



Institute for Empirical Research in Economics
University of Zurich

Working Paper Series
ISSN 1424-0459

Working Paper No. 37

**Firm-Specific Training: Consequences for Job
Mobility**

Josef Zweimüller and Rudolf Winter-Ebmer

March 2000

Firm-specific Training: Consequences for Job Mobility

Josef Zweimüller

University of Zürich, CEPR, London and IZA, Bonn

and

Rudolf Winter-Ebmer

University of Linz, WIFO, Vienna, CEPR, London and IZA, Bonn

March 2000

Abstract:

This paper analyzes the impact of formal training on worker mobility. Using data from the Swiss Labor Force Survey, we find that on-the-job search activities and, to a smaller extent, actual job separations are significantly affected by both employer-provided and general training. Moreover, while the separation probability of searching workers is strongly affected by previous firm-provided training, no such effect shows up for non-searchers. This is consistent with the hypothesis that workers bear most of the cost of specific training.

JEL: J63, J24

Key words: firm-specific training, on-the-job-search, turnover.

Thanks to Johannes Binswanger for excellent research assistance, to Steve Pischke and seminar participants at Linz for valuable comments. This research has been supported by the Austrian Central Bank's Jubilee Fund (#6819/2) and by the European Commission under the TSER program PL980182 for the PURE project. The views in this paper are not necessarily those of the associated institutions.

1. Introduction

This paper analyzes the impact of firm-specific training on job mobility. While many recent studies have looked at the impact of employer-provided training on level and growth of wages, the impact of training on employee turnover has received far less attention.¹ This is surprising since it is widely acknowledged that training is a potentially important determinant not only of wages but also of other labor market outcomes. 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 decisions. 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.² 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. While this is a robust theoretical result, 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

¹ For a comprehensive survey on the impact of training on labor market outcomes, see Bishop (1997).

² See Lazear and Rosen (1990) and Winter-Ebmer and Zweimüller (1997) for an empirical test of this model of statistical discrimination.

between two subsequent years. At the same time, training incidence in Switzerland is not very different from other OECD-countries (O'Connell, 1999).³

The paper is organized as follows. In the next section, we describe the data and the estimation procedure. Section 3 presents the results and Section 4 concludes.

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 1996.⁴ 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.

The total sample used for this study consists of somewhat more than 36,000 worker-year observations. Among these 35.7 % have participated in occupational training (38.8 % of all men 32.0 % of women), of which 29.5 % received employer-provided training and 6.7 % participated in training-measures that were not supported by the employer.⁵ From the whole sample 8 % (6.8 % of all male employees, 9.5 % of all females) changed jobs between the current and the subsequent survey year, and of which 7.7 % (7.5 % for males, 8.1 % for females) were currently looking for another job while employed.

These data allow us to study the impact of firm-specific and general training on (i) workers' on-the-job search and (ii) actual job mobility of workers. To estimate the impact of training on these variables, we ran probit regressions of the following type

$$(1) \quad y_i = x_i \beta + \alpha_1 F_i + \alpha_2 G_i + \varepsilon_i$$

³ 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.

⁴ See Winter-Ebmer and Zweimüller (1999) for an analysis of wage differentials using these data.

⁵ For a detailed analysis of the incidence of training in Switzerland, see Bundesamt für Statistik (1997).

The outcome y_i is a dummy variable in the regressions that analyze on-the-job search behavior and workers' actual job separations. On-the-job search is coded 1, if the individual is currently looking for a new job, whereas mobility is coded 1 if the individual changes jobs within one year after the interview date. x_i is a vector of human-capital and other control variables and β the corresponding vector of coefficients to be estimated. The parameters of interest are α_1 and α_2 which measure the estimated impact of firm-specific training by individual i , F_i , and of general training, G_i , respectively. ε_i is an error term that satisfies the usual assumptions.

3. Results

Table 1 shows the results of the probit analysis for on-the-job search (Panel A of Table 1) and for job changes (Panel B). Table 1 displays the marginal impact of a change in the training variable (from 0 to 1), evaluated at the means of the control variables. As far as workers' on-the-job search activities are concerned, 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 on-the-job search activities of Swiss workers. The probability of job-search for trainees is 1.8 % lower than the corresponding value for non-trainees. This compares to a fraction of 7.7 % on-the-job searchers in our sample. Interestingly, the impact is 40 % larger for women than for men. This higher effect of firm-specific training for women could be caused by their somewhat lower training incidence. Nonetheless it seems that training is a good personnel policy to tie qualified female workers closer to the firm.

Table 1

Also general training activities 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 somewhat stronger than the impact of firm-specific training. Workers who invest in general training are looking for a new job to apply their new proficiencies efficiently. There are no important gender differences.

These results are not inconsistent with the traditional human capital explanation of the consequences of firm-specific 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 1 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 these 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.⁶ 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 clear and less strong for actual job separations. In line with theories of specific investment we find for the whole sample, that firm-specific training induces lower mobility. Compared to the above results on on-the-job search behavior, the effect of training on actual separations is quantitatively smaller and significant only for women, but not for men. Furthermore, we find no significant impact of general training.

Taken together, our results indicate that the absence of firm-specific training increases search intensity for a new job considerably, but actual moving less so. How can this puzzle be explained? It seems plausible that the impact of firm-specific training on search behavior must be stronger than the one on moving, because not all searchers can actually find a suitable new job – given that layoff rates in Switzerland are low. Moreover, only insofar as rents from this firm-specific training are shared between the employer and the employee, there is an incentive for the worker to stay with the current firm.

Table 2

One possibility to shed more light on the different impact of firm-specific training on on-the-job search and mobility is to look at differences in the training-impact between job quitters and workers laid off involuntarily. Why should the cause for the termination of the contract be important for the impact of firm-specific training on job mobility? The way in which costs

⁶ Detailed results can be received from the authors upon request.

and benefits of firm-specific training are shared between worker and employer (Hashimoto, 1981) will have consequences on turnover decisions. A firm bearing most of the training costs (and its benefits) will think twice before laying off recently trained workers. In this situation voluntary quit behavior of workers should not change much as a result of training. Thus, the impact of firm-specific training on voluntary quits and layoffs can give us some hints on the applied sharing rules.

Unfortunately, our data contain no distinction between quits and layoffs. Instead we use the information on worker's search activities as an indication for voluntary quits. When the sample is divided according to job-search behavior, we get very clear results: Workers who have searched for a new job at the interview date, separation from the job within the next year is drastically reduced if they benefited from firm-specific training, especially so for women. The impact of firm-specific training on those who did not search in the past, is much lower and only significant for women. If we loosely interpret the mobility of searchers as voluntary quits and the mobility of non-searchers as layoffs, we can conclude that the benefits of firm-specific training are predominantly collected by the workers. The lower impact of firm-specific training on job mobility – as opposed to job-search behavior – can, therefore, be explained by the higher impact on voluntary quits, which shows up already in the job-search decision.⁷

4. Conclusions

This paper studies the impact of training on employee turnover in Switzerland. We find that firm-specific training leads to a significant reduction in on-the-job search activities of Swiss workers and a weaker but still significant impact of firm-specific training on actual job separations. Workers previously enrolled in general training have a higher probability of on-the-job search but such training has no impact on actual job separations. Moreover, we find that the separation probability of a searching worker is strongly affected by previous firm-specific training, whereas the separation probability of a non-searcher is not affected by firm-specific training. This result is consistent with the hypothesis that workers pay most of the cost of firm-specific training.

⁷ The fact that firm-specific training has no – or no big – negative impact on firm-initiated separations can also be explained by a signaling argument. Firm-specific training can serve as a information-revelation device to distinguish between competent and less competent workers, which may lead to laying off the incompetent ones.

Table 1: The impact of training on on-the-job search and job changes⁸

Panel A:	On-the-job search (0,1)		
	All	Men	Women
Firm-specific training (0,1)	-0.018 (0.003)	-0.015 (0.003)	-0.021 (0.004)
General training (0,1)	0.027 (0.007)	0.027 (0.010)	0.025 (0.010)
Pseudo R ²	0.077	0.093	0.065
Mean of LHS variable	0.075	0.073	0.078
N	41527	22309	19218

Panel B:	Worker changes job next year (0,1)		
	All	Men	Women
Firm-specific training (0,1)	-0.005 (0.002)	-0.003 (0.002)	-0.009 (0.004)
General training (0,1)	0.001 (0.004)	-0.001 (0.005)	0.004 (0.006)
Pseudo R ²	0.157	0.167	0.145
Mean of LHS variable	0.078	0.067	0.091
N	41585	22338	19247

⁸ The coefficients are marginal effects from Probit regressions, standard errors are in parentheses. Additional controls include: gender, age, age², tenure, tenure², 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.

Table 2: Job changes for previously searching and non-searching workers⁹

Panel A:			
Sub-Sample:	Worker has <i>not</i> searched for a new job at the interview date		
Dependent var.:	Worker changes job next year (0,1)		
	All	Men	Women
Firm-specific training (0,1)	-0.003 (0.002)	-0.001 (0.002)	-0.005 (0.003)
General training (0,1)	0.003 (0.004)	-0.0002 (0.005)	0.006 (0.007)
Pseudo R ²	0.158	0.169	0.145
Mean of LHS variable	0.068	0.058	0.081
N	38396	20683	17713

Panel B:			
Sub-Sample:	Worker has searched for a new job at the interview date		
Dependent var.:	Worker changes job next year (0,1)		
	All	Men	Women
Firm-specific training (0,1)	-0.050 (0.019)	-0.031 (0.025)	-0.067 (0.028)
General training (0,1)	-0.042 (0.025)	-0.039 (0.035)	0.045 (0.034)
Pseudo R ²	0.098	0.092	0.116
Mean of LHS variable	0.194	0.176	0.213
N	3131	1626	1505

⁹ The coefficients are marginal effects from Probit regressions. Same control variables as in Table 1.

References

- Acemoglu, Daron and Jörn-Steffen Pischke (1999), Beyond Becker: Training in Imperfect Labour Markets, *Economic Journal* 109, F112-F142.
- Bänziger, Annik (1999), *Weiterbildung und Geschlechtsspezifische Lohndifferenziale, Eine Empirische Analyse für die Schweiz*, Dissertation, University of Zurich.
- Barron, John M., Mark C. Berger, and Dan A. Black (1998), "Do Workers Pay for On-the-Job Training?" *Journal of Human Resource* 34, 235-252.
- Barron, John M., Dan A. Black, and Mark A. Loewenstein (1989), "Job Matching and On-the-Job Training," *Journal of Labor Economics* 7, 1-19.
- Bishop, John H. (1997), "What We Know about Employer-Provided Training: A Review of the Literature," in: Polachek S. and J. Robst (eds), *Research in Labor Economics*, Vol 16, 19-87.
- Bundesamt für Statistik (1997), *Weiterbildung in der Schweiz*, Berne, Switzerland.
- Gritz, Mark R. (1993), "The Impact of Training on the Frequency and Duration of Employment," *Journal of Econometrics* 57, 21-51.
- Hashimoto, Masanori (1981), Firm-Specific Human Capital as a Shared Investment, *American Economic Review* 71/3, 475-482.
- Holzer, Harry (1990), "The Determinants of Employee Productivity and Earnings: Some New Evidence," *Industrial Relations* 29, 403-422.
- Krueger, Alan and Cecilia Rouse (1998), "The Effect of Workplace Education on Earnings, Turnover, and Job Performance," *Journal of Labor Economics* 16, 61-94.
- Lazear, Edward and Sherwin Rosen (1990), "Male-Female Wage Differentials in Job Ladders", *Journal of Labor Economics* 8, 106-123.
- Leuven, Edwin and Hessel Oosterbeek (1999), "Demand and Supply of Work-Related Training: Evidence from four Countries, in: Polachek S. and J. Robst (eds), *Research in Labor Economics*, forthcoming.
- Loewenstein, Mark A. and James R. Spletzer (1999), "General and Specific Training", *Journal of Human Resources* 34/4, 710-733.
- 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, 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.

- Pannenberg, Markus (1997), "Financing On-the-Job Training: Shared Investment or Promotion Based System? Evidence from Germany," *Zeitschrift für Wirtschafts- und Sozialwissenschaften* 117, 525-543.
- Parent, Daniel (1999), "Wages and Mobility: The Impact of Employer-Provided Training," *Journal of Labor Economics* 17, 298-317.
- Veum, Jonathan R. (1997), "Training and Job Mobility among Young Workers in the United States," *Journal of Population Economics* 10, 219-233.
- Winter-Ebmer, Rudolf and Josef Zweimüller (1997), "Unequal Assignment and Unequal Promotion in Job Ladders", *Journal of Labor Economics* 15, 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, 89-93.