequences for displaced workers. Social plans for larger firms are typically around twenty pages and contain the agreements on the possibilities for both financial (severance pay) and non-financial (outplacement, training) arrangements that compensate the employee for losing her open-ended contract.

While one might expect that these plans offer the displaced worker a choice in whether she prefers a more generous financial arrangement or more support in the form of outplacement or training, this is typically not the case. Severance pay is generally allocated to each worker according to the *kantonrechtersformule* (KRF), while training and outplacement, if they are offered, are usually on a voluntary basis for each displaced worker.

In deciding on the level of severance pay, the correction factor C is the main bargaining tool. The correction factor mostly depends on the budget the firm has available, taking into account how much the firm spends on other arrangements.

While a social plan is not legally compulsory in the case of mass layoffs, many collective labor agreements do oblige it. Aside from these agreements, the most important reason for employers to draw up a social plan is that employees who are laid off without a social plan can challenge the layoff at the cantonal judge. The judge will typically allocate a higher level of severance pay if employers have decided to lay workers off without a social plan. To prevent this from happening, employers want to have a social plan that the labor unions agree with, because this makes it effectively impossible for individual employees to challenge the layoff. A judge will usually not deviate from the social plan if it was agreed upon with the unions. Also, a social plan provides certainty for the employer regarding the costs of the layoff.

II. Data description

To estimate the effects of outplacement and severance pay on unemployment duration, I use data gathered from social plans that contain the arrangements firms offer their displaced workers. I connect these data to the firms involved in these plans and finally use registration data from Statistics Netherlands (CBS) to gather information regarding the displaced workers involved in these plans.

The advantage of using only data on displaced workers is that there is no relation between unobserved characteristics of these workers, such as ability, and the fact that they were displaced, whereas such a relation would probably exist for a sample containing all dismissed workers (Gibbons and Katz, 1991).

The advantage of using data on social plans is that I have an idea of the comprehensive package that people were offered when displaced. I know for example whether they received

severance pay in addition to outplacement, so that I can try to disentangle the effects of severance pay and outplacement support on unemployment duration.

A major disadvantage is that I don't know whether workers who were offered outplacement support actually took up the offer. This means that I can only estimate the "intention to treat", rather than an average treatment effect for outplacement (see section III). Furthermore, since I don't know what other workers were offered when dismissed, I can only rely on variation within my sample of social plans. This severely limits my possible control group.

My full sample consists of 552 social plans from 2002 to 2010 from a database from the Ministry of Social Affairs and Employment. This database only contains social plans that were registered as collective labor agreements, which means they apply to all displaced workers for a firm. The database doesn't contain all social plans agreed upon in this period. For example EIM (2008) estimates that between 2004 and 2007 1,130 social plans were agreed upon. A representative from the largest labor union in the Netherlands confirmed that each year there are about 1,500 – 2,000 social plans. Most of these (around 1,000) are very small and only contain minimal arrangements. Labor unions are not involved with these, as they are agreed upon between the employer and the works council. Then there are about 350 – 500 plans where the labor union is involved, but that are not registered as collective labor agreements. These are more substantial, but are what the representative referred to as "batch production". Finally we have the social plans from the database, which are more substantial – usually around twenty pages, but sometimes over a hundred pages long – and tailored to the situation at a specific firm.

I use a special dataset from Statistics Netherlands containing all workers laid off for economic reasons for the years 2003 – 2007 for whom a request to lay off was granted by the UWV and whose job actually ended (BEONTTAB). In addition to the pure UWV layoffs, Statistics Netherlands also includes those who were involved in mass layoffs. They use a statistical method to determine whether people were involved in a mass layoff. In months with an outflow that is substantially larger than an average month, all job endings are included, whether they went through the UWV, cantonal judge or by mutual consent. However, mass layoffs are frequently characterized by an outflow that stretches over a longer period – where the later months don't have an outflow significantly above average – so not necessarily all workers involved in a mass layoff are included (Van Gaalen, 2012).

In the remainder of this section I compare my sample of social plans to earlier ones in section II.A. In section II.B I present descriptive statistics on displaced workers covered by the social plans in my sample.

A. *Social plans*

Table 1 shows the contents of the social plans in my sample. We see that the large majority of firms offer severance pay, with most of them being related to the *kantonrechtersformule* (KRF). We see that 62% of the firms offer outplacement support in their plans, with an average length of eight months. Other support includes possibilities for getting a new job within the same firm or getting training. Finally, a substantial share of the plans offer specific arrangements for the elderly – usually starting from around fifty-eight years old – in the form of a financial bridge to their pension or early retirement schemes.

To get a sense of the representativeness of my sample, Table 1 also compares my sample with earlier overviews of social plans from different periods. While these are difficult to compare, since the sample sizes and periods are different, we do see that most of the contents are similar. I'm particularly interested in severance pay and outplacement and we can see that for severance pay my sample is roughly in between the sample by EIM (2008) and Tros,

Table 1—: Percentage of social plans in my sample containing specific arrangements compared with those of plans used in other recent studies.

Contents of social plans (%)	Van den Berge	Boos et al (2001)	Tros et al (2005)	EIM (2008)	Van den Berge (matched sample)
Financial					
Severance pay	77		83	67	77
C = 1	40		31		30
C < 1	35		30		26
C > 1	13		12		10
Unrelated to KRF	12		27		11
Incentive to leave	45	40	64	44	47
Supplement to UB	18	37	31		25
Incentive to replace	24		43	30	23
Job-to-job					
Outplacement	62	42	68	74	66
Duration (avg months)	7.6		8.1	9	8.4
Duration (min - max)	3 – 30			3 – 24	3 – 30
Budget (avg €)	3,742				2,953
Internal replacement	67		78	78	64
Mobility centre	9		17	18	5
Training	24	47	29	65	14
Income suppletion	21	31	26	34	20
Arrangements for the elderly					
Bridge to pension	38		45		42
More job-to-job support	11				13
N	552	105	145	198	148
Year	2002 − 2010	2000	2004 − 2005	2004 − 2007	2003 − 2007

Source: Sample of social plans gathered from database of Ministry of Social Affairs and Employment and the studies of Boos, Nagelkerke and Serail (2001); Tros, Rayer and Verhulp (2005); EIM (2008).

Rayer and Verhulp (2005). For outplacement my sample is similar to the one used by Tros, Rayer and Verhulp (2005). Overall the samples seem to match quite well.

B. Description: individual characteristics

Table 2 shows summary statistics for my sample of 8,751 displaced workers. The dataset on displaced workers is linked – through information on the job people were dismissed from – to my sample of social plans. I was able to find information on dismissed workers for 148 social plans for the period 2003 – 2007. The final column in Table 1 shows the contents of the matched sample. For both outplacemen and severance pay the sample is very similar to the full sample.[6]

My sample with displaced workers is linked to registration data to obtain information on personal, household and firm characteristics.[7] Unemployment duration is defined as the

---

[6]A probit analysis shows that only "Training" and "Supplement to UB" are significantly different between the two samples.

[7]Unfortunately I have no information on education, since this type of information is only gathered through surveys

difference between the start date of the new job and the end date of the previous job, measured in days. I have job data until December 31, 2010, and displaced workers are followed until a maximum of five years after their layoff (so three years for those laid off at the end of 2007). This should lead to relatively small censoring problems. Still, for 19.5% of the sample I was unable to find a new job. This means that either they are still searching for a job or they left the labor market. I assume that everyone who hasn't found a job at age 65 leaves the labor market at that point for reasons related to pension or health. This accounts for 2.7%. Through another dataset I was able to identify that some unemployed workers started freelancing. These account for 1.2%. For the final 15.6% the search duration is set at their respective maximum, so 1,827 days (five years) for those laid off before January 1, 2005 and shorter periods for those laid off after that date. All workers for whom I couldn't find a new job are treated as censored, either at the point where they start freelancing, where they turn 65 or after December 31, 2010.

Particularly relevant in the context of outplacement is the number of people who find a job that starts right after they lost their previous job. After excluding everyone who already had another job more than two months before their current job or continued to work at the same company after a merger, I have 25.7% of the sample who experience no unemployment spell.

Table 2 shows that the comparison groups for outplacement and severance pay differ significantly in many respects. The differences suggest that those who don't receive severance pay are typically those on the bottom end of the labor market: young people who earn relatively little in jobs that require a low level of education. For outplacement the differences are much less pronounced, but tend to go in the same direction. In my estimations I control for the observed differences, but it could be that the differences in personal characteristics are related to unobserved characteristics such as education, ability and motivation, which could bias my results.[8]

<div align="center">Unemployment duration</div>

The two graphs in Figure 1 show the nonparametric Kaplan-Meier curves for outplacement and severance pay. These curves show the outflow from unemployment over the duration of the unemployment spell as it is found in the data. The figure suggests that those who received an offer of outplacement typically experienced slightly longer spells than those who did not and the same holds for those who received severance pay. The differences in survival curves are small however and could be due to differences in personal characteristics.

III.   Estimation strategy

I estimate the effects of outplacement and severance pay on the probability of moving from job to job, the hazard rate for those who experience an unemployment spell, the (log) wage in the new job and subsequent employment history. Henceforth I will simply refer to the offer of outplacement or severance pay as the assignment of treatment, indicated by $T_i = \{1, 0\}$. While estimations of the hazard will tell us something about the effect of treatment on job finding rates and unemployment duration, estimations of the subsequent wage and employment history tell us something about job quality.

---

in the Netherlands. Only about one third of the sample has data on education and this would have restricted my sample size too much.

[8]Also note that the average wage in the first new job is substantially lower than the average wage in the previous job. This is a common finding for displaced workers, see e.g. Jacobsen, LaLonde and Sullivan (1993).

Table 2—: Summary statistics of displaced workers.

Individual characteristics (%)	Full sample	Outplacement offered	No out-placement offered	Severance pay	No severance pay
Mean unemployment spell (days)	478	500	418	490	436
SD unemployment spell (days)	667	684	616	672	647
Exit route (%)					
New job after unemployment spell	54.8	54.3	56.3	53.5	59.4
Job to job	25.7	25.3	26.8	26.0	24.7
Censored	19.5	20.4	17.0	20.5	15.8
Personal characteristics (%)					
Age: < 35	33.1	32.9	33.8	24.4	64.4
$35 - 45$	26.6	26.0	28.4	29.9	15.0
$45 - 55$	23.6	23.2	24.8	27.4	10.1
≥ 55	16.6	18.0	12.9	18.3	10.5
Avg. tenure (months)	150	155	135	168	86
Avg. monthly wage in lost job (€)	2,369	2,447	2,157	2,631	1,431
Avg. monthly wage in new job (€)	1,809	1,886	1,607	1,974	1,253
Female	37.6	35.4	43.5	33.8	50.9
Partner	78.9	78.4	80.0	80.4	73.4
Children	54.5	53.3	49.4	53.6	57.6
Dutch	82.2	81.7	83.4	82.4	81.2
Sector (%)					
Manufacturing	28.2	26.7	32.4	32.6	12.8
Construction	2.4	2.2	3.1	2.7	1.3
Wholesale and retail trade	32.0	27.6	44.1	18.5	80.5
Information and communication	13.1	16.2	4.6	16.7	0.0
Other specialized business services	11.9	15.3	2.7	15.0	0.9
Health and social work activities	9.7	9.5	10.3	11.1	4.5
Other	3.1	2.5	2.8	3.4	0.0
Firm size (nr. of employees, %)					
< 50	4.7	5.6	1.7	5.4	1.8
50 to 99	6.2	4.4	11.4	6.1	6.8
100 to 149	5.0	4.1	7.4	6.1	1.3
150 to 199	4.8	6.3	0.7	5.7	1.4
200 to 249	2.0	2.1	1.7	2.1	1.6
250 to 499	10.0	8.4	14.3	10.7	7.4
500 to 999	11.8	10.6	15.1	14.7	1.7
1,000 to 1,999	11.4	12.8	7.7	14.7	0.0
More than 2,000	44.2	45.8	39.8	34.6	78.1
N	8,751	6,398	2,353	6,835	1,916

Notes: I control for 13 sectors in the analyses, but many of these only include a very small percentage of workers, so they are not reported here.
Source: Own calculations based on registration data from Statistics Netherlands (CBS).

Figure 1. : Kaplan-Meier survival curves for outplacement and severance pay.
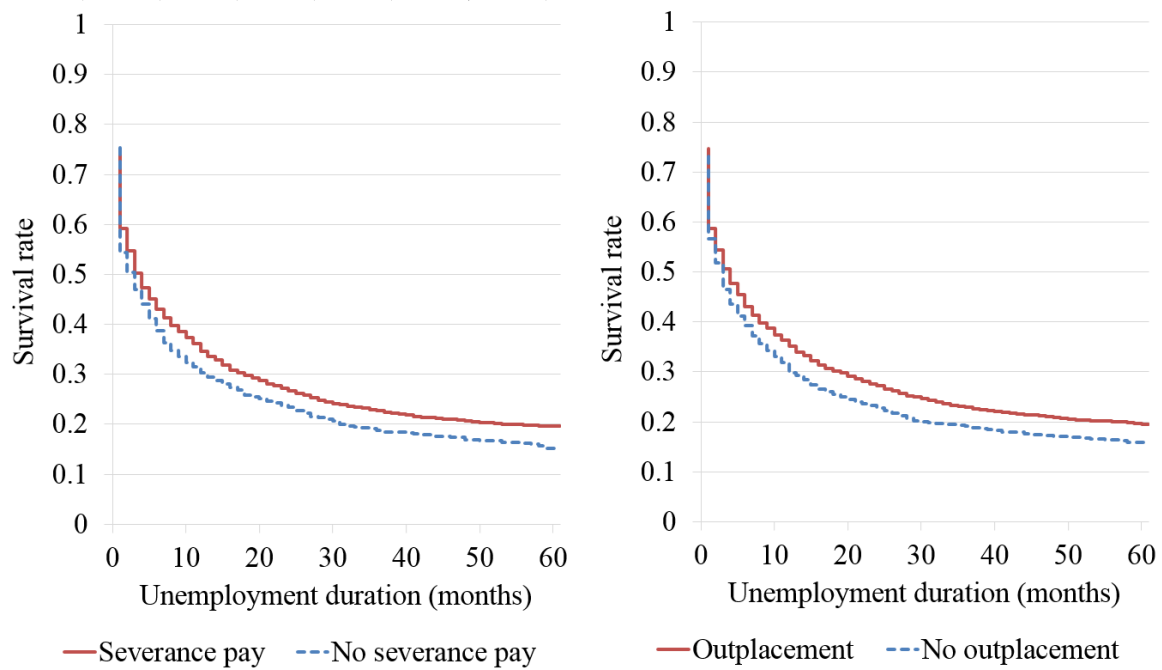
Source: Own calculations based on registration data from Statistics Netherlands and the social plans in the database of the Ministry of Social Affairs and Employment.

A. Specification of hazard model

A limitation of the data is that I can't identify who actually took up outplacement. The social plan only indicates that someone received an offer of outplacement, but since these offers are almost always on a voluntary basis, we don't know whether the individual actually took up that offer. This means that I can only estimate the effect of the offer, also known as the "intention to treat". However, because these type of programs always have to cope with attrition, the "intention to treat" is of intrinsic interest, aside from giving an idea of the average treatment effect. People do change their behavior in response to these services and some people decide to join, whereas others don't. The intention to treat gives us the average effect on the behavior of all people who were offered treatment (Heckman, LaLonde and Smith, 1999).[9] This limitation doesn't hold for severance pay, but unfortunately exact numbers of the amount of severance pay are unavailable, so I will only examine the impact of receiving severance pay.

To estimate the hazard (job finding) rate θ_i I use both a proportional hazards (PH) model and a mixed proportional hazards (MPH) model, where I allow for unobserved heterogeneity (Van den Berg, 2001). The employment hazard θ for individual i with characteristics $\mathbf{X}_i$ at unemployment duration t in the MPH is

$$\theta(t|\mathbf{X}_i, \eta_i) = \lambda(t) \cdot exp(\mathbf{X}_i'\beta + T_i\gamma) \cdot \eta_i. \tag{1}$$

where $\lambda(t)$ is the time-varying baseline hazard function. Duration dependence is modeled as a piecewise constant function of elapsed duration, specified as:

$$\lambda(t) = exp\left(\sum_{j=1}^{J} \lambda_j I(t_{j-1} \le t < t_j)\right) \tag{2}$$

I have a potentially long time period of five years of unemployment, but the transitions towards employment decline rapidly after the first year. Based on eyeballing the Kaplan-Meier estimates in Figure 1 I estimate the baseline hazard with $J = 10$ intervals. The first half of the first year is estimated with constant hazards for each month ($t_1 = 30 \ldots t_5 = 150$).[10] For the second half of the first year I assume constant quarterly hazards ($t_6 = 180, t_7 = 270$) and for the second year I assume constant hazards for each half of the year ($t_8 = 360, t_9 = 540$). Finally, I assume a constant interval after the first two years ($t_{10} \ge 720$).[11]

The level of the baseline hazard is allowed to differ multiplicatively between individuals, as indicated by the term $exp(\mathbf{X}_i'\beta + T_i\gamma)$. All variables in $\mathbf{X}_i$ are time-invariant and measured at the moment of layoff.[12] $T_i\gamma$ gives the individual effect of treatment on the hazard rate. Using the $exp(\cdot)$ function ensures that the hazard rate is non-negative for all $\mathbf{X}_i'\beta$. In the MPH model I allow for unobserved heterogeneity with $\eta_i > 0$, which I assume to be distributed as gamma with mean 1 and variance σ^2.[13] Unobserved heterogeneity could be important, since I can't include variables such as educational levels and motivation.

---

[9]People with experience in outplacement confirm that the take-up rate is quite high. They estimate it to be around 80%.

[10]For convenience, I assume months of 30 days.

[11]I have tried specifications with more intervals, but the resulting baseline hazard is similar.

[12]These variables are age, sex, tenure and log monthly wage in the previous job, whether the workers has children and a partner, ethnicity, sector, firm size in terms of number of workers and year and quarter of inflow. See Table 2.

[13]In the PH model $\eta_i = 1$.

I use the same models to estimate the effects of treatment on the duration of the first job. This is an indication of both job and match quality. The interpretation of the model is reversed though, since the hazard rate is in this case defined as the exit rate out of *employment*.

B.   *Specification of the wage model*

In addition to job duration, I also look at the effect of treatment on the wage in the new job. As a baseline specification I use a simple (log) wage model to estimate the effect of treatment on job quality:

$$(log)w_i = \alpha + \mathbf{X}'_i\beta + T_i\gamma_i + \epsilon_i. \tag{3}$$

where $\mathbf{X}_i$ is a vector of control variables containing the same controls as in the hazard model specification. γ_i identifies the effect of interest and ϵ_i is an individual-specific error term. A problem for this simple model could be that some people don't find a job, which means that their wage is censored. If censoring is non-random, which it most likely is, this could lead to selection bias. To account for this I also apply the Heckman correction (Heckman, 1979). This approach takes two steps.

First, estimate the probability of finding a job using a probit model with all observations. The binary choice model for having a job is

$$y_{1i} = 1\{y^*_{1i} > 0\}$$

with a latent index

$$y^*_{1i} = \mathbf{X}'_{1i}\beta_1 + \epsilon_{1i}$$

If the latent index exceeds 0, individual i decides to have a job. The estimates from the latent index can be used to calculate the inverse Mills' ratio

$$\hat{\lambda} = \frac{\phi(\mathbf{X}'_{1i}\beta_1)}{\Phi(\mathbf{X}'_{1i}\beta_1)}$$

where ϕ is the probability density function of the standard normal distribution and Φ is its cumulative distribution function.

Second, use $\hat{\lambda}$ to estimate the model

$$(log)w_i = \alpha + \mathbf{X}'_{2i}\beta_2 + T_i\gamma_i + \sigma_{12}\hat{\lambda}v_i \tag{4}$$

using only the uncensored observations, where $\sigma_{12} = cov(\epsilon_i, v_i)$. The error terms are assumed to be jointly normal.

IV.   Results

A.   *Probability of moving from job to job*

I use a probit model to estimate the probability of moving to another job right after losing the current job. Since employees have to be given at least two months notice of a pending layoff, they have time to search for another job. Outplacement services are usually already offered during this period, so they could positively affect the probability of moving from

job-to-job. The prospect of receiving severance pay could negatively affect this probability, because it will give workers more time to search. Finally, it is likely that the best workers will find a job quicker, so an indicator of worker quality such as wage is expected to have a positive effect.

Table 3 reports the results.[14] It shows that, contrary to expectations, outplacement doesn't have a significant effect on the probability of moving from job to job. One reason could be that the workers who do directly get another job are the best workers and their benefits from an offer of outplacement are very small. The coefficient for severance pay shows that it has no effect on the probability of moving from job to job. Severance pay would only have an effect if it relieves liquidity constraints of workers, but for people who directly move through to another job, this effect would be negligible, unless they have no buffer whatsoever. It is therefore expected that these workers, like many Dutch workers, simply set aside their severance pay and take it up at a later period when they earn less and hence have to pay less tax (e.g. after retirement). I interpret wage as an indicator of unmeasured variables such as education and ability and indeed it shows the expected significant positive effect.

The results also show that older workers, relative to those younger than 35 years, have a significantly smaller probability of moving from job to job. The effect is largest for those aged 55 years or older (I will return to this effect below). All other personal characteristics have the expected signs, with having dependents in the form of children and a partner positive effect on the probability of moving from job to job, while being female implies a lower probability.

While these coefficients are interesting, they don't yet tell us much about the actual probability of moving from job to job. Simulations show that the average male, aged $45 - 55$ with a partner and earning the median wage has a 23% chance of moving from job to job, whereas for a similar female the probability is 16%.

Whereas there might be no average effects of outplacement or severance pay, there could be effects for different subgroups. To check for this I have run the same model for different age groups. Table 4 reports the estimates. The baseline estimates are included for comparison. The results indicate that both outplacement and severance pay have no effect for those younger than 55 years. On the other hand, for those older than 55 years both outplacement and severance pay have a significant positive effect. However, this is relative to the very small baseline probability for those older than 55. Without outplacement or severance pay, those older than 55 have a 1.6% chance of moving from job to job, whereas with outplacement this increases to 3.3% and with severance pay to 3.4%.[15] So while their chances improve by about 50%, the actual impact is still very small. Figure 2 shows the predicted probabilities for different age group on the basis of the estimates in Table 4.[16]

B. Unemployment duration: hazard estimates

The non-parametric Kaplan-Meier curves in Figure 1 show some indication of how outplacement and severance pay affect unemployment duration. However, to get a better sense of the effects on both exit rates and unemployment duration and to account for duration dependence, we need to model these effects.

Table 5 shows the results from a PH and an MPH model on the exit rates out of unemployment. There are two major effects from allowing for unobserved heterogeneity in the

---

[14]The missing parameter estimates for this model and the following analyses can be found in the Appendix in section A.A1.

[15]I will return to this result on severance pay below, where I argue that it is likely the result of selection bias.

[16]I have also run the same model for two wage groups: less than and more or equal to the in-sample median wage of 2,360 euros. In line with the baseline specification, I found no significant effects of either outplacement or severance pay for most groups.

Table 3—: Parameter estimates for probit model on the probability of moving directly from job to job.

	Full model
Outplacement	0.0401
	(0.0409)
Severance pay	0.0159
	(0.0556)
Individual characteristics	
Age: $35 - 45$ years	-0.2393**
	(0.0430)
Age: $45 - 55$ years	-0.5175**
	(0.0505)
Age: ≥ 55 years	-1.3292**
	(0.0809)
ln(wage) in previous job	0.1705**
	(0.0262)
Tenure (months) / 10	-0.0118**
	(0.0019)
Female	-0.1712**
	(0.0358)
Partner	0.0922*
	(0.0408)
Children	0.0379
	(0.0347)
Dutch	0.1973**
	(0.0415)
Constant	-1.7675**
	(0.2407)
N	8,751

Notes: Robust standard errors in parentheses. Controls for year and quarter of inflow, sector and firm size are included. Omitted categories: *Age*: < 35 years. Significance levels: $\dagger : 10\% * : 5\% ** : 1\%$.
Source: Own calculations using registration data from Statistics Netherlands on displaced workers.

Table 4—: Parameter estimates for probit model on the probability of moving directly from job to job for different age groups.

	Baseline	< 35 years	$35 - 45$ years	$45 - 55$ years	≥ 55 years
Outplacement	0.0401	-0.0070	-0.0452	-0.0555	$0.3053^{\dagger}$
	(0.0409)	(0.0838)	(0.0728)	(0.0819)	(0.1654)
Severance pay	0.0159	-0.0518	0.0489	0.1796	0.6377*
	(0.0556)	(0.1000)	(0.1053)	(0.1291)	(0.2477)
N	8,751	2,900	2,331	2,068	1,452

Notes: Robust standard errors in parentheses. Controls for year and quarter of inflow, sector and firm size are included. Significance levels: $\dagger : 10\% * : 5\% ** : 1\%$.
Source: Own calculations using registration data from Statistics Netherlands on displaced workers.

Figure 2. : Predicted probabilities of moving from job to job for males and females with outplacement in different age categories.
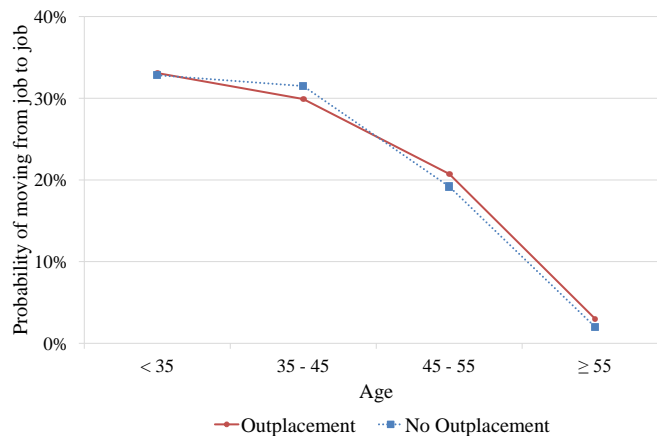
Source: Own calculations based on registration data from CBS. The predicted probabilities are calculated at the population averages of $\mathbf{X}_i$ for each age group based on the estimates in Table 4.

MPH model. First, the coefficients on most individual characteristics are larger. Second, the coefficients on duration dependence are smaller. These effects are expected, because the individuals with the best chances of leaving unemployment (due to unobserved variables such as ability) will leave first, leaving a population that is less likely to exit unemployment. The PH model without unobserved heterogeneity doesn't account for this, so the effect will go in the duration dependence parameters. The MPH model, on the other hand, separates this "weeding out" effect from genuine duration dependence (Lancaster, 1979).

When examining the coefficients from the MPH model, we see that outplacement has no significant effect on the exit rates. This is quite similar to what we saw in the Kaplan-Meier estimates, which suggested a very small negative effect of outplacement. The coefficient on severance pay provides no evidence for the idea that these unemployed workers face liquidity constraints. Severance pay has a small positive effect on the hazard rate, although only significant at the 10% level. A positive effect of severance pay is contrary to what we would expect on the basis of theory or what previous studies have shown, so it likely indicates a selection effect.

As we saw in Table 2, those who receive no severance pay are younger, earn less and predominantly work in sectors that require less education, such as retail and trade. While I control for most of these characteristics, they could be related to other characteristics that are not controlled for, such as education, ability and motivation. If workers who receive severance pay have a higher level of education, ability or motivation, this could mean they will find a job sooner than those who receive no severance pay. This could hold even if severance pay does in fact increase unemployment duration, which makes the estimate difficult to interpret beyond that it indicates a selection effect.

All personal characteristics point to the expected effects. Age, relative to those younger than 35, has a strong negative effect on the hazard rate. One likely reason for the strong effects of age on both unemployment duration and the probability of moving from job to job we saw above is that employers simply prefer to hire younger workers, for example because of perceived productivity differences or because investments in them will have a larger potential payoff. These are all valid economic reasons. However, part of the effect is likely due to

unobserved variables and selection effects. One such unobserved variable affecting the results on age are early retirement schemes, which are quite common in social plans. I've tried to control for these, but due to the multitude of different schemes, starting at different ages and different possible effects, it is very difficult to interpret the results.[17] Another reason is that older workers will likely receive longer unemployment benefits.[18] A third reason could be that older workers on average have a lower level of education and tend to work more often in declining occupations (Bosch and ter Weel, 2013).

Somewhat surprisingly, wage in the previous job, a proxy for worker quality, doesn't seem to have an effect on the hazard. Tenure has a small negative effect, which indicates that workers who have worked at one firm for a long time find it more difficult to find a job. There could be several reasons for this. First, they might have more firm-specific skills, making it harder to find an appropriate match. Second, they could have received a larger amount of severance pay, because this is partly related to tenure. Third, they have less or outdated experience on the labor market, making it more difficult to look for appropriate vacancies and go through the application process. Being female has a significant negative effect on the hazard, whereas having children positively affects the hazard.

The estimates for duration dependence indicate that the exit rate declines as time progresses, which could for example be because workers who have been unemployed for some time have a harder time to find a job, or that they have given up looking for a job, for example via early retirement schemes.

While the hazard rates are important parameters, as they are implied by job search theory, it is also relevant to look at the implied unemployment durations. Using the hazard rates, we can estimate the median unemployment duration for different groups. For the median male, between 45 and 55 years old and earning the median wage, the median unemployment duration is about 450 days. For the median female, between 45 and 55 years old and earning the median wage for females, the median unemployment duration is about 560 days.

While there might be no average effects of outplacement, it could be that, just as above, some groups do experience significant effects. Table 6 reports the estimates of the same MPH model as in Table 5 for several subgroups. The baseline estimates are included for comparison. There are some interesting observations. First, the differences between low wage and high wage workers and males and females are relatively small, whereas the differences between age groups are quite substantial. For those younger than 35 almost all estimates are insignificant, indicating that they simply find it relatively easy to find a new job. The estimates for outplacement are particularly striking, with a negative effect for the age group between 35 and 55 and a large significant effect for those older than 55.[19] The estimates for severance pay confirm the idea of a selection effect playing a role, as for those older than 55 the estimate is substantial and significant.

Figure 3 shows the cumulative job-finding probability for the different age groups. I obtain this probability by first calculating the probability of finding a job for each individual based on the estimates in Table 6, which is given by

---

[17]In estimates where I include a variable for early retirement schemes in social plans I found mostly positive effects on the hazard rate. This again likely indicates a selection effect, possibly relating to a correlation between the generosity of a social plan and an employers' other personnel-related policies.

[18]Unemployment benefits last between 3 and 38 months, depending on how long a person has worked in her life. After the expiration of regular unemployment benefits, most workers will go into means-tested welfare. However, workers who were laid off after 50 are entitled to a different welfare system, which doesn't take into account any property they might have (including savings, such as severance pay). This could also lengthen their unemployment durations compared to younger workers. Unfortunately I don't have data on unemployment benefits or welfare.

[19]Outplacement starts being significant and positive when I restrict the sample to age ≥ 46 and onwards. The maximum is obtained with a sample restricted to age ≥ 55, after which the estimates turn insignificant again.

Table 5—: Parameter estimates for hazard rate models.

	Proportional Hazard	Mixed Proportional Hazard
Outplacement	0.0320	0.0553
	(0.0447)	(0.0647)
Severance pay	0.1475*	0.1523†
	(0.0577)	(0.0866)
Individual characteristics		
Age: $35 - 45$ years	-0.2925**	-0.5601**
	(0.0453)	(0.0731)
Age: $45 - 55$ years	-0.6835**	-1.1417**
	(0.0504)	(0.0833)
Age: ≥ 55 years	-2.0733**	-3.0182**
	(0.0770)	(0.1316)
ln(wage) in lost job	-0.0440†	0.0080
	(0.0226)	(0.0368)
Tenure (months) / 10	-0.0093**	-0.0145**
	(0.0018)	(0.0027)
Female	-0.1673**	-0.2164**
	(0.0344)	(0.0520)
Partner	-0.0085	0.0531
	(0.0386)	(0.0577)
Children	0.1019**	0.1757**
	(0.0351)	(0.0520)
Dutch	0.2719**	0.3942**
	(0.0393)	(0.0593)
Duration dependence		
Month 2	-0.5277**	-0.3719**
	(0.0545)	(0.0712)
Month 3	-0.7489**	-0.4609**
	(0.0610)	(0.0894)
Month 4	-0.7952**	-0.3463**
	(0.0651)	(0.1101)
Month 5	-1.0715**	-0.6193**
	(0.0751)	(0.1268)
Month 6	-1.0298**	-0.4825**
	(0.0768)	(0.1317)
Month $7 - 9$	-1.2084**	-0.5561**
	(0.0573)	(0.1075)
Month $10 - 12$	-1.4696**	-0.7712**
	(0.0665)	(0.1257)
Month $13 - 18$	-1.4778**	-0.4126**
	(0.0569)	(0.1362)
Month $19 - 24$	-1.8783**	-0.8925**
	(0.0709)	(0.1527)
Month 25 +	-2.2822**	-1.1376**
	(0.0551)	(0.1160)
Constant	-4.8509**	-5.3414**
	(0.2130)	(0.3396)
σ^2		1.0572
		(0.0675)
N	6,502	6,502

Notes: Standard errors in parentheses. Controls for year and quarter of inflow, sector and firm size are included.
Omitted categories: *Duration*: Month 1 *Age*: < 35 years. Significance levels: $\dagger : 10\% * : 5\% ** : 1\%$.
Source: Own calculations using registration data from Statistics Netherlands on displaced workers.

$$(5) \qquad 1 - \hat{S}_p(t|X_i) = \exp\left(-\int_0^t \hat{\theta}_1(z \mid X_i)\, \mathrm{d}z\right)$$

Where $\hat{S}_p$ is the estimated survivor function with $p =$ outplacement, severance pay or no treatment and $t = 30, 60, \ldots, 1770, 1800$. I obtain the probabilities for e.g. outplacement by imposing outplacement $= 1$ and imposing 0 for severance pay. I average these probabilities across individuals for each 30 day time period and take the sum of the probability of the period t and earlier periods to arrive at the cumulative probability.

These results highlight that the job finding probability is very different for those older and those younger than 55. For those younger than 35, the probability of finding a job reaches almost 80% within the first year and increases to about 95% within 5 years. For those between 35 and 45 the numbers are around 70% and 90% respectively. We already see a clear decline in the probability for those between 45 and 55, where the probability of finding a job is around 50% within the first year and around 75% after 5 years. In contrast, for those older than 55, the probability without outplacement or severance pay is around 5% within the first year and gradually increases to about 10%. Again, apart from the pure age effects, this could be related to older workers receiving longer unemployment benefits or (early) retirement. Second, outplacement starts to be effective from the 45 55 age group, but it seems to be most effective for the elderly, where it increases the job-finding probability by around 5 percentage points, a 50% increase from the baseline probability. Severance pay is even more effective, which likely indicates selection effects.

Table 6—: Parameter estimates for hazard rates out of unemployment for specific subgroups.

	Baseline	< 35	35 − 55	≥ 55	Low wage	High wage	Male	Female
Outplacement	0.0553	0.2413	-0.2228*	0.7587*	-0.0069	0.1003	0.0189	0.0831
	(0.0647)	(0.2610)	(0.1055)	(0.3347)	(0.0934)	(0.1027)	(0.0890)	(0.1064)
Severance pay	0.1523†	-0.0846	-0.0123	1.4155**	0.0511	0.2395	0.2086	0.1331
	(0.0866)	(0.2892)	(0.1534)	(0.4434)	(0.1132)	(0.1722)	(0.1329)	(0.1326)
N	6,502	1,314	3,199	1,375	3,242	3,260	4,008	2,494

Notes: Standard errors in parentheses. All controls are included. Significance levels: $\dagger : 10\% * : 5\% ** : 1\%$. Low (high) wage is less (more) than the in-sample median wage of 2,360 euros.
Source: Own calculations using registration data from Statistics Netherlands on displaced workers.

Unemployment duration: sensitivity analysis

To check the sensitivity of my results for outplacement, I performed several different esti-
mates. First, I checked whether the effect of outplacement is duration dependent by including
interaction effects of outplacement and duration. It could for example be that outplacement
only has an effect at the beginning of the unemployment spell, but if it doesn't result in a job,
its effect quickly diminishes. On the other hand, it could be that people want to finish their
outplacement program and hence the effect only starts after a couple of months. However, I
found no evidence of a duration dependent effect.

Second, I constructed treatment and control groups using nearest neighbor propensity score
matching and excluded those not on the common support. As Table 2 shows, the group
who receives outplacement is in some respects quite different from the group who doesn't
receive outplacement, so this method could control for possible selection effects. However,
the estimates turn out to be very similar.[20]

I also check for the sensitivity of severance pay. One could worry that my results for
severance pay are related to my choice of variables. After all, it could be that it is not
so much whether you receive severance pay or not, but rather the actual amount that you
receive. To check whether these different measures matter, I ran the MPH model with two
other sets of measures. First, I simply included all five categories of severance pay: no
severance, severance unrelated to the *kantonrechtersformule* (KRF), severance with $C < 1$,
$C = 1$ and $C > 1$ (model A). In model B I've calculated the actual level of severance pay
people receive and determined categories on that basis. This can only be done for those who
receive severance related to the KRF, so the sample size is smaller. Also, I only know whether
the correction factor is equal to, larger or smaller than 1. These are the two reasons why I
chose to not use this method in the baseline estimates. I calculate severance on the basis of
the KRF, which is

$$A \text{ (weighted years of tenure)} \cdot B \text{ (gross wage)} \cdot C \text{ (correction factor)}$$

The weights are determined by age, with every year below 40 counting as 1, every year between
40 and 50 as 1.5 and every year after 50 as 2. For the correction factor I take $C = 0.5$ if
$C < 1$ and $C = 1.5$ if $C > 1$. I then determine four groups based on the calculated levels:
(1) no severance, (2) severance $< 16,514$, (3) $16,514 \leq$ severance $< 60,000$ and (4) severance
$\geq 60,000$.[21]

Table 7 reports the results. I've also included the coefficient for outplacement, and it shows
that the estimates for outplacement remain insignificant with these different measures of
severance pay. The results from both models, especially model B, suggest that the actual
level of severance pay doesn't matter as much as just receiving it. This supports the selection
effect discussed above, that those who don't receive severance pay are likely those with the
worst prospects.

Finally, since age seems to matter a lot for the effects of both outplacement and severance
pay, it could be that the results depend on the exact definition of age categories. To test
this, I ran the same MPH model as in Table 5 with different age categories: < 30, $30 - 40$,
$40 - 50$, $50 - 58$ and ≥ 58. I also ran the model with seven age intervals, starting at age 30

---

[20]This is in line with the argument in Angrist and Pischke (2008, 70), who claim that "[...] regression can be
motivated as a particular sort of weighted matching estimator, and therefore the differences between regression and
matching estimates are unlikely to be of major empirical importance."

[21]16,514 euros is the median level after excluding those without severance pay and 60,000 euros is a more or less
arbitrary point, roughly where it becomes fiscally interesting to set your severance aside, although that depends on
individual considerations.

Figure 3. : Cumulative probability of finding a job for those who experience an unemployment spell.
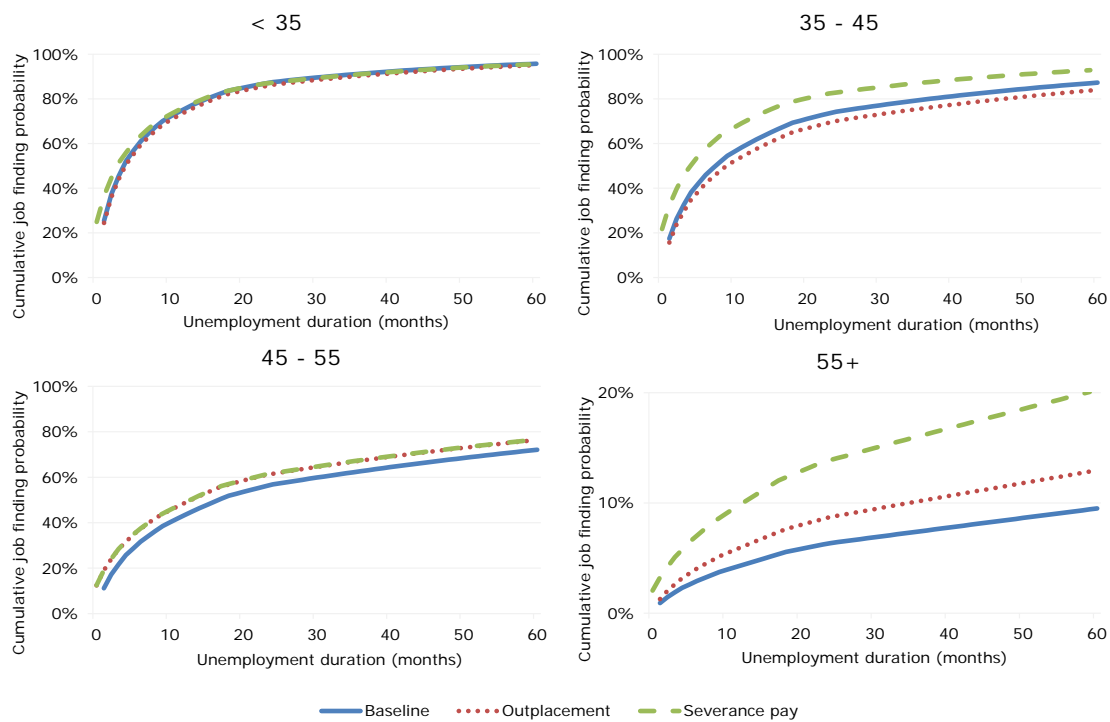
Notes: The labels on the *x*-axis refer to the beginning of the spell. I censored the graph at 40 months, since it remains constant after that period.

Table 7—: Parameter estimates for hazard rates out of unemployment estimated with different measures of severance pay.

	Baseline	Model A	Model B
Outplacement	0.0553	0.0798	0.0638
	(0.0647)	(0.0668)	(0.0698)
Severance pay	$0.1523^\dagger$		
	(0.0866)		
$C < 1$		0.3875**	
		(0.1333)	
Unrelated to KRF		0.4222**	
		(0.0891)	
$C = 1$		-0.0128	
		(0.1033)	
$C > 1$		0.3817**	
		(0.1472)	
$< 16,514$ euros			0.3402**
			(0.0898)
$[16,514, 60,000)$			0.4804**
			(0.1025)
$\geq 60,000$			0.4592**
			(0.1384)
N	6,502	6,502	5,106

Notes: Standard errors in parentheses. Significance levels: $\dagger$: 10% $*$: 5% $**$: 1%. Model A includes all five categories of severance pay. Model B includes four levels based on calculations of severance pay with the KRF. The in-sample median severance pay (when those with no severance pay are excluded) is 16,514 euros.
Source: Own calculations using registration data from Statistics Netherlands on displaced workers.

until age 60, with five year intervals in between (both are not reported). For both models the estimates for outplacement and severance pay are very similar to the baseline estimates and the effects for older workers remain. This means that my results for both outplacement and severance pay are quite robust.

C. Job quality: wages

While outplacement and severance pay might not significantly affect unemployment duration or the probability of moving from job to job, it could be that they still lead to an improved match between employer and employee. I will start with estimating the effects on wage in the new job – an important dimension of job quality – and continue to job duration below.

Given that outplacement will typically make search more efficient so that workers can be more selective with their new job, we would expect that it would lead to a higher reservation wage and a higher wage (see the evidence in Arellano (2009). Severance pay could have a similar positive effect if it relieves the liquidity constraints unemployed workers face. Table 8 shows the results from a simple OLS log-wage regression and a Heckman selection model. I take the natural logarithm of gross monthly wage in the new job as the dependent variable. The Heckman selection model takes into account the selection bias resulting from some people not having a job. It assumes a normal selection process, and I use whether someone has a partner and children as selection variables, since these likely have little or no effects on wages, but could influence the job-finding probability in multiple ways.

The coefficient on the inverse Mill's ratio is significantly different from zero, which provides

evidence of selection on wages.[22]

The OLS results suggest that both outplacement and severance pay don't affect wages. The Heckman results confirm this for outplacement, but indicate that the effect for severance pay seems to be a positive effect on the job finding probability and a negative effect on wages. The results for wage in the previous job in the Heckman model are in line with the OLS results, with a large positive effect on wage and a small negative effect on the job finding probability. This variable captures a large part of the unobserved characteristics, such as education or ability. The elasticity is high, around 0.65, indicating that, conditional upon other observed characteristics, if the previous wage was 10% higher, the current wage will be 6.5% higher.[23]

The coefficient on "job to job" indicates the impact of having moved to another job without an intervening unemployment spell. This is another indicator of worker quality, because it is likely that those who directly moved to another job have different unobserved characteristics that will also affect their wages. And indeed, moving from job to job has a large significant impact on wage in the next job.[24] Finally, the coefficients on age are also interesting. The OLS results suggest negative effects for older workers on wage, but the Heckman estimates suggest that this is mostly due to age having a large negative effect on the job finding probability. This is a clear case of selection: older workers find it more difficult to find a job, but once they find it, they are not paid any less. Tenure could be taken as an indicator of firm-specific human capital. As such, it should have a negative impact on wages and this is confirmed in both the OLS and Heckman results. As we already saw above, tenure negatively impacts the job-finding probability, possibly due to out-dated experience on the job market for those with longer tenure. But tenure also negatively affects wages, although the effect is small: a year more tenure translates into a 1% lower wage in the Heckman model.

I have also examined the effects, using the same Heckman model as before, for different age groups. I found significant positive effects of outplacement on wage for those younger than 35, where outplacement is associated with a 17% higher average wage in the new job.

D. Job quality: employment stability

Another indication of job quality is employment duration. Since outplacement makes search more efficient, it could lead to a better match, which should lead to longer employment duration of the first job. Severance pay will have similar effects if it relieves liquidity constraints. I first estimate the probability of job loss within one year using a probit model with the same control variables as above. I found no significant effects of either outplacement or severance pay (not reported). However, a probit model ignores right-censored data and also doesn't include jobs shorter than 1 year. To get a better sense of the effects of outplacement and severance on job duration, we should use hazard rate models.

Table 9 shows the estimates on the exit rate out of the first job. For this model, job duration was measured in months, rather than days. And, note that while the model is in other respects the same as the hazard model from Table 5, the interpretation of the coefficients is reversed, because we are now looking at the exit rate out of employment. The table shows that outplacement has a barely significant (at the 10% level) and small positive impact on the exit rate out of the first job. These estimates, together with the estimates on wage, suggest

---

[22]The coefficient on the inverse Mill's ratio is the covariance between the error terms of the selection and the wage equation and hence tests for independence of the two equations. In other words, it is equal to σ_{12} in equation 4.

[23]I calculate the effect for the Heckman model and take into account the small negative effect wage has on the probability of finding a job. See e.g. Cameron and Trivedi (2005, 552) for the formulas for calculating the marginal effects while taking into account selection.

[24]"Job to job" is not included in the selection equation of the Heckman model, because it almost perfectly predicts selection.

Table 8—: Parameter estimates for wage in first new job.

	Log-wage regression (OLS)	Heckman: wage (conditional upon finding a job)	Heckman: selection (probability of finding a job)
Outplacement	0.0415	0.0294	0.0586
	(0.0294)	(0.0336)	(0.0483)
Severance pay	-0.0411	-0.1104*	0.2253**
	(0.0428)	(0.0472)	(0.0648)
Individual characteristics			
Age: $35 - 45$ years	0.0134	0.0676†	-0.3035**
	(0.0284)	(0.0374)	(0.0615)
Age: $45 - 55$ years	-0.1120**	0.0835	-0.7403**
	(0.0361)	(0.0598)	(0.0630)
Age: ≥ 55 years	-0.7362**	0.2445	-1.9767**
	(0.0698)	(0.2248)	(0.0725)
Job to job	0.4978**	0.4958**	
	(0.0203)	(0.0246)	
ln(wage) in previous job	0.6551**	0.6803**	-0.0728*
	(0.0248)	(0.0214)	(0.0355)
Tenure (months) / 10	-0.0094**	-0.0056**	-0.0086**
	(0.0016)	(0.0017)	(0.0018)
Female	-0.2194**	-0.1494**	-0.2214**
	(0.0277)	(0.0327)	(0.0457)
Partner	0.0111		-0.0419
	(0.0286)		(0.0478)
Children	-0.0068		0.2062**
	(0.0253)		(0.0402)
Dutch	0.1351**	0.0657†	0.2341**
	(0.0313)	(0.0358)	(0.0468)
Constant	2.1137**	2.2294**	1.5061**
	(0.2073)	(0.1892)	(0.3165)
Inverse Mill's ratio ($\hat{\lambda}$)			-1.0610**
			(0.2338)
N	7,043	8,751	8,751

Notes: Robust standard errors in parentheses. Controls for year and quarter of inflow into unemployment, sector and firm size of old job are included. Omitted categories: *Age*: < 35 years. Significance levels: $\dagger$: $10\% * : 5\% ** : 1\%$.
Source: Own calculations using registration data from Statistics Netherlands on displaced workers.

that outplacement doesn't seem to affect the quality of the job or the match. Severance pay has no effect on the hazard rate.

There seems to be some evidence of duration dependence, because the hazard rate significantly declines after the first year. This indicates that job separations are most likely in the first year, especially the first few months. There could be at least two reasons for this. First, employers generally give new employees a trial period of one or a few months, during which they can easily fire them. Second, and probably more important, many workers take temporary jobs. Personal characteristics have the expected signs. The two indicators of worker quality, wage in the previous job and whether someone moved directly from job to job, have significant negative effect on the exit rate, particularly large for the "job to job" variable. On the other hand, with each successive age group the exit rate increases significantly relative to younger age groups. There could be at least two explanations for this. First, older workers find it much harder to find a good match on the labor market. Second, older workers only need to work a short time period until (early) retirement, although this really only holds for workers older than 55 years. Finally, having dependents, in the form of children and possibly a partner, has a significantly negative effect on the exit rate. I have repeated the analysis with the MPH model for different age groups, but found no heterogeneous effects.

V.   Conclusions

Both outplacement and severance pay are important instruments in the social plans that workers are offered when they are involved in mass layoffs with large firms. However, there has been little research on the effects of these instruments on unemployment duration and subsequent job quality. I find that both outplacement and severance pay are not associated with a higher probability of moving from job to job or a shorter unemployment spell, except for older workers. For severance pay I find that it is associated with a slightly higher exit rate out of unemployment, which likely indicates a selection effect.

Aside from job search, outplacement and severance pay could also influence job quality. I found little evidence for this however. Outplacement has no average effect on wages, although for those younger than 35 it seems to be effective. Severance pay has a small negative effect on wages. There is no effect of either severance pay or outplacement on the duration of the first job.

To recap, I find very little evidence of an average effect of outplacement on the labor market prospects of those who receive an offer when they are laid off. However, I do find some heterogeneous effects of outplacement. Older workers seem to benefit in terms of an increased chance of finding a job, whereas younger workers benefit in the form of higher wages.

Note that selection effects can't be ruled out, since especially older workers also benefit significantly from receiving severance pay. It must be kept in mind that for outplacement I estimate the effect of the offer of outplacement – the intention to treat – which means that I likely underestimate the actual effect, although it is unclear by how much. Nevertheless, my findings for outplacement are in line with many of the findings on ALMP, where most studies find small positive or zero effects of policies in many ways similar to outplacement. In addition, Van den Berg and Van der Klaauw (2006) also find that the effect of counseling is most effective for older workers, whereas they find no effects for younger workers. My results for severance pay stand in contrast to the literature, but this is likely due to selection effects.

My findings also provide evidence of some overall trends in the labor market. Older workers typically find it much harder to find a job than younger workers, although part of this could be due to early retirement by older workers or longer unemployment benefits. Attempts to include this failed due to lack of good data on early retirement schemes.

Table 9—: Parameter estimates for hazard rate models on exit out of first job.

	Proportional Hazard	Mixed Proportional Hazard
Outplacement	0.1014†	0.1199†
	(0.0557)	(0.0660)
Severance pay	0.0293	0.0743
	(0.0696)	(0.0864)
Individual characteristics		
Age: $35 - 45$ years	0.1795**	0.2431**
	(0.0572)	(0.0694)
Age: $45 - 55$ years	0.5562**	0.6883**
	(0.0648)	(0.0827)
Age: ≥ 55 years	1.1107**	1.4416**
	(0.0909)	(0.1390)
Job to job	-0.6139**	-0.7167**
	(0.0437)	(0.0539)
ln(wage) in previous job	-0.3819**	-0.5319**
	(0.0303)	(0.0506)
Tenure (months) / 10	0.0000	-0.0007
	(0.0023)	(0.0029)
Female	-0.0046	-0.0166
	(0.0441)	(0.0546)
Children	-0.1356**	-0.1857**
	(0.0432)	(0.0540)
Partner	-0.2158**	-0.2805**
	(0.0479)	(0.0615)
Dutch	-0.3004**	-0.3843**
	(0.0478)	(0.0628)
Duration dependence		
Month 3	-0.0177	-0.0102
	(0.1457)	(0.1521)
Month 4	0.0652	0.1092
	(0.1395)	(0.1483)
Month 5	-0.3447*	-0.3190*
	(0.1522)	(0.1614)
Month 6	-0.3232*	-0.2733†
	(0.1496)	(0.1604)
Month $7 - 9$	-0.2144†	-0.1140
	(0.1206)	(0.1306)
Month $10 - 12$	-0.3768**	-0.2433†
	(0.1227)	(0.1355)
Month $13 - 18$	-0.6382**	-0.4385**
	(0.1129)	(0.1290)
Month $25 +$	-1.2303**	-0.9328**
	(0.1113)	(0.1400)
Constant	-0.5231†	0.6939
	(0.3089)	(0.4553)
σ^2		0.6143
		(0.1253)
N	7,043	7,043

Notes: Standard errors in parentheses. Controls for year and quarter of inflow, sector and firm size are included. Omitted categories: *Duration*: Month 1 *Age*: < 35 years. Significance levels: $\dagger : 10\% * : 5\% ** : 1\%$.
Source: Own calculations using registration data from Statistics Netherlands on displaced workers.

A major limitation of my results is selection bias. First, my sample of firms is non-random, but since especially outplacement is typically only offered by larger firms, this might be a relatively small problem. Second, the effects of outplacement and severance on unemployment duration only hold for those people who actually experienced an unemployment spell and this group is likely to be different from those that directly move to another job. Third, workers who don't receive severance pay are very different from those who do receive severance pay: they are younger, earn much less and more likely to work in sectors that require less education, such as retail. For outplacement the heterogeneity isn't quite as substantial, but still exists, where those who don't receive outplacement earn less and work in different sectors than those who do receive outplacement. While I control for most of these factors, such as sector and wage, they could be related to unobserved characteristics which will bias my results. If those who don't receive severance pay or outplacement have worse prospects than those who do, my results are an overestimation of the actual effect. The evidence suggests that this is particularly the case for severance pay, where I find significant positive effects for those who do receive it on most dependent variables, whereas theory and previous studies suggest it should either have no or negative effects.

Policy implications

Partly in response to the crisis and growing unemployment rates, we have seen recent policy discussions on what to do with the relatively large sums of severance pay people receive and the low job finding chances of some groups of workers, such as elderly workers. The *Sociaal Akkoord*, recently agreed upon between the government and social partners, proposes to replace severance pay with a so-called "transition budget". This budget would be used to help people transit to another job, through services such as outplacement, or, if they require it, retraining. My results are relevant for this discussion. They suggest that older workers find it much harder to find a job, and that outplacement can be effective for them, both in reducing unemployment durations and increasing direct job to job transitions. For younger workers I find no effects of outplacement on their job finding probability, which is not surprising given that they typically find a job quite easily (almost 75% of those younger than 35 are estimated to have a job within 6 months and for those between 35 and 55 this was still around 65%). However, I do find that outplacement is associated with higher wages, which suggests that outplacement agencies could be succesful in tailoring their programs to the needs of different people.

This suggests that a policy similar to the one in Belgium from 2007 – 2009 might be an improvement. In Belgium outplacement is mandatory for every laid off worker 45 years or older. It is however important to carefully study the experiences in Belgium. While the policy might have had some positive effects, its design seems flawed. The relatively low level of the fine for non-complying employers, together with increased competition and little quality control has led to a reduction in principe, and possibly also quality, of outplacement services. Such effects should be taken into account when considering a similar policy.

Future research

This is one of the few studies examining the effects of outplacement and severance pay, and certainly the first doing so with data from social plans in the Netherlands. My results suggest many avenues for further research.

First and foremost, it is important to deal with selection bias. It is clear that those who receive severance pay or outplacement are selected non-random, so a different setup might be required. Simultaneous estimation of unemployment duration and subsequent wage combined

with a flexible form for the unobserved heterogeneity parameters would be a way to capture (part of) the selection based on unobserved characteristics. In addition, to estimate a treatment effect rather than the intention to treat, we need a dataset where it is clear who used the offer of outplacement. It would be even better if we could use a proper (quasi-)experimental setup, but this would require some sort of discontinuity. Perhaps the recent policy discussions on cutting down severance pay and focusing more on job-to-job support will provide an opportunity to get a better sense of the causal effects of outplacement and severance pay.

Second, I find no effects from outplacement, except for older workers. This result suggests that younger workers found it relatively easy to find a job, so that outplacement support hardly matters, whereas for older workers finding a job was much harder, and support can be helpful. It would be interesting to see if these differences hold up with more recent data taking into account the recession, when the labor market for younger workers is much worse than it was in my study period from 2003 to 2007. It would also be interesting to examine whether this also holds for other workers who find it more difficult to find a job, such as workers in declining sectors.

Third, not every outplacement program is created equally and it could matter whether someone receives a very minimal program or a more extensive program. I haven't examined such differences, but they could be important drivers of effectiveness.

Finally, I don't observe some important variables, which could lead to an omitted variable bias. These include education, but also for how long people receive unemployment benefits. The effects are currently partly captured by such variables as age (for unemployment benefits) and wage (for education), biasing the results for these variables.

References

Angrist, Joshua D., and Jörn-Steffen Pischke. 2008. *Mostly Harmless Econometrics.* Princeton University Press.

Arellano, Alfonso. 2007. "The Effect of Outplacement on Unemployment Duration in Spain." *FEDEA Working Paper.*

Arellano, Alfonso. 2009. "The effect of outplacement services on earning prospects of unemployed." *EC Working Paper Series.*

Black, Dan A., Jeffrey A. Smith, Mark C. Berger, and Brett J. Noel. 2003. "Is the Threat of Reemployment Services More Effective than the Services Themselves? Evidence from Random Assignment in the UI System." *The American Economic Review*, 93(4): pp. 1313–1327.

Boos, C., A. Nagelkerke, and T. Serail. 2001. "Sociale zekerheidsafspraken tussen werkgevers en werknemers."

Borghouts-van de Pas, Irmgardt W.C.M. 2012. *Securing job-to-job transitions in the labour market.* Wolf Legal Publishers.

Bosch, Nicole, and Bas ter Weel. 2013. "Labour-market outcomes of older workers in the Netherlands: Measuring job prospects using the occupational age structure." *De Economist*, 161(2): 199 – 218.

Cameron, A. Colin, and Pravin K. Trivedi. 2005. *Microeconometrics: Methods and Applications.* Cambridge University Press.

Card, David, Jochen Kluve, and Andrea Weber. 2010. "Active Labour Market Policy Evaluations: A Meta-Analysis*." *The Economic Journal*, 120(548): F452–F477.

Card, David, Raj Chetty, and Andrea Weber. 2007. "Cash-on-Hand and Competing Models of Intertemporal Behavior: New Evidence from the Labor Market." *The Quarterly Journal of Economics*, 122(4): 1511–1560.

De Cuyper, Peter, Anneleen Peeters, Debbie Sanders, Ludo Struyven, and Miet Lamberts. 2008. "Van werk naar werk: de markt van outplacement."

EIM. 2008. "Werk op maat: curatieve van werk naar werk activiteiten in de praktijk."

Gibbons, Robert, and Lawrence Katz. 1991. "Layoffs and Lemons." *Journal of Labor Economics*, 9(4): 351–380.

Graversen, Brian Krogh, and Jan C. van Ours. 2008. "How to help unemployed find jobs quickly: Experimental evidence from a mandatory activation program." *Journal of Public Economics*, 92(1011): 2020 – 2035.

Heckman, James J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica*, 47(1): pp. 153–161.

Heckman, James J, Robert J LaLonde, and Jeffrey A Smith. 1999. "The economics and econometrics of active labor market programs." In . Vol. 3, 1865–2097. Elsevier.

Jacobsen, Louis S., Robert J. LaLonde, and Daniel G. Sullivan. 1993. "Earnings Losses of Displaced Workers." *The American Economic Review*, 83(4): 685–709.

Jacobs, Laura, and Peter De Cuyper. 2013. "Wat na collectief ontslag? Processen en effecten van outplacement in kaart gebracht." *KU Leuven / HIVA*.

Lancaster, Tony. 1979. "Econometric Methods for the Duration of Unemployment." *Econometrica*, 47(4): pp. 939–956.

OECD. 2013. "Employment Outlook 2013."

OVAL. 2012. "BrancheMonitor 2012 Samenvatting."

The Wall Street Journal. 2009. "Outplacement Firms Struggle to Do Job."

Thomsen, Stephan. 2009. "Job Search Assistance Programs in Europe: Evaluation Methods and Recent Empirical Findings." *FEMM Working Paper No. 18*.

Tros, Frank H., C.W.G. Rayer, and E. Verhulp. 2005. "Flexibiliteit en zekerheid in sociale plannen. Naar meer activering?" *SMA*, 60(11/12): 528–538.

Uusitalo, Roope, and Jouko Verho. 2010. "The effect of unemployment benefits on re-employment rates: Evidence from the Finnish unemployment insurance reform." *Labour Economics*, 17(4): 643 – 654.

Van den Berg, Gerard J. 1994. "The Effects of Changes of the Job Offer Arrival Rate on the Duration of Unemployment." *Journal of Labor Economics*, 12(3): pp. 478–498.

Van den Berg, Gerard J. 2001. "Chapter 55 Duration models: specification, identification and multiple durations." In *Handbook of econometrics*. Vol. 5 of *Handbook of Econometrics*, , ed. J.J. Heckman and E. Leamer, 3381 – 3460. Elsevier.

Van den Berg, Gerard J., and Bas Van der Klaauw. 2006. "Counseling and Monitoring of Unemployed Workers: Theory and Evidence from a Controlled Social Experiment." *International Economic Review*, 47(3): 895–936.

Van Gaalen, Ruben. 2012. "Latere baankansen voor ontslagen jongeren." *Economische Statistische Berichten*, 97: 202–4.

Winter-Ebmer, Rudolf. 2001. "Evaluating an Innovative Redundancy-Retraining Project: The Austrian Steel Foundation." *IZA Discussion Paper No. 297.*

Appendix

A1.   Full estimation results individual effects

Table A1—: Omitted parameter estimates for models in Tables 3, 5, 8, 9.

	Probit model (Table 3)	Unemployment exit (MPH, Table 5)	Heckman wage (Table 8)	Exit rate out of first job (MPH, Table 9)
Sector (ref: Manufacturing)				
Construction	-0.5265**	0.8463**	0.1336	0.1524
	(0.1091)	(0.1716)	(0.0870)	(0.1511)
Wholesale and retail trade	-0.0136	0.0214	0.1016†	-0.2489*
	(0.0659)	(0.0974)	(0.0519)	(0.0987)
Transport and storage	0.1403	0.5294†	0.0311	-0.0630
	(0.1402)	(0.2780)	(0.1161)	(0.2288)
Accommodation and food serving	0.0669	-0.0112	0.1316	0.7982*
	(0.2053)	(0.3706)	(0.1726)	(0.3322)
Information and communication	0.2822**	-0.3051*	0.2323**	-0.2841*
	(0.0788)	(0.1265)	(0.0691)	(0.1244)
Financial institutions	0.2362	0.3298	0.0449	-0.4356
	(0.2104)	(0.3150)	(0.1685)	(2862)
Other specialised business services	-0.3565**	0.3295	0.1408*	-0.1420
	(0.0728)	(0.1007)	(0.0569)	(0.1148)
Health and social activities	-0.0440	-0.1807†	0.1054†	-0.2576*
	(0.0765)	(0.1082)	(0.0606)	(0.1179)
Other	-0.2541	-0.1768	0.1168	-0.1656
	(0.2834)	(0.2665)	(0.2314)	(0.4525)
Firm size (ref: < 50 employees)				
50 − 99 employees	0.0865	0.6498**	-0.1307	0.0345
	(0.1096)	(0.1460)	(0.0907)	(0.1581)
100 − 149 employees	0.1982†	0.6342**	-0.1167	-0.0616
	(0.1141)	(0.1594)	(0.0960)	(0.1727)
150 − 199 employees	-0.0900	0.6670**	0.1182	-0.2055
	(0.1178)	(0.1489)	(0.0932)	(0.1691)
200 − 249 employees	-0.1692	1.0151**	-0.1209	0.1391
	(0.1495)	(0.2153)	(0.1157)	(0.2075)
250 − 499 employees	0.0766	0.4307**	-0.0589	0.1361
	(0.1008)	(0.1272)	(0.0795)	(0.1447)
500 − 999 employees	0.0090	0.5143**	-0.0514	0.1129
	(0.1047)	(0.1346)	(0.0838)	(1527)
1,000 − 1,999 employees	0.0359	0.5942**	0.1682*	-0.4539**
	(0.1009)	(0.1238)	(0.0800)	(0.1522)
≥ 2000 employees	0.0313	0.3433**	-0.1201	0.0856
	(0.1014)	(0.1246)	(0.0833)	(0.1482)
Year of job loss (ref: 2003)				
2004	-0.0445	-0.0455	-0.1091	0.3456*
	(0.0985)	(0.1555)	(0.0798)	(0.1581)
2005	-0.1086	0.2284	-0.1743*	0.3243*
	(0.0981)	(0.1546)	(0.0798)	(0.1577)
2006	0.1463	0.1485	0.0941	0.0849
	(0.1025)	(0.1644)	(0.0835)	(0.1649)
2007	0.3185**	0.7058**	-0.0558	-0.1593
	(0.1083)	(0.1771)	(0.0898)	(0.1740)
Quarter of job loss (ref: Q1)				
2nd quarter	0.0345	-0.0401	-0.0050	0.0532
	(0.0525)	(0.0781)	(0.0417)	(0.0803)
3rd quarter	0.2036**	0.0844	-0.0010	0.0252
	(0.0526)	(0.0810)	(0.0428)	(0.0837)
4th quarter	0.0891†	0.2352**	-0.0299	0.0796
	(0.0520)	(0.0771)	(0.0433)	(0.0791)
N	8,751	6,502	8,751	7,043

Notes: Standard errors in parentheses, robust standard errors for the probit and wage models. Significance levels: $\dagger: 10\% *: 5\% **: 1\%$.
Source: Own calculations using registration data from Statistics Netherlands on displaced workers.