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Participation in Continuing Vocational Training in Germany between 1989 and 2008

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Abstract

The question of who participates in continuing vocational training and who does not remains critical in a society in which the importance of lifelong learning is assumed. On the basis of the SOEP data collection periods of 1989, 1993, 2000, 2004 and 2008, I will describe participation in continuing vocational training in Germany over this time frame, and explain it in relation to two prominent theories used in the economics of education – the human capital theory and the theory of labour market segmentation.

JEL Classification: I24

1. Introduction

Despite the increasing importance given to informal learning, participation in formal continuing vocational training also remains highly relevant. As can be seen clearly from the manifestos of both established and smaller political parties in Germany, lifelong learning and continuing vocational training are extremely important educational and economic themes, championed by all established parties across the political spectrum. The Federal Ministry of Education and Research also assigns great importance to organised further education (Bundesministerium für Bildung und Forschung, 2011, 72). According to the Ministry, continuing vocational training helps to provide the skills which become necessary due to technological and economic changes while acting as an effective means for compensating for skills shortages. Adult Education experts have stressed 'the growing knowledge base of all areas of life' (Autorengruppe Bildungsberichterstattung, 2010, 135), while others talk of a 'transformation process' (Schrader, 2003, 142) from an industrial to a service society, and an accompanying change from a 'work to a knowledge society'. According to Schröder, in such a society, the knowledge base has risen significantly and the growth in the number of educated people has gained increasing momentum (Schröder, 2009). And, according to Jacobsen, in the future we can expect to see even more employees in the service sector performing 'knowledge-based work' (Jacobsen, 2010, 221).

The question with which I am concerned here is one which has occupied the attention of further education researchers since the beginning of this academic field at the start of the twentieth century: namely, which social groups participate in training courses and which do not? With the increasing commodification of adult education and the shift from popular education (*Volksbildung*) to continuing vocational training, research in this area has grown, so that there are now several sources of data that can help us to answer this question (e.g. Berichtssystem Weiterbildung / Adult Education Survey; Continuing Vocational Training Survey; German Mikrozensus; Socio-Economic Panel Study, IAB Establishment Panel). There are now a large number of publications which describe the learning behaviour of people in Germany regarding continuing vocational training, and which try to explain the factors that determine participation in continuing vocational training. These publications constantly come to the conclusion that continuing vocational training is an educational resource which is unequally distributed. For instance, women participate less in such training than men, people with a low level of school qualification participate much less than people with a high level of school qualification, and older people participate less than younger people (e.g. Schömann / Leschke, 2008; Schiener, 2006; Wilkens / Leber, 2003).

In my article, I describe the development of participation in continuing vocational training between 1989 and 2008 using two theoretical perspectives – the human capital theory and the theory of labour market segmentation. I am able to explain some of the factors that influence participation in continued vocation training through applying a multivariate model to the common factors derived from these two theories.

2. Theoretical Considerations

Participation in continuing vocational training is normally explained according to economic theories of education, in which the theory of human capital, based on the classical neo-liberal political economy of Adam Smith and later on neoclassical economics, is the most prominent (Solow, 1956; Schultz, 1961; Becker, 1993). From the perspective of human capital theory, people usually behave in a way which maximises their benefits, which means that individuals only decide to participate in continuing vocational training when the expected benefits – that is, an increase in income – outweigh the costs (cf. Pfeifer / Behringer / Adam, 2008, 2). This theory also explains the employers' investment in the human capital of their employees (cf. Schmid / von Dosky / Braumann, 1996, 69; Behringer, 1999, 31). The employer assumes, from the perspective of human capital theory, that investment in continuing vocational training will result in increased productivity and lower costs in the future. Therefore, in the same way that employees are interested in investing in education to the extent

that it yields the appropriate financial returns, so the employer is interested in investing in continuing vocational training to the extent that the costs are outweighed by gains in production (Hubert / Wolf, 2007, 6).

From such a perspective arise numerous assumptions: for example, that older people participate in continuing vocational training less than younger people because they do not expect promotions and because they are approaching the end of their career path (cf. Leber / Möller, 2007; Hubert / Wolf, 2007; Eckert / Schmidt, 2007; Behringer, 1999; Becker / Hecken, 2008); and that women are less willing to participate in continuing vocational training because they more often take on childcare responsibilities and are therefore not in employment during this period or only work on a part-time basis (cf. Brödel / Yendell, 2008; Hubert / Wolf, 2007). Employers, in turn, show little interest in financing cost-intensive courses for women in part-time employment since the increase in productivity that can be expected does not seem high enough (see Hubert / Wolf, 2007). Women are therefore more affected by statistical discrimination, and more prone to 'broken biographies'. What is also expected is that participation in continuing vocational training will increase with the level of education. Investment in education up to now shows a willingness to accept a longer period of financial and temporal sacrifice in the expectation of higher income returns (see Behringer, 1999, 57). Higher levels of qualification are at the same time a sign of an increased readiness to participate in continuing vocational training (ibid.). Also, higher positions within a company correlate positively with participation in continuing vocational training, and not least because highly qualified people within a company have a 'multiplier effect' (Hubert / Wolf, 2007, 8) to the extent that they pass on their acquired knowledge to other employees in the company. Moreover, it can be assumed that there is more participation in continuing vocational training in industries with a high level of innovation (cf. Behringer, 1999, 57). It is to be expected that, especially in knowledge-intensive industries, there will be a high demand for learning and continuing vocational training.

According to Lutz und Sengenberger's hypothesis of labour-market segmentation, the German labour market is divided into three very stable, self-contained segments, and moving between the segments is made very difficult by the barriers put on mobility (Lutz / Sengenberger 1974). In the so-called *everyman's labour market* (Sengenberger, 1987, 119), the employer is not tied to the employee, who, in turn, is always replaceable (ibid.). What is required on this labour market are merely basic knowledge of the language, a minimum level of physical performance, and the discipline to work (Sengenberger, 1987, 120). Since employers have little interest in keeping employees on a long-term basis, they seldom offer opportunities for continuing vocational training (cf. Becker / Hecken, 2008, 142). In addition, the predominantly simple activities in this segment are unlikely to make further training necessary. Lutz and Sengenberger differentiate this particular segment from what they call the *company-internal*

labour market, which consists of employees with company-specific skills. The skills are so company-specific that the employee is tied to her or his particular company, which makes switching to a different employer very difficult. Nonetheless, the chances of promotion within the company itself are high and employment is long-term (cf. Lutz, 1987, 1–2). Since the employee is recruited not only for the entry-level job, 'but for a whole sequence of jobs' (Blossfeld/Mayer, 1988, 264), employers are interested in the learning ability of the workforce, and it can therefore be expected that participation in continuing vocational training in this segment is high and that the labour force will contribute to the costs of such training (cf. Schiener, 2006, 140). The third segment of the labour market – the *field-specific labour market* – consists of career professionals (Sengenberger, 1987, 126) who have a standard occupational or industry-specific qualification in the form of a certificate (certificate of proficiency, journeyman's certificate, diploma, etc.). This standardisation enables employees to change companies unproblematically. According to Schiener, the formal restrictions on access to companies in this segment require heavy investment in initial training and not so much in corporate training (cf. Schiener, 2006, 140). Therefore, participation in continuing vocational training is lower, and employees must bear the cost of such training more frequently.

3. Results of the Descriptive Analysis

In what follows, I will present some results from the German Socio-Economic Panel (SOEP) Study[1] in the context of the theoretical considerations. In the SOEP, a number of questions concerning participation in continuing vocational training were asked in the survey waves of 1989, 1993, 2000, 2004, and 2008. My analysis focuses on the question of participation in continuing vocational training in a three-year period prior to and including the survey date.[2] I will evaluate the information provided by the respondents concerning their participation in professionally-oriented courses, the respondents here being aged 19 to 64, in employment, and neither in an apprenticeship nor retired.[3]

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1 For more information about the SOEP, see Wagner et al. (2007).

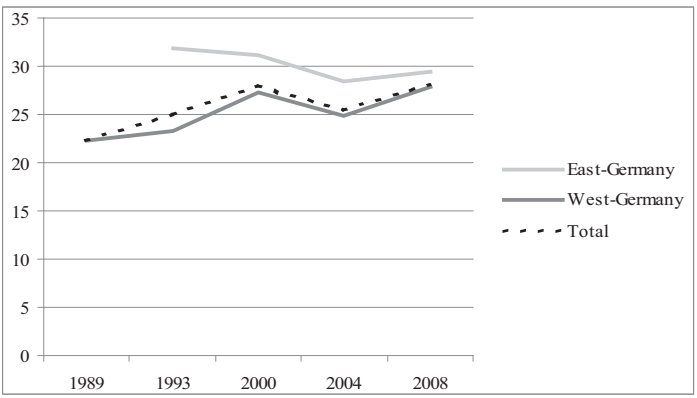
2 The question in the SOEP is: 'There are different opportunities available if one wants to educate oneself further. Think back in the last three years. Have you in that time period done any of the following to further your professional education? Answers: Regularly read scientific or professional publications, Attended professional conventions or congresses, Participated in professionally oriented courses, including those which are still in progress'. My analysis focuses only on the last form of continuing vocational training, i.e., on professionally-oriented courses.

3 For this reason, I exclude from my analysis the retired, trainees, those still at school, as well as people doing their military or civilian service.

Development of participation in professionally-oriented courses

What we can see from the results is that the proportion of those participating in professionally-oriented courses in the period of three years rose between 1989 and 2000 from 22.3% to 28.0% (Figure 1). In 2004, the rate of continuing vocational training fell again by three percentage points, but reached its highest level to date of 28.2% in 2008.

The expansion, especially in the 1990s, is due, amongst other factors, to the specific conditions on the labour market in the new federal states, which had a marked effect on the participation rate in the period after 1989 (von Rosenbladt/Bilger, 2008, 12). While in the 1990s the rate of participation in continuing vocational training in East Germany was still a few percentage points higher than in the West, after 2000 this difference became smaller and smaller, so that, in 2008, there were barely any differences at all between West and East Germany.



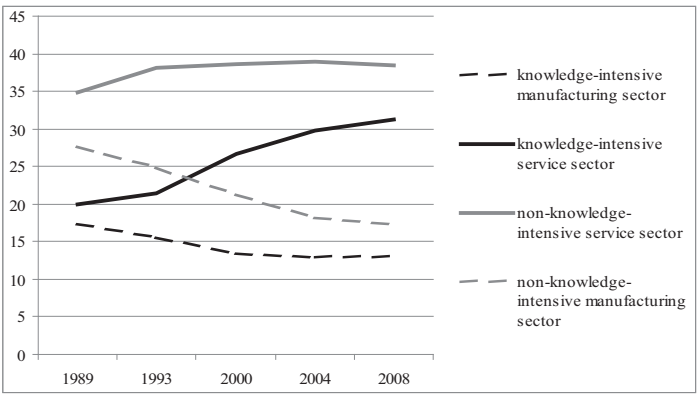
Source: SOEP (Wagner et al., 2007), my own calculations (weighted).

Figure 1: Participation in professionally-oriented courses in the last three years 1989 to 2008 (in percentage)

In knowledge-intensive industries there is a high demand for learning and therefore the rate of participation in continuing vocational training is also high, in accordance with the expectations of the human capital theory. The increase in the general rate of continuing vocational training can mainly be explained by the rise in employment levels in the knowledge-intensive service sector[4].

4 To categorise the different sectors of industry, I have used Harald Legler und Rainer Frietsch's method of identification (2006, 5 ff). In their identification of knowledge-intensive branches and goods, Legler and Frietsch employ different indicators for the ser-

Most respondents in employment are employed in service industries which are not knowledge-intensive, and that this has been the case since the first survey period in 1989 (Figure 2). It is the knowledge-intensive service sector in particular which has experienced a massive growth. Since the survey period of 2000, there have been more recipients of further training employed in the knowledge-intensive service sector than in the non-knowledge-intensive manufacturing sector, with the latter experiencing a rapid decline.

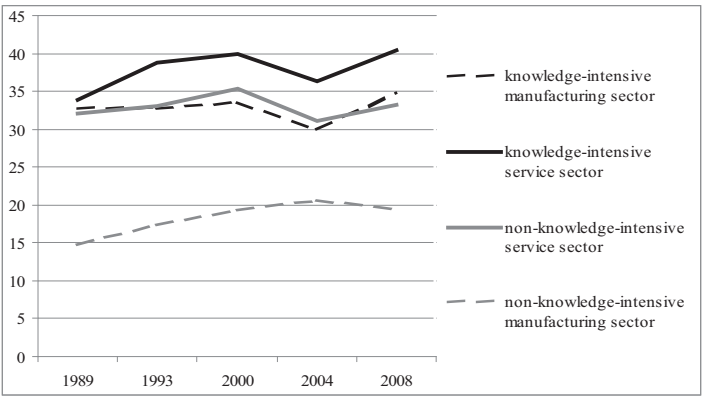


Source: SOEP (Wagner et al., 2007), my own calculations (weighted).

Figure 2: Employees in industry sectors (in percentage)

Regarding participation in continuing vocational training, the analysis shows that the rate is highest in the knowledge-intensive service sector (in 2008: 40.5%, Figure 3). Since the first survey period in 1989, this rate has increased by 6.6 percentage points. As expected, the lowest rate of continuing vocational training is in the non-knowledge-intensive manufacturing sector, where the rate in 2008 was only 13.3%, its lowest level since 1989. The non-knowledge-intensive service sector and the knowledge-intensive manufacturing sector have approximately the same rate of continuing vocational training.

vice sector and the industrial sector respectively, and they provide a list which, constructed from various data sources, statistical analyses (e.g., OECD data), and patent research, considers the different economic branches of the Federal Employment Agency.



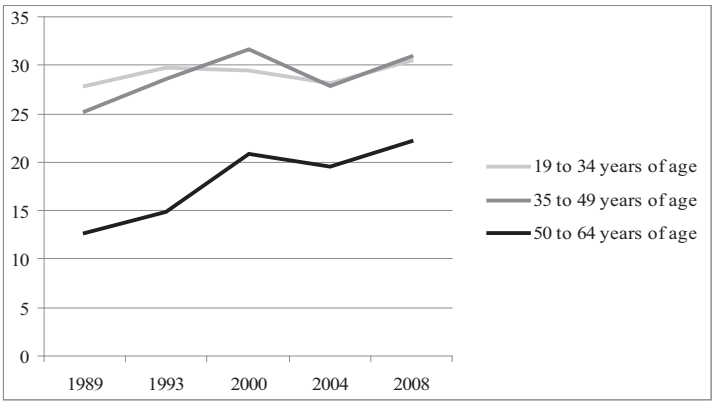
Source: SOEP (Wagner et al., 2007), my own calculations (weighted).

Figure 3: Participation in professionally-oriented courses according to industry sectors (in percentage)

Participation in professionally-oriented courses according to age

Further analysis shows, as expected, that the age group least involved in continuing vocational training comprises people aged between 50 and 64 (Figure 4). Also, younger people aged 19 to 34 participate as frequently in such training as the middle age group of 35 to 49. The results support human capital theory, according to which investment in continuing vocational training for older workers often does not seem worthwhile, from the perspective both of workers and employers, because it is assumed that the production yields will not exceed the investment.

There is another trend to notice here, though: the clearest increase in the number of continuing vocational training events visited in the last few years is amongst the older employees (data not presented here). There could be several reasons for this. Since the cohorts who were educated during the expansion of education in the 1960s and 1970s have higher formal qualifications than those cohorts preceding them, there are increasingly more older employees who have had experience of continuing vocational training with higher formal qualifications than older cohorts (cf. Iller, 2008, 85). Another explanation might be that, with an increasing retiring age, the cut-even point where returns and costs are equal shifts upwards, so that employers are more likely to invest in human capital in regard to the group of older workers who were previously to the right of the threshold.



Source: SOEP (Wagner et al., 2007), my own calculations (weighted).

Figure 4: Participation in professionally-oriented courses according to age (in percentage)

Participation in professionally-oriented courses according to gender

If we compare the rates of participation of men and women, what we can notice is that, since the end of the 1990s, women have been catching up in regard to attending courses and training sessions (Table 1), with the difference in 2008 being only 3%. The correlation coefficient (Phi) shows that the relationship between gender and participation in continuing vocational training has become ever weaker over the years. Before the fall of the Berlin Wall in 1989, the group of women in West Germany participating in professionally-oriented courses was about 14 percentage points less than for men. This increasing gender equality is also confirmed by other studies (cf. Schömann/Leschke, 2008, 351; Wilkens/Leber, 2003, 334).

Table 1

Participation in professionally-oriented courses according to gender (1989 to 2008 in percentage)

	1989	1993	2000	2004	2008
Male	29.5	29.3	30.5	28.2	29.7
Female	16.0	20.6	25.4	22.7	26.7
Phi	0.161	0.100	0.057	0.063	0.034
P	0.000	0.000	0.004	0.001	0.045

Source: SOEP (Wagner et al., 2007), my own calculations (weighted).

The remaining differences can be explained by the higher volume of work performed by men (cf. Von Rosenbladt/Bilger, 2008, 58) and by the fact that women are more often involved in family activities and parenting (cf. Schömann/Leschke, 2008, 351; Leber/Möller, 2007, 13–14). Thus, it can be assumed, within the context of human capital theory, that an employer's investment in continuing education courses for women who work part-time does not appear a worthwhile investment. Also a potential pregnancy and career break due to childcare could lead to a negative decision regarding investment in a continuing vocational training course for women.

Indeed, since the 2000 survey, there has been no significant correlation with gender, if only those in employment are included in the analysis (results not presented here; for similar results, see also Wilkens/Leber, 2003, 334; Schiener, 2006, 169–170). However, in the survey periods of 1989 and 1993, this correlation was significant.

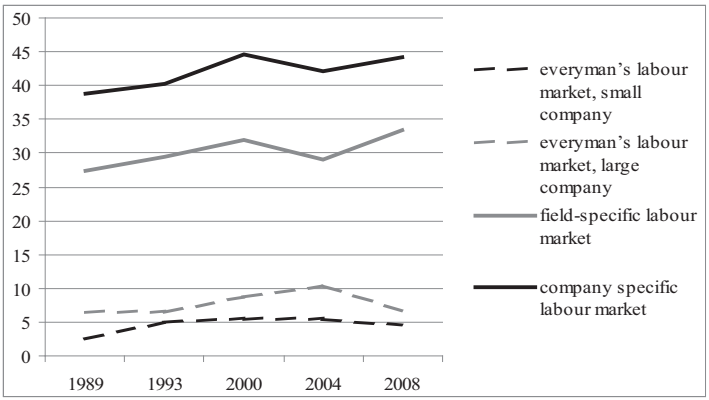
Nonetheless, these results do not refute the human capital theory regarding the participation of women in continuing vocational training, it is rather to be assumed, that the increasing rate of participation amongst women is due to the fact that women on average have become more career oriented and at the same time less willing to take over childcare responsibilities. The latter two factors could in fact contribute to an ongoing change in the attitude of employers regarding an investment in continuing education courses for women.

Participation in professionally-oriented courses according to labour market segment

If we look at the data according to labour market segment, the picture that emerges is to be expected.[5] The highest rates of participation are in the company-specific labour market, where, according to the theory of labour market segmentation, employers are very interested in the learning ability of their employees. It is also relatively high in the field-specific labour market, but lower than in the company-specific labour market, where an investment might not be considered worthwhile for an employer due to the high level of inter-company mobility of the workers. As expected, the rate is lowest in the everyman's la-

[5] To study participation in continuing vocational training according to different labour market segments, I followed Blossfeld/Mayer (1988, 266), Szydlik (1990, 53–67), and Schiener (2006, 164) in dividing segments into four types. Company size and the skills required by the job are taken into consideration in the empirical implementation of the segments. Low-skilled jobs requiring no training or simply a short instruction are assigned to the everyman's labour market. This market is further divided according to company size, with smaller companies comprising fewer than 200 employees and larger companies comprising more than 200 employees. Higher-skilled jobs belong to the field-specific labour market, if there are fewer than 200 employees in the company, or to the company-internal sector, if there are more than 200 employees in the company.

bour market as there is less need for continuing vocational training due to the simple activities performed and the fact that the employer is not interested in a long-term collaboration with the workers. These results match Schiener's results (2006, 164 – 166).



Source: SOEP (Wagner et al., 2007), my own calculations (weighted).

Figure 5: Participation in professionally-oriented courses according to labour market segments (in percentage)

4. Factors Determining Participation in Continuing Vocational Training of Employees – The Multivariate View

A frequent problem, and one which especially arises in linear regression models, is the fact that correlations between explanatory factors are not sufficiently considered. Models that do not consider multicollinearity between independent variables can yield biased regression weights and thus to misinterpretations (cf. Weiber / Mühlhaus, 2010, 25). One method to improve parameter estimates is path analysis, a form of structural equation modeling consisting exclusively of manifest variables. It provides a way to test complex systems of hypotheses by solving the problem of the (incorrect) causal interpretation of the correlations between the independent variables and the dependent variable considering multicollinearity and spurious correlations (ibid.). In this way, for the purpose of a synthetic perspective, a complex model which tests various hypotheses can be generated. Here – unlike in conventional regression models – one is able to distinguish between direct and indirect effects respectively mediating variables. Furthermore, path analysis, being a special type of structural equation modeling, provides the possibility to consider measurement errors, reducing the bias of statements about the relationship of theoretical constructs. The structural equation model of participation in continuing vocational training

takes into account statistically significant correlations between the independent factors. Since the theoretical implications relate in particular to the work of employed persons, non-employed and self-employed individuals are not included in the analysis. In addition, cases with missing values were excluded in the items due to the requirements of structural equation modeling.

In the models for each wave, some indicators are considered which can be deduced from human capital theory such as age[6], sex, number of years of education, limitation, employment status, and occupational status. In addition, referring to Schiener (2006) both indicators for the empirical implementation of the labour market segments – the required qualification and the company size – are considered. Furthermore, the knowledge-intensive service industry is included as a dummy variable. The other segments would have made the model fit less well, so they have been removed from the model. Model fits for each year were excellent in terms of the Root Mean Square Error of Approximation (RMSEA).

In table 2 the standardised regression weights of all indicators are presented, with direct effects only shown.[7] The results show that by far the most influential indicator across all the survey periods is that of occupational status (Table 2). There are several explanations for this. On the one hand, this could be connected to the high demands that are made in higher occupational positions. On the other, to the fact that people in positions of leadership more often take on multiplier functions (cf. Hubert / Wolf, 2007) and pass on what they have learned to others in the company. From the perspective of human capital theory, such an investment in multipliers in a high occupational position should lead to the highest expected profits.

What is also worth mentioning is the training required in the particular job: as expected, the likelihood of participation in continuing vocational training rises with the professional education that is required for the job.

The other factors play a less important role. For example, age, when taken into account in connection with the number of years of education, has barely any influence at all.

6 In the model, age is squared to take into account the fact that younger workers do not require as much further training since their initial training is still present.

7 The correlations between the independent variables are not reported here, but are available from the author upon request.

Table 2

Factors Determining Participation in Continuing Vocational Training (only Employees, Structural Equation Models, Standardised Regression Coefficients)

	1989		1993		2000		2004		2008	
	β	P	β	P	β	P	β	P	β	P
company size[a]	0.092	0.000	0.063	0.000	0.088	0.000	0.084	0.000	0.080	0.000
knowledge-intensive service[b]	n.d.e. [c]		0.066	0.000	0.034	0.000	0.041	0.000	0.021	0.045
required qualification[a]	0.098	0.000	0.125	0.000	0.080	0.000	0.091	0.000	0.125	0.000
occupational status[a]	0.290	0.000	0.199	0.000	0.272	0.000	0.227	0.000	0.219	0.000
employment status[a]	0.031	0.023	0.036	0.013	n.d.e.		n.d.e.		n.d.e.	
limitation[b]	r.f.m.[d]		r.f.m.		n.d.e.		n.d.e.	0.000	0.022	0.036
number of years of education	0.117	0.000	0.126	0.000	0.049	0.000	0.055	0.000	0.055	0.000
Age²	–0.104	0.000	–0.062	0.000	–0.063	0.000	–0.076	0.000	–0.072	0.000
sex[b]	n.d.e.	0.000	n.d.e.		–0.035	0.000	n.d.e.	0.000	–0.052	0.000
CMIN	7.485		7.745		5.607		68.329		7.240	
DF	5		3		6		8		7	
P	0.187		0.052		0.469		0.000		0.404	
CMIN / DF	1.497		2.582		0.935		8.541		1.034	
RMSEA	0.011		0.019		0.000		0.028		0.002	
PCLOSE	1.000		0.999		1.000		1.000		1.000	
R^2	0.229		0.185		0.157		0.133		0.146	
N	4508		4347		10954		9334		8184	

[a] company size: under 20, 20 to under 200, 200 to under 2000, 2000 and more (1989); under 5, 5 to under 20, 20 to under 200, 200 to under 2000, 2000 and more (1993); under 5, 5 to under 20, 20 to under 100, 100 to under 200, 200 to under 2000, 2000 and more (2000 und 2004); under 5, 5 to 10, 11 to under 20, 20 to under 100, 100 to under 200, 200 to under 2000, 2000 and more (2008); occupational status (according to Behringer 1999): employees with simple tasks, skilled employee, case handler / lower management level, manager; required qualification: no qualification / instruction, initial training, training courses, vocational training, university; employment status: part time, full time (1989 and 1993); marginally employed, part time, full time (2000, 2004 and 2008):

[b] categories of reference: knowledge-intensive manufacturing sector, non-knowledge-intensive manufacturing sector, non-knowledge-intensive service sector; fixed term or no employment contract; female.

[c] no direct effect.

[d] removed from model due to incomplete data.

Source: SOEP (Wagner et al., 2007), my own calculations (not weighted).

5. Summary

Participation in continuing vocational training is increasing primarily because there are more and more people working in the knowledge-intensive and non-knowledge-intensive service sector, a sector in which continuing vocational training plays an important role. It is encouraging that women nowadays

are participating more in continuing vocational training than in the late 1980s, although this is also connected to employment status. Female part-time work or even unemployment, often combined with childcare, have a negative effect on participation in continuing vocational training. What is also interesting is that older employees now participate in continuing vocational training more often than used to be the case, which suggests that it is not so much age anymore that is decisive as the level of education or the field of occupation. Participation in continuing vocational training is also connected to the labour market segment: the so-called everyman labour market has the lowest rate of participation, the company-specific (often the service industries) labour market has the highest, with the professional labour market lying between the two. The multivariate model shows that it is above all the occupational status which is most decisive in determining participation in continuing vocational training. People in leadership positions have a higher chance of participating in continuing vocational training than people lower down in the hierarchy. This could also lead to a problem: continuing vocational training is distributed primarily according to the 'Matthew Principle' (cf. Bolder 2006, 438). It is those who have already benefited who benefit further in the form of educational resources, which have a positive effect on income and employability.

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