# On-the-job-training, job search and job mobility

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## 1. INTRODUCTION

This paper analyzes the impact of firm-specific training on job mobility. While many recent studies have looked at the impact of on-the-job training on level and growth of wages, the impact of training on employee turnover has received far less attention. This is surprising since it is widely acknowledged that training is a potentially important determinant not only of wages but also of labor market outcomes in general.

The theory of human capital, developed by BECKER (1964), distinguishes general and firm-specific training. By definition, the former is applicable in all firms, whereas the latter is productive only within a particular firm. This distinction has important implications for the financing of training: in its strict form, firms will be reluctant to finance general training, because workers can reap the rewards of training in any firm.<sup>2</sup> Likewise, this distinction has also consequences for job mobility. While investments in general training may induce a worker to search more actively for a new job, specific training investments may induce a worker to stay with the current firm. The role of training for labor market turnover is also highly relevant from the point of view of economic policy. With respect to specific training, the threat of termination of the employment relationship may lead to underinvestment. For obvious reasons, it is important to know to which extent specific training *reduces* job search and actual job separations. In contrast, general training could *increase* the mobility of the workers and thus enhance the flexibility

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- For a comprehensive survey on the impact of training on labor market outcomes, see BISHOP (1997).
- See Acemoglu and Pischke (1999) for some qualifications to this hypothesis in the case of imperfect labor markets.

of the labor market. Hence it is important, and highly policy-relevant, to know the quantitative impact of general training on job search behavior and actual job mobility.

In the present paper, we will study the consequences of training for job mobility and job-search. As actual job mobility is the composite of voluntary quits and involuntary layoffs, which are difficult to separate in most cases, we look also at the workers' intention to look for a new job. Workers' on-the-job search activity gives us a separate indicator for mobility intentions on the part of the worker. Furthermore, turnover and intended turnover can be seen as a main determinant in unequal treatment of males and females in terms of wages and/or job promotion.<sup>3</sup> Training on the job is certainly one measure to increase the worker's attachment with his firm. We therefore estimate the impact of training separately for males and females.

With respect to the impact on turnover, theories of on-the-job training make a clear prediction: Investment in specific human capital reduces workers' incentive to quit a job and firms' incentive to fire a worker. Investments in general training are applicable in other firms and may induce workers to search more actively for a new job. While these are robust theoretical results, there is hardly empirical evidence that supports this prediction. The reason is not only the scarcity of empirical studies as such, but also that the existing studies yield ambiguous results. Among the few papers that address the issue, Lynch (1991), Gritz (1993), and Parent (1999) find that company training reduces the probability of job separations for young U.S. workers. In contrast, Krueger and Rouse (1998) who focus on personnel files from two large U.S. companies, and Veum (1997) who uses NLSY-data conclude that trainees are equally likely to quit than non-trainees.

While most of the existing empirical evidence in the literature is based on U.S. data, the empirical evidence presented in this paper is based on data from Switzerland. Concerning the impact of training on turnover, the Swiss case may be particularly interesting because of the very low mobility of its work-force: only about 8% in our sample have changed jobs between two subsequent years. At the same time, training incidence in Switzerland is not very different from other OECD-countries (O'CONNELL, 1999).

The paper is organized as follows. In the next section, we describe the data and the estimation procedure. Section 3 presents results on the impact of training on job search and job mobility. Section 4 looks in more detail at actual worker turnover and Section 4 concludes.

<sup>3.</sup> See LAZEAR and ROSEN (1990) and WINTER-EBMER and ZWEIMÜLLER (1997) for an empirical test of this model of statistical discrimination.

<sup>4.</sup> Leuven and Oosterbeek (1999) using data from the International Adult Literacy Survey find that Swiss employers are more active in initiating and financing training as compared to employers in the U.S., Canada and The Netherlands.

#### 2. DATA AND ESTIMATION

To study the impact of training on worker turnover we use data from the Swiss Labor Force Survey (SLFS). The SLFS is a rotating panel from which we use information on the years 1991 to 1996. The survey contains detailed information about training participation of workers during the past year. In particular, we know whether the training is supported by the employer either because the training takes place during the regular working time or because the employer finances any direct costs. This allows us to distinguish between "employer-provided" and "self-financed" training. Employer-provided training will be associated with firm-specific training whereas self-financed training will be associated with general training. The panel character of the SLSF allows to trace workers' careers over time from which their job mobility can be inferred. Furthermore, the survey asks all employed workers whether they are currently looking for another job. This allows us to analyze the importance of training as a determinant of the *intended* mobility by workers.

Non-searchers Searchers N 38396 3131 Changed job next year 0.102 0.290 0.195 0.130 Firm-specific training 0.032 0.058 General training 40.0 34.5 Age (11.7)(9.8)Female 0.461 0.481 12.58 Years of schooling 12.82 (2.76)(2.94)9.41 4.85 Job tenure (9.17)(5.37)

Table 1: Summary statistics for searching und non-searching workers

The total sample used for this study consists of somewhat more than 41'000 worker-year observations.<sup>6</sup> Among these 7.5 % have been looking for a new job. In Table 1 we present separate descriptive statistics for the group of searchers and non-searchers. Searching workers are much more likely to change the job within the next year: 29 % of searchers changed the job, whereas only 10.2 % of non-searchers. Likewise, there is a clear

- See WINTER-EBMER and ZWEIMÜLLER (1999) for an analysis of wage differentials using these
  data
- 6. We can use the whole sample in our regression concerning *on-the-job-search* behavior. The regressions on *job mobility* are based on only 28'000 observations. The reason is that the construction of the job mobility variable requires information on the employment status of the previous year. For the 1991-observations (the first year in the sample) we have no information on employment status in the previous year, hence these observations cannot be used.

distinction in the provision of training: among the non-searchers firm-specific training (19.5%) is far more prevalent as compared to general training (3.2%); workers searching for a new job had less firm-specific training (only 13.0%), but more general training (5.8%). In terms of demographics, there are no big differences; but searchers are – as expected – younger and possess less job tenure with the current employer.

These data allow us to study the impact of firm-specific and general training on job search and mobility. To estimate the impact of training on job search activities, we ran probit regressions of the following type

$$y_i^* = x_i \beta + \alpha_1 F_i + \alpha_2 G_i + \varepsilon_{1i}$$

$$y_i = 1 \quad \text{if} \quad y_i^* \ge 0$$

$$y_i = 0 \quad \text{if} \quad y_i^* < 0.$$

$$(1)$$

Actual on-the-job search  $y_i$  is coded 1, if the individual is currently looking for a new job, and 0 otherwise. The latent index  $y_i^*$  measures the propensity to search on-the-job.  $x_i$  is a vector of human-capital and other control variables and  $\beta$  the corresponding vector of coefficients to be estimated. The parameters of interest are  $\alpha_1$  and  $\alpha_2$  which measure the estimated impact of firm-specific training by individual i,  $F_i$ , and of general training,  $G_i$ , respectively.  $\varepsilon_{1i}$  is an error term that captures unobserved heterogeneity and satisfies the usual assumptions.

To estimate the impact of training on actual job mobility we proceed in steps. A first model runs a probit regression with job mobility as the dependent variable.

$$z_i^* = x_i \delta + \gamma_1 F_i + \gamma_2 G_i + \eta y_i + \varepsilon_{2i}$$

$$z_i = 1 \quad \text{if} \quad z_i^* \ge 0$$

$$z_i = 0 \quad \text{if} \quad z_i^* < 0.$$
(2)

Mobility  $z_i$  is coded 1 if the individual changes jobs within one year after the interview date, and  $\delta$ ,  $\gamma_1$ , and  $\gamma_2$  measure the impact of  $x_i$ ,  $F_i$ , and  $G_i$  on the propensity to move to another employer as measured by the probit index  $z_i^*$ . Obviously, an actual move between jobs could also be affected by the search behavior of workers, so equation (2) includes the search indicator  $y_i$  as an explanatory variable. To account for differences in the impact of training on actual job mobility between searching and non-searching individuals, we allowed for interaction effects between training indicators F and G on the one hand, and the search indicator g on the other hand.

An obvious problem with this procedure is that unobserved factors that affect the worker's decision to move are likely to be correlated with unobserved factors that affect the worker's decision to search for a new job. In other words  $\varepsilon_{1i}$  and  $\varepsilon_{2i}$  are likely to be correlated. To account for this problem, a second model estimates the probability of moving to a new employer using a bivariate probit model with sample selection. This estimates the probability of moving to a new employer conditional on the outcome of the

search decision. This model accounts for possible correlation of the unobserved heterogeneity terms  $\varepsilon_{1i}$  and  $\varepsilon_{2i}$ . We estimated this model separately for job-searchers and for non-searchers which yields two sets of estimated coefficients. The probability that individual i is moving to another job is given by

$$Pr(z = 1|y = 1) = \Phi_2(x\delta + \gamma_1 F_i + \gamma_2 G_i, x\beta + \alpha_1 F_i + \alpha_2 G_i; \rho) / \Phi(x\beta + \alpha_1 F_i + \alpha_2 G_i)$$
(3)

while the probability that a non-searching indivual is moving to another job is given by

$$\Pr(z=1|y=0) = \Phi_2(x\delta + \gamma_1 F_i + \gamma_2 G_i, -x\beta - \alpha_1 F_i - \alpha_2 G_i; \rho) /$$

$$(1 - \Phi(x\beta + \alpha_1 F_i + \alpha_2 G_i))$$

$$(4)$$

where  $\Phi$  and  $\Phi_2$  denote the cumulative density of, respectively, the univariate and the bivariate standard normal distribution, and  $\rho$  is the correlation coefficient of error terms  $\varepsilon_{1i}$  and  $\varepsilon_{2i}$ .

# 3. THE IMPACT OF GENERAL AND SPECIFIC TRAINING ON JOB SEARCH AND JOB CHANGES

Table 2 presents estimates for the impact of general training and specific training on onthe-job search and shows the marginal impact of a change in the respective training variable (from 0 to 1), evaluated at the means of the control variables. The results show a clear picture. The probability that a currently employed worker looks for another job is significantly lower, if this worker underwent firm-specific training within the year prior to the survey. Also the magnitude of the training-effect is sizeable, given the overall onthe-job search activities of Swiss workers. The probability of job-search for trainees is 1.6 percentage points lower than the corresponding value for non-trainees. Given that 7.5 % of all individuals in our sample engage in on-the-job search, this amounts to a decrease in the search probability by more than 20%. We also estimated the probit equation (1) separately for men and for women. Interestingly the impact is somewhat larger for women than for men. It could be that due to the shorter expected period of the work life of women a given amount of firm-specific training could have a stronger impact on the labor market outcomes of females as compared to males. Note, however, that women have also a lower training incidence than men. In sum, it seems that employer-provided training is a good personnel policy to keep workers from searching for another job and thus to tie qualified workers closer to the firm.

General training activities also have a significant and strong impact on on-the-job search activities of Swiss workers. However, while firm-specific training decreases workers' on-the-job search activities, general training increases the probability of search. In absolute value, the impact of general training is even stronger than the impact of firm-

specific training. Participation in general training increases the probability of job search by 2.8 percentage points or 37% (evaluated at the mean of the dependent variable). It seems that workers who invest in general training are looking for a new job to apply their new proficiencies efficiently. There are no important gender differences in the impact of general training on on-the-job-search activities.

	On-the-job search (0,1)		
	All	Men	Women
Firm-specific training (0,1)	-0.016 (0.003)	-0.013 (0.003)	-0.019 (0.004)
General training (0,1)	0.028 (0.007)	0.027 (0.010)	0.027 (0.010)
Pseudo R <sup>2</sup>	0.077	0.093	0.065
Mean of LHS variable	0.075	0.073	0.078
N	41527	22309	19218

Table 2: The impact of training on on-the-job search

Notes: The coefficients are marginal effects from Probit regressions, standard errors are in parentheses. Additional controls include: gender, age, age<sup>2</sup>, tenure, tenure<sup>2</sup>, years of education, nationality, family status, apprentice certificate, part-time dummy, overtime dummy, as well as 3 firm-size, 2 city size, 2 job hierarchy, 9 industry dummies and 5 year fixed effects.

These results are not inconsistent with the traditional human capital explanation of the consequences of training for employee turnover. If workers share some of the *specific* investments their incentive to quit is lower. This should show up in lower search activities of trainees. If the training investment is *general*, we would not expect any significant impact on employee turnover. The positive correlation of general training in Table 2 could be the result of reverse causation: workers, who intend to move, invest in general human capital to improve their position as a searcher on the external labor market. In order to mitigate this reverse-causation problem, we substituted the incidence of training in the last period by the incidence of training in period t-2. The qualitative results were practically the same. Another explanation for the positive impact of general training on on-the-job search is the possibility of wage raises: Workers are supposed to be rewarded according to their outside opportunities, which should increase with general training. In order to get or even know about these outside offers, the workers have to increase their on-the-job search.

While we find an unambiguous impact of training on workers' search behavior, the evidence is less strong for *actual job separations*. The results in Table 3, Panel A, indicate that, for the whole sample, firm-specific training induces significantly lower mobility of 0.08 percentage points, which amount to a 7% reduction in the separation probability. Again, this is in line with theories of specific investment. Interestingly, the effect is only

7. Detailed results can be received from the authors upon request.

significant for men but not for women. Individuals engaged in general training are more likely to leave the firm for a new employer. However, the effect is significant only for women but not for men. Furthermore, the results in Panel A may give an erroneous picture as the interesting variables are both measured as events that took place during the year prior to the interview. In order to make sure that the training event took place before the job change Panel B regresses the incidence of specific and general training in the second-last year before the interview. Here it turns out that all training variables are highly significant and are also larger in size than before, in particular for general training. In fact, general training has an effect on job changes that is of equal (absolute) size than on job search (see Table 2 above); the same holds with respect to firm-specific training: here the effect on job search is somewhat higher than the effect on actual job changes. Interestingly, there continue to be strong differences in the training effect between men and women, but now with respect to general training whereas no such differences show up with respect to specific training.

Table 3: The impact of training on changing the job

Panel A	Worker changes job next year (0,1)		
	All	Men	Women -0.005 (0.005) 0.015 (0.006)
Firm-specific training (0,1)	-0.008	-0.009	-0.005
Current year	(0.003)	(0.003)	(0.005)
General training (0,1)	0.009	0.003	0.015
Current year	(0.006)	(0.008)	(0.006)
Pseudo R <sup>2</sup>	0.195	0.202	0.192
Mean of LHS variable	0.116	0.099	0.135
N	28100	15159	12941

Panel B	Worker changes job next year (0,1)		
	All	Men	Women
Firm-specific training (0,1)	-0.011	-0.011	-0.010
Last year	(0.003)	(0.003)	(0.005)
General training (0,1)	0.027	0.020	0.032
Last year	(0.008)	(0.010)	(0.012)
Pseudo R <sup>2</sup>	0.196	0.202	0.192
Mean of LHS variable	0.116	0.099	0.135
N	28100	15159	12941

As we cannot say, in which firm the training took actually place, we cannot rule out that training occurred already in the new firm for job changers.

### 4. TRAINING AND JOB CHANGES: THE ROLE OF SEARCH ACTIVITIES

Our analysis of the impact of training on job mobility did not account for the search behavior of workers. However, we have seen that job search behavior is strongly affected by training incidence and, for obvious reasons, we should also expect a significant impact of search activities on actual job separation. The object of this section is to disentangle the direct turnover effects of training (that works irrespective of the search behavior of workers) from the indirect one (that works through the workers' choice to search for a new job). Note that the indirect effect could be associated with the effect of training on the worker's intention to stay with or separate from his or her current employer. The direct effect could be associated with the effect of training on the firm's choice to terminate an employment relationship. While such an interpretation is suggestive, we have to be cautious. For instance, the search for a new employer could be triggered by the worker's anticipation that he will be fired. Similarly, job changes without preceding search could be the outcome of attractive job offers that were not anticipated by the worker. As the data do not allow us to identify observed job separations as quits or layoffs, this issue cannot be resolved. While it is important to keep this in mind, the indirect effect will most likely reflect workers' choices, while the direct effect will predominantly reflect firms' choices.

In order to disentangle the direct from the indirect effect, Table 4 analyzes the role of training on job mobility, but additionally controls for previous search activities of the workers. All explanatory variables are measured during the *second-last* year before the interview date, whereas the dependent variable is measured during the year prior to the interview date. This allows us to study how previous job search behavior and training incidence affect *subsequent* mobility choices. The results in Panel A of Table 4 indicate that, unsurprisingly, previous job search activities strongly affect current job separations. Moreover, the effect is quantitatively strong. The separation probability on-the-job-searchers is 7.1 percentage points higher (or about 69 %) higher than the separation probability of non-searchers. Moreover, we find that the estimated effects of both general and specific training is as in the previous Table 3. In other words, accounting for previous search activities, i.e. the direct effect, does not seem to affect the magnitude of the training effect on actual job separations.

Panel B of Table 4 tests for differences in the training effect on actual job separations for previous searchers and non-searchers. This is captured by an interaction effect between the training dummies (general and specific) on the one hand, and the search variable on the other hand. It turns out that, with respect to specific training, separation behavior seems to be different. For previous non-searchers, the specific training is associated with a significantly lower separation probability (as indicated by the significantly negative coefficient of the specific training dummy). For previous on-the-job-searchers, the total effect is given by the sum of the training variables and the interaction effect between training and previous search. In the case of specific training for previous job-searchers, the interaction effect neutralizes the specific training effect. For general

training, the results in Panel B of Table 4 indicate no particular differences between previous searchers and non-searchers. Again, the effect for non-searchers is measured by the general training dummy, whereas the effect for previous searchers is measured by the general training dummy plus the interactions effects of training with previous search. For the whole sample, the former coefficient is significantly positive, whereas the latter effect is nil, hence it seems that there are no differences in *general* training effects between searchers and non-searchers. Point estimates differ between men and women, but none of the coefficients is significant.

Table 4: The impact of training on on-the-job search: the direct impact of search activity

December 1. A	Worker changes job next year (0.1)		
Panel A	All	Men	Women
Searched last year	0.071	0.064	0.078
·	(0.007)	(0.009)	(0.011)
Firm-specific training (0.1)	-0.011	-0.011	-0.010
Last year	(0.003)	(0.004)	(0.005)
General training (0.1)	0.025	0.018	0.031
Last year	(0.008)	(0.010)	(0.012)
N	28066	15141	12925

Daniel D	Worker changes job next year (0,1)			
Panel B	All	Men	Women	
Searched last year	0.065	0.061	0.069	
	(0.007)	(0.010)	(0.011)	
Searched last year * Firm specific training	0.026	0.013	0.045	
	(0.014)	(0.015)	(0.026)	
Searched last year * General training	0.000	-0.008	0.011	
	(0.017)	(0.018)	(0.030)	
Firm-specific training (0,1) Last year	-0.013	-0.012	-0.014	
	(0.003)	(0.004)	(0.006)	
General training (0.1)	0.025	0.020	0.029	
Last year	(0.009)	(0.011)	(0.013)	
N	28066	15141	12925	

The problem with the estimates in Table 4 is that the search decision may itself be determined by factors that also affect actual job separations. In other words, such confounding factors may bias our estimates of the impact of training for searchers and non-searchers in Table 4. In order to test for this possibility we estimated a bivariate probit model with sample selection effects that accounts for the endogeneity of the job-search decision. We estimated this model separately for searcher and non-searchers, resulting in different training coefficients for the two groups. Table 5 reports the results.

Table 5: Job changes for previously searching and non-searching workers

Panel A	Selection: Dependent var	Worker has <i>not</i> searched for a new job at the interview date Worker changes job next year (0,1)				
Sample	Identifying Restriction	Firm-specific training, last year (0,1)	General training, last year (0,1)	N (Uncensored)	Wald γ <sup>2</sup>	
All	temporary job	-0.011 (0.003)	0.021 (0.005)	28066 (26021)	1888	
Men	n	-0.010 (0.003)	0.017 (0.008)	15141 (14084)	972.0	
Women	H	-0.012 (0.005)	0.023 (0.008)	12925 (11937)	911.5	
All	overtime	-0.011 (0.003)	0.021 (0.005)	28066 (26021)	1887	
Men	u	-0.010 (0.003)	0.017 (0.008)	15141 (14084)	969.4	
Women	tt .	-0.011 (0.005)	0.023 (0.008)	12925 (11937)	911.5	
All	job hierarchy	-0.011 (0.003)	0.021 (0.005)	28066 (26021)	1891	
Men	·	-0.010 (0.003)	0.017 (0.008)	15141 (14084)	990.9	
Women	u	-0.012 (0.005)	0.023 (0.008)	12925 (11937)	912.5	
Panel B	Selection: Dependent var	Worker has searched for a new job at the interview date Worker changes job next year (0,1)				
Sample	Identifying Restriction	Firm-specific training, last year (0,1)	General training, last year (0,1)	N (Uncensored)	Wald $\chi^2$	
All	temporary job	0.019 (0.023)	0.054 (0.041)	28066 (2045)	142.7	
Men	н	0.004	0.037	15141	84.2	
Women		(0.040)	(0.053)	(1057)	02	
Women	H	0.049 (0.044)	(0.053) 0.065 (0.066)		157.1	
All	" Overtime	0.049	0.065	(1057) 12925		
		0.049 (0.044) 0.020	0.065 (0.066) 0.053	(1057) 12925 (988) 28066	157.1	
All		0.049 (0.044) 0.020 (0.023) 0.004	0.065 (0.066) 0.053 (0.039) 0.037	(1057) 12925 (988) 28066 (2045) 15141	157.1	
All Men	Overtime	0.049 (0.044) 0.020 (0.023) 0.004 (0.040) 0.052	0.065 (0.066) 0.053 (0.039) 0.037 (0.053) 0.064 (0.066)	(1057) 12925 (988) 28066 (2045) 15141 (1057) 12925	157.1	
All Men Women	Overtime	0.049 (0.044) 0.020 (0.023) 0.004 (0.040) 0.052 (0.048)	0.065 (0.066) 0.053 (0.039) 0.037 (0.053) 0.064 (0.066)	(1057) 12925 (988) 28066 (2045) 15141 (1057) 12925 (988) 28066	157.1 129.6 71.8	

Notes: The coefficients are marginal effects from bivariate Probit regressions with sample selection. Same control variables as in previous Tables for the search equation (= selection equation). Same control variables for the mobility equation (= outcome equation), except for the identifying restriction indicated in column 2 of the present Table.

To identify the effects it is necessary that restrictions in the job mobility equation have to be imposed. More precisely, there has to be at least one variable which appears in the selection equation (in our case: the job-search equation) that does not appear in the outcome equation (in our case: the job mobility equation). While economic theory does not give a clear guidance on such restrictions, we proceeded in a pragmatic way. We used three different variables that turned out to be consistently insignificant in our previous job mobility regressions: (i) whether or not an individual holds a temporary job; (ii) whether or not an individual works overtime; and (iii) the job hierarchy status of the employee (2 variables). We used these three exclusion restrictions alternatively to estimate our sample selection probits. The results in Table 5 show very robust results, which do not depend on the particular identifying restriction we impose.

Panel A of Table 5 reports the results of the bivariate probit with sample selection for the non-searchers. The non-searchers are the larger group (more than 90 % of the observations) and are treated as non-censored observations in this bivariate probit regression. The results are in line with our previous estimates. Specific training reduces the probability of a job separation, whereas general training activities increase the separation probability. Quantitatively, the estimated effects do not differ across the different specifications (i.e. across models with different identifying restrictions), which is reinsuring for the robustness of the results. We also observe that there are no big differences between men and women. Specific training reduces the separation probability of non-searchers by somewhat more than 1 percentage point. In contrast, general training increases the separation probability of non-searchers by about 2 percentage points.

Panel B of Table 5 reports the results for previous on-the-job-searchers. Here the results are different. Without exception, all training coefficients are insignificant. Neither firm-specific training nor general training has a significant impact on actual job mobility. In other words, there is no *direct* effect of training on job mobility. However, the results clearly indicate that there is a strong effect of training on on-the-job-search behavior. Hence training affects job mobility of on-the-job-searchers because training affects job-search-behavior as such. General training increases on-the-job-search activities whereas firm-specific training reduces such activities. In sum, general (specific) training activities lead workers to search more (less) intensively for a new job. Actual mobility choices, however, are not significantly affected by training incidence.

Taken together, our results indicate that the absence of firm-specific training increases search intensity for a new job considerably. Actual job moves are affected by firm-specific training, but such a direct effect exists only for workers that have not searched previously. How can this puzzle be explained? One interpretation is that workers who have changed jobs without preceding search are primarily laid-off workers. The estimated reduction in the separation probability measures the reluctance of firms to fire workers in whom they have invested. Mobile workers with previous search, on the other hand, are predominantly workers who have quit their job. Hence it is not surprising that firm-specific training has no direct effect on separations but affect actual job changes only indirectly via an increase in search activities. While this explanation seems most plausible to

us, a full examination of this hypothesis would require information on the reasons for the termination of the employment relationship, which is in general very difficult to get. Also with respect to *general training*, there are differences between previous searchers and non-searchers. While we find consistently positive effects of general training on job mobility for previous non-searchers, the point estimates for previous searchers are higher in all cases, but generally insignificantly so – which could be caused by the much lower number of general trainees in our sample. Again, for previous searchers, the indirect effect is at work. General training increases search-activities for previous searchers and an increase in search significantly raises the likelihood to change jobs.

### 5. CONCLUSIONS

Whereas economists are often lamenting about insufficient flexibility of workers and the labor market in general, high flexibility also imposes costs on employers. Voluntary quits on the part of workers cause high turnover costs for firms; they have to recruit new workers, have to face the costs of idle positions for some time, have to retrain the worker and provide a social climate which makes the cooperation of new working groups possible. Therefore, firms might want to tie their workers to the firm with higher wages and the opportunity to learn on-the-job. Human capital theory offers some simple insights into the impact of training. Whereas highly specialized "firm-specific" training should lead to reduced quits of the workforce, general training could easily lead to higher quits.

This paper studies the impact of training on employee turnover in Switzerland. We find, in fact, that the predictions of human capital theory are confirmed: workers, who had firm-specific training last year, search less for a new job and quit their jobs less often. The opposite is true for general training, the effect thereof being numerically somewhat larger. Workers who had no quit intention a year ago, the provision of firm-specific training *reduced*, and that of general training *increased*, actual quit behavior a year ahead. Effects are less pronounced for the case of workers, who had already quit intentions in the past.

In sum, our results clearly indicate that on-the-job firm-specific training provision on the part of the firm can have a substantial impact on quit behavior of the workforce, which might be a cost-effective way to influence detrimentally high worker turnover. General training, on the other hand, might considerably increase the willingness and/or the possibilities on the part of the workers to change their jobs.

#### REFERENCES

- ACEMOGLU, DARON and JÖRN-STEFFEN PISCHKE (1999), "Beyond Becker: Training in Imperfect Labour Markets", *Economic Journal*, 109, p. F112-F142.
- BECKER, GARY S. (1964), Human Capital, Chicago.
- BISHOP, JOHN H. (1997), "What We Know about Employer-Provided Training: A Review of the Literature", in: Solomon W. Polacheck and John Robst (eds.), *Research in Labor Economics*, 16, p. 19–87.
- BUNDESAMT FÜR STATISTIK (1997), Weiterbildung in der Schweiz, Bern.
- GRITZ, MARK R. (1993), "The Impact of Training on the Frequency and Duration of Employment", *Journal of Econometrics*, 57, p. 21–51.
- KRUEGER, ALAN and CECILIA ROUSE (1998), "The Effect of Workplace Education on Earnings, Turnover, and Job Performance", *Journal of Labor Economics*, 16, p. 61–94.
- LAZEAR, EDWARD and SHERWIN ROSEN (1990), "Male-Female Wage Differentials in Job Ladders", *Journal of Labor Economics*, 8, p. 106–123.
- LEUVEN, EDWIN and HESSEL OOSTERBEEK (1999), "Demand and Supply of Work-Related Training: Evidence from four Countries", in: Solomon W. Polacheck and John Robst (eds.), Research in Labor Economics, forthcoming.
- LYNCH, LISA M. (1991), "The Role of Off-the Job vs. On-the-Job Training for the Mobility of Young Women Workers", *American Economic Review*, 81, p. 151–156.
- O'CONNELL, PHILIP J. (1999), "Adults in Training: An International Comparison of Continuing Education and Training", *mimeo*, Center for Educational Research and Innovation, OECD, Paris.
- PARENT, DANIEL (1999), "Wages and Mobility: The Impact of Employer-Provided Training", *Journal of Labor Economics*, 17, p. 298–317.
- VEUM, JONATHAN R. (1997), "Training and Job Mobility among Young Workers in the United States", *Journal of Population Economics*, 10, p. 219–233.
- WINTER-EBMER, RUDOLF and JOSEF ZWEIMÜLLER (1997), "Unequal Assignment and Unequal Promotion in Job Ladders", *Journal of Labor Economics*, 15, p. 43–71.
- WINTER-EBMER, RUDOLF and JOSEF ZWEIMÜLLER (1999), "Firm-Size Wage Differentials in Switzerland: Evidence from Job-Changers", *American Economic Review* (Papers and Proceedings), 89, p. 89–93.

#### **SUMMARY**

This paper analyzes the impact of formal training on worker mobility. Using data from the Swiss Labor Force Survey, we find that both general and specific training significantly affects on-the-job search activities. The effect of training on actual job mobility differs between searchers and non-searchers. In line with human capital theory, we find that specific (general) training has a negative (positive) impact on job mobility for previous non-searchers. For individuals who have been looking for a new job, the impact of (general and specific) training works via the increased likelihood of an actual change due to search, while there is no direct effect of training on actual job moves.

#### ZUSAMMENFASSUNG

Wirkt sich betriebliche Weiterbildung positiv auf die Firmentreue von Mitarbeitern aus? In diesem Aufsatz benutzen wir Daten der Schweizerischen Arbeitskräfteerhebung (SAKE) und unterscheiden zwischen privat- und firmenfinanzierter Weiterbildung. Die Auswirkungen auf die Verbleibewahrscheinlichkeit in der Firma unterscheidet sich zwischen Personen, die schon nach einer neuen Stelle gesucht haben oder nicht. Privat finanziertes (firmenfinanziertes) Training erhöht (reduziert) bei Nicht-Suchenden die Wahrscheinlichkeit, die Firma zu verlassen. Bei Personen, die angeben, bereits nach einem neuen Job zu suchen, gibt es keinen direkten Einfluss der Weiterbildung auf den Jobwechsel, aber einen indirekten Effekt über die Suchentscheidung.

### RÉSUMÉ

Cet article étudie l'effet de la formation professionelle formelle sur la mobilité des travailleurs. En utilisant des données de l'Enquête Suisse sur la Population Active (ESPA) nous constatons que, et la formation générale, et la formation spécifique influent d'une manière significative sur les activités de recherche de travail. L'effet de la formation sur la mobilité entre deux postes de travail est différent selon que les personnes concernées sont ou non à la recherche d'un nouvel emploi. En accord avec la théorie du capital humain, nous constatons que la formation spécifique (générale) a un effet négatif (positif) sur la mobilité entre différents postes des personnes qui auparavant ne cherchaient pas. Pour les individus déjà à la recherche d'un nouvel emploi, la probabilité d'un changement de poste est dû à cette recherche et non à un effet direct de la formation (générale ou spécifique) sur la mobilité.