

## Executive Summaries

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### **The Puzzle of Non-Participation in Continuing Training – An Empirical Study of Chronic vs. Temporary Non-Participation**

Although participation in continuing vocational training is often found to be associated with considerable individual benefits, a puzzlingly large share of the workforce still does not take part in training. In order to solve the puzzle we distinguish between temporary and chronic non-participants.

Previous studies have shown that training participants and non-participants differ in many ways. They may be more or less ambitious, they may be more or less stress-resistant, they may have higher or lower analytical or language skills and many other things. Due to such (unobservable) characteristics some people decide to take part in training and many others do not, i. e. people self-select into training. If this is the case, the high earnings of people who have taken part in training may not be due to training but due to these other characteristics that make them more productive even without training. On the other hand this also means that those people who decided not to take part in training would not have the same high earnings. They would usually have much lower returns or sometimes nothing but costs if they participated in training. Many empirical studies have shown that returns to training are indeed higher for individuals who have participated in training than the returns of individuals who actually decided not to take part in training.

In our paper we show that not only participants and non-participants are different but that non-participants themselves can also be split in two different groups: there are those who never take part in training (chronic non-participants) and those who are only currently not taking part in training (temporary (non-)participants). We argue that for these two groups the same problems as above arise when returns to training are compared. Chronic and temporary non-participants differ in many ways as well. Chronic non-participants may have lower abilities, they may be less stress-resistant, they may be more inflexible or may have more difficulties with learning etc. Due to such (unobservable) characteristics they decide never to take part in training, i. e. they also self-select. In this case their returns to training could also be systematically lower than the returns of temporary (non-)participants. So chronic non-participants may have very small positive returns to training – or sometimes they may indeed have nothing more than costs if they participated in training. This is the problem we study in our paper. We distinguish between chronic non-participants and temporary (non-)participants in order to solve the puzzle of non-participation despite the generally high positive returns of participants.

We use a unique data set of non-participants which was commissioned by the German “Expert Commission on Financing Lifelong Learning” and covers a very large number of individuals not taking part in training. We use an econometric estimation model that takes into account the above-mentioned self-selection problems and estimate returns to training that chronic non-participants would realistically be able to gain given their special (unobservable) characteristics.

We find firstly that chronic non-participants would have higher costs than temporary (non-)participants if they were to participate. This is either driven by loss of leisure (e.g. they would need more time and effort) or direct costs (e.g. learning stress), as

the forgone salary does not seem to be a crucial determinant. We secondly find that the short-term benefits of chronic non-participants associated with their current jobs would be lower. Temporary (non-)participants would on average have a higher probability of receiving a pay rise as well as increased job security than chronic non-participants. Thus, considering only their current job, the decision of chronic non-participants never to take part in training seems to be a rational decision in the short and medium term. However, since these are precisely the workers who are at greater risk of losing their jobs in the long run it would be important for them to think more in the long term. Regarding employment prospects, our results clearly indicate that participation in training would be very important since it would provide the individuals with knowledge enabling them to do more complex or even completely different jobs in the future. Although training does not protect workers from losing their jobs, in the case of unemployment it would clearly increase their likelihood of finding new jobs. Thus long-run gains are comparatively higher and more important for chronic non-participants than for temporary (non-)participants. However, chronic non-participants seem to have either too short a time perspective or too little information about future options and obstacles. Although chronic non-participants suffer from a negative cost-benefit ratio of training from their viewpoint, in the long run even chronic non-participants would similarly benefit from participation due to improved prospects on the labor market. Our results clearly indicate that chronic non-participants either misperceive future developments or suffer from an exceptionally high discount rate, which solves the puzzle of non-participation.

*Lutz Bellmann and Florian Janik*

**To recruit skilled workers or to train one's own?**

**Vocational training in the face of uncertainty as to the rate of retention of trainees on completion of training**

Year after year, many young people fail to obtain a vocational training place and as a result frequently attend state-funded skill-building schemes. Manifold reasons have been expressed in the public debate for this dramatic situation, which has been continuing for years despite various promotional programmes and the "Pakt für Ausbildung" (Pact for Training). Too high training costs, inadequate orders, a lack of job prospects after training and insufficiently-qualified applicants are frequently referred to in this context. Tertiarisation is commonly identified as a further reason for this development. Firstly because the rationalisation processes in manufacturing and the concomitant reduction of employment also reduces the number of training places, and secondly because the ratio between training places offered and the number of employees is deteriorating in the service sector (Baethge et al. 2007).

The stiffer competition faced by firms at both national and international level is indicated as a further cause. The results of the IAB Establishment Panel also suggest that firms engage in less training because they are unsure as to whether they will be able to offer subsequent employment to the trained workers if they enter into a training agreement because of the considerable competition pressure and the uncertainty with regard to their income situation which this entails (cf. Bellmann/Hartung 2005). Another reason that is frequently expressed for firms' reticence when it comes to vocational training lies in the organisation and structure of German vocational training as such. Where firms are not only subject to considerable competition pressure, but are also operating in innovative fields in which worker skill requirements are high and subject to rapid change, one may presume that the German system of vocational training, with its firmly established training content over which the firms have little influence, is not the right source of skilled workers because it is too uncertain whether the training contents actually match the current requirements at the end of the training period. For these reasons, the external recruitment of skilled workers may be preferred over vocational training. Both arguments entail the hypothesis that uncertainty influences firms' training behaviour and that increasing uncertainty has a negative influence

on it. This uncertainty is modelled in this paper using the probability of a trainee not remaining in the firm on completion of his/her training. Firms respond to a low expected retention rate and reduce their commitment to vocational training. At the same time, the recruitment of already trained workers to cover the demand for skills becomes more attractive because of falling opportunity costs.

Little information is available in manufacturing to confirm the theoretical considerations. The results obtained in the service sector correspond on the whole to the considerations put forward in this paper as to the significance of uncertainty for vocational training behaviour. While competition pressure does not take on any major significance, the expected correlations are, however, confirmed for both other uncertainty factors – i. e. high staff turnover and matching of vocational training to the actual skill requirements. Firms with considerable movement in the headcount and with a large share of skilled workers train less and at the same time have a larger demand for skilled workers who already have the requisite skills. Vocational training is obviously not optimal for these firms with regard to their need for skilled workers. Uncertainty as to retention after training can help to explain the growing gap between employment and training in the tertiary sector in this context.

If this relationship were to be confirmed in further analyses, it would mean that the dual system of vocational training is faced not only by quantitative challenges against the background that, firstly, future employment gains are to be expected more in the tertiary sector and, secondly, employment relationships are becoming increasingly flexible. In order to make the provision of training more attractive in these sectors, and to give it a future, one approach to be explored is that of greater interlinking between practical work experience, higher education and dual training. The increasing trend towards more dual courses of study (cf. *Ausbildung-Plus.de* 2006) is an indication that the stakeholders have already recognised this need. One must also consider how current changes in the demand for skills can be integrated more rapidly into the dual system. Furthermore, the increasing flexibilisation of the labour market, for which many are calling, is to be critically analysed against the background of these results.

*Hans Dietrich and Hans-Dieter Gerner*

### **The determinants of apprenticeship training with particular reference to business expectations**

Starting with production-motivated and investment-motivated arguments why firms supply apprenticeship training, this article extends this view by introducing business expectations into the discussion. Production-motivated argumentation takes into account, the fact that even apprentices may be productive while being trained and hence if the gains at this time are higher than the costs, which means that there are no positive net costs, firms will employ apprentices. If there are positive net costs, apprenticeship training has to be motivated investment-oriented. In this case firms have to expect, that they can employ the trainees after completion of the apprenticeship to gain returns which exceed the net costs.

Business expectations, however, are relevant for both, the production- and the investment-oriented argumentation. Decreasing business expectations indicate to training firms an expected reduction in the productive contribution of apprentices to the firm. As a consequence the net costs of apprenticeship training may increase and training firms will reduce their provision of training capacities. A precondition for long-term returns on firm-based training is that firms will be able to retain apprentices after the training period. As labour demand depends on the demand for goods, the future market position must be sufficient. When offering new apprenticeship places, firms have to make their decisions under uncertainty. So business expectations could be a relevant indicator in firms' decisions. Under the assumption that firms respond more sensibly to possible losses than to earnings (this phenomenon is called loss aversion), it is rea-

sonable, that they will reduce their training facility to a greater extent than they would intensify it in the case that business expectations decreased/improved to the same amount.

The econometric estimations based on the IAB Establishment Panel data provide a strong evidence that firms respond sensitively to changes in business expectations, which shows by the way a strong cyclical dependence of the supply of apprenticeship places. The analysis of the question whether firms supply apprenticeship training at all, shows that they respond very sensible to decreased business expectations (firms do not conclude a single new treaty), while they do not respond in the positive case; these findings correspond with our assumptions on a loss-averse behaviour of firms. Another explanation could be that costs of entry into apprenticeship training are higher than exit costs. The results regarding the analysis of training capacities are quite surprising. While there is according to our assumption a positive correlation between business expectations and training capacities, there is no asymmetric behaviour in the case that business expectations are going in the same direction for a short time. However, if there is no change in the sign of business expectations for a longer time firms respond more sensible to the positive case. This very surprising result obviously needs further research.

*Elisabeth M. Krekel and Günter Walden*

#### **What influence do work-life situations and vocational orientation measures exert on individual commitment to continuing training?**

Continuing vocational training is considered to play an important role for both societal and occupational integration. Individuals are not only prepared to participate in continuing vocational training but also to invest their own money and free time. Various existing general conditions have an influence on this continuing vocational training commitment. Moreover, for single societal groups exist different levels of access to continuing vocational training. Existing studies show that individual characteristics (such as school education or occupational status) have a considerable impact on people's continuing vocational training participation and that differences arising as a result of prior educational processes frequently reinforce participation or non-participation in continuing vocational training.

The paper "What influence do work-life situations and vocational orientation measures exert on individual commitment to continuing training?" takes these research results as its starting point for an examination of the question which factors influence individual continuing vocational training commitment in terms of participation in and expenditure on continuing vocational training (the latter referring to investment of money and free time). Moreover, it discusses the relevance of the subjective evaluations of people's own life and occupational objectives. Besides the determination of causal factors, a further aim of the present paper is to use the combinations of characteristics in order to identify and separate groups, which differ according to their respective work-life situation.

The basis for these analyses is the survey data of the Expert Commission on the Financing of Lifelong Learning on participation or non-participation in continuing vocational training in enterprises as well as the survey data of the Federal Institute for Vocational Education and Training regarding the costs and benefits of continuing vocational training of individuals. These two studies are based on the same statistical population and thus make it possible to undertake an observation of aspects of continuing vocational training participation and of private expenditure on continuing vocational training.

In general, the data shows that continual vocational training is determined by the level of education and occupational status combined with the form of employment. Besides these more objective factors, also vocational orientation has a major influence on con-

tinuing vocational training participation. Moreover, it was possible to identify three specific groups, which differ in respect of participation and investment in continuing vocational training: full-time and part-time employed women with a rather low income, men in full-time employment with a high level of qualification and men in full-time employment with a middle level of qualification. Although gender as such does not have any significant influence on continuing vocational training commitment, the work life-situation of women has. Continuing vocational training participation by the group of full-time and part-time employed women with a rather low income was 60 %, slightly below the level of participation of men in full-time employment with a middle level of qualification (65 %) and clearly below that of men in full-time employment with a high level of qualification (90 %). Men in full-time employment with a high level of qualification not only participate more frequently in continuing vocational training but also invest more in their own continuing vocational training: this is mostly associated with a specific level of career aspiration and (particular) access to in-company continuing vocational training. Moreover, continuous participation in continuing vocational training appears to form an integral part of the daily working lives of this group. In contrast to this latter group, full-time and part-time employed women with a rather low income are – because of the high proportion of part-time employment and low levels of personal income – more dependent of their own commitment and benefit to a lesser extent from in-company continuing vocational training.

Besides the importance of already acquired education and training for the participation in continuing vocational training, it is also apparent that the degree of occupational integration, determined the employment relationship, has a considerable influence on continuing vocational training commitment. This because, mainly those in part-time employment (women) are less well integrated in company training processes and, irrespective of their level of educational attainment, participate in continuing vocational training on a less frequent basis. Continuing vocational training commitment is thus to a large extent dependent on the prevailing personal and occupational general conditions as these relate to special groups. The promotion of continuing vocational training pursuing the objective of increasing and stabilising continuing vocational training participation, should consider these findings.

*Samuel Muehleemann and Stefan C. Wolter*

### **Regional Effects on Employer-Provided Training: Evidence from Apprenticeship Training in Switzerland**

This paper examines the determinants of firms' willingness to provide training in the context of the dual apprenticeship training system in Switzerland. The willingness of firms to provide training depends on the one hand on firm-related factors such as firm size, the industry and the qualification structure of the workforce. On the other hand external factors are also responsible, such as the availability and quality of potential apprentices, competition from other employers and also training regulations imposed by the state. The paper uses empirically the fact that the Swiss firms which could provide training are exposed to highly different influences from region to region, with the exception of the training regulations, which apply at national level. In Switzerland therefore, in addition to regional demographic differences, there are also considerable regional differences with regard to the education system, which are caused by the strongly federalist system. However, the labor markets in Switzerland, too, demonstrate highly different conditions as a result of both geographical and linguistic boundaries. This regional variance in the basic conditions for firms that could provide training is exploited in this paper in order to be able to examine its impact on the decision to provide training. In addition the paper makes an innovative contribution to the existing literature by dividing Switzerland into regions not according to the political borders but according to the geographical and economic realities.

The paper shows that the academic quality of the school-leavers has, as expected, a significant impact on the training activity of firms. If firms which are potentially willing to provide training have to expect lower-quality apprentices, this has a negative influence of the expected cost-benefit ratio of training, caused firstly by increased expenditure on training and secondly by lower productivity on the part of the apprentices.

However, also the expansion of full-time education institutions, in particular grammar schools, has a significant negative impact on firms' willingness to provide training. The results show that an increase in the rate of school-leavers completing their upper secondary school leaving certificate by 10 percentage points lowers the training probability of firms in a region by 3.8 percentage points. This effect arises because young people who are more academically inclined tend to complete full-time upper-secondary schooling and therefore the average quality of the applicants for apprenticeships in the dual training system declines. As a consequence, firms in regions with a well-developed full-time education system provide fewer apprenticeship places because the expected costs of the training are higher.

Furthermore a reduction in the number of applicants for apprenticeships also leads to poorer matching between applicants and firms. It can be seen that a 10 % decrease in the population of young people in a region reduces firms' willingness to provide training by 0.8 percent. This result has a significance for the coming years that should not be underestimated, since the coming years will be characterized by a drop in the number of school-leavers due to demographic factors. This drop will not automatically lead to less strain on the apprenticeship market, as the number of apprenticeships offered will also fall along with the decrease in the number of young people.

In addition to the quantity and quality of the applicants for apprenticeships, the number of local firms in the same industry also has a negative influence on the training behavior of an individual firm because this increases the danger of an apprentice being poached away by another firm after he/she has completed training. A 10-percent increase in the number of firms leads to a 1.9-percent lower willingness to train in the firms. The danger of poaching is particularly relevant for a firm if the costs of training are not covered during the apprenticeship period. This result clearly underlines once again the importance of a balanced cost-benefit ratio of an apprenticeship programme. If this can be achieved during the apprenticeship period, firms are better protected against losses that can arise when their own apprentices are poached away after they have completed their training.

*Renate Neubäumer and Susanne Kohaut*

#### **A double hurdle approach for company further training behaviour and an empirical test of this using data from the IAB establishment panel**

Despite the growing importance of company further training, 60 % of all western German firms do not provide their employees with further training. If firms are asked to give their reasons for not providing further training, only 19 % report that they do not support further training in principle; 16 % say that they only did not provide further training in the first six months of the year but that they do support further training in principle; 12 % state that they only did not release their staff for further training for reasons of time and 57 % state that the skill level of their workforce is currently sufficient. This suggests that the *length of the observation period* is of importance in questions regarding *firms' further training behaviour*. The paper starts out from the hypothesis that if a longer observation period were taken as a basis, the share of firms providing further training would increase and their further training intensity would decline, and that this can be assumed to be the case in particular in small firms.

The background for this is early work on the importance of the length of the survey interval for purchasing decisions of households; for instance, with a short observation period a household not purchasing alcoholic beverages may mean that the members

of the household do not drink alcohol in general or that they are using alcoholic drinks that they bought previously. This can be explained using a so-called double hurdle model: the first hurdle that generally stands in the way of purchasing certain goods can be of social, psychological or ethnic nature, whilst the second hurdle involves the price being too high or the existence of supplies. If the observation interval, and thus the period in which a purchase can be made, is extended, then the second hurdle becomes lower because special offers for the good become more likely and/or the supplies are exhausted.

The paper first develops a double hurdle model to depict the *further training behaviour of firms*: The *first hurdle* is that a firm classifies *provision of further training* as being worthwhile in general because the associated *costs* are permanently not higher than the *revenues* expected in the future as a result of the training measure. It is deduced that these costs and revenues of further training vary considerably depending on the capital intensity, innovation orientation and size of the firms, their employee structure and their labour relations and therefore determine firms' further training behaviour.

The *second hurdle* is that the firm *definitely provides further training* because the employees' skill levels are no longer sufficient or the firm wishes to prevent this happening. The reason for this can be that the last further training measures took place some time ago or that occasions for further training have occurred. When the observation period is longer this second hurdle is lower, so *more* of the firms that are *interested in further training in general* can be observed. In the paper this is assumed to be of importance in particular for small firms: firstly because internal further training measures, which are less costly for them and require a minimum number of participants, are only worthwhile at longer intervals, and secondly because reasons for further training such as the introduction of new products or new production processes or organisational changes occur less regularly in small firms.

In part three the applicability of the model is tested *empirically* using data from the *IAB establishment panel*. To what extent can the further training behaviour of firms be better depicted by extending the observation period?

First of all the *descriptive analysis* shows that just under half of the firms that did not provide further training in 2001 were actually involved in further training when the observation period was longer; in particular small and very small firms provide their employees with further training on an irregular basis. Furthermore, firms which do not provide further training and firms that provide further training regularly or irregularly differ considerably as regards the means and proportions of the explanatory variables.

In the *multivariate analysis* we first calculate the further training provision and the intensity of further training for the 2001 wave of the IAB establishment panel, i. e. for an observation period of only one year, and estimate what determinants they depend on. In the second step the results of the three survey waves of the establishment panel between 2000 and 2005 are combined, i. e. we make a cross-section out of the balanced panel and obtain in this way an observation period of six years for which we calculate the same dependent variables and estimate their determinants.

It emerges first of all that there are a number of variables which have an influence on whether it is generally worthwhile for the firms to provide further training, i. e. whether they overcome the first hurdle. When the observation period is extended, these structural variables remain largely unchanged. This is shown by comparing our probit estimates of further training provision and our quasi-likelihood estimates of the intensity of further training for 2001 and for 2000 to 2005 in each case: the same variables for capital intensity and innovation orientation and the same proportions for the employee structure prove to be significant in each case. Only the variables that characterise industrial relations – existence of a works council and payment above the collectively agreed wage scale – lose significance when the observation period is longer, which suggests that they do not have a stable influence on the general further training behaviour.

In addition, it is possible to establish proof of a number of concrete reasons for further training, by means of which the second hurdle for further training activities is overcome. Investment in communication technology and EDP and changes in the organisation structure are significant for firms' provision of further training and intensity of further training in both the short and the longer observation periods.

These results suggest that the procedure presented here of extending the observation period by using the results of several waves of panel data sets is suitable for other economic issues.

*Juerg Schweri und Barbara Mueller*

### **Why has the share of training firms declined in Switzerland?**

In dual vocational training systems, decisions about training places are made by the market players, in other words by the firms and the young people. In this context the share of training firms is an indicator which receives much public attention in Switzerland. The share of training firms in the private sector of the economy fell clearly between 1985 and 2001 from 24.7 percent to 17.6 percent. This has frequently been interpreted as evidence of firms' decreasing willingness to provide training. This paper examines whether this interpretation is correct and can therefore serve as an argument in favour of state intervention.

With the aid of firm census data from 1985, 1995, 1998 and 2001, we examine over time whether the decrease in this indicator can be explained by different independent variables. In addition to taking into account demand-side variables such as firm characteristics, we also use supply-side variables, such as the demographic development of sixteen-year-olds and the share of grammar school pupils among all sixteen-year-olds, which are factors that have so far been neglected in empirical literature. In fact, when these variables are controlled for, only small differences remain between the training probabilities of the different years. The remaining differences also match the economic situation in the respective years: a lower average training probability than in 1985 can be seen in the recession year of 1995, whilst an increase can be found for 1998 and 2001, with their better economic situation. No general negative trend in the training probability can be ascertained.

The analyses also make it possible to assess the importance of the individual explanatory variables for the decline in the training probability from 1985 to 2001. The two most important factors, which together are responsible for about two thirds of the decline, are increasing numbers of very small firms in the economy (which raise the overall number of firms but hardly ever provide training), and a clear reduction in the number of sixteen-year-olds, which has reduced the number of training relationships and thus also the share of training firms. Both of these factors seem to be largely unproblematic for the apprenticeship training system. As the decrease in the indicator "share of training firms" can be largely explained in this way, we find no indication of a general decline in firms' willingness to train apprentices. Political interventions in the apprenticeship market (training levies, the expansion of full-time schooling etc.) can therefore not be justified by the observed decline in this indicator alone.

*Hilary Steedman and Karin Wagner*

### **The impact of national ICT qualification systems on companies' recruitment practices – an Anglo-German comparison**

This study is based on an empirical investigation of the recruitment practices of German and British companies in four sectors, banking, retailing, motor manufacture and ICT software development. The study aims to improve our understanding of the impact of the supply of qualifications at different levels on the recruitment and the likely



career progression of graduates and apprentices working in ICT in Britain and Germany. This comparison is of particular policy relevance as the German higher education system is now moving towards the Bachelor/Master system of university qualifications. The comparison with the British system – where the Bachelor/Master system was implemented long ago – could provide some indication of the likely impact of this change in university qualifications on the recruitment practices and organisation of German companies. British universities are able to react more rapidly and effectively to student demand for courses and the number of ICT graduates in Britain increased substantially during the 1990s. By contrast, German graduate numbers have remained low and increases have lagged substantially behind the demand from business for ICT skills.

Our survey found that not only was a smaller supply of ICT graduates available to German companies, but also that German companies normally recruited only graduates with ICT or ICT-cognate qualifications such as physics. Institutional rigidities affecting the supply of graduate skills and the associated higher costs help to explain German employers' strong support of the apprenticeship route to increase the number of young people entering a career in ICT. The attempt to increase the ICT skill supply by hiring personnel from abroad was on the one hand hindered by legal guidelines and on the other hand it was difficult to integrate these specialists because of cultural and language problems.

British companies on the other hand were found to be extremely flexible and it was common practice to recruit graduates for ICT occupations from a wide range of academic disciplines. This more liberal attitude requires cooperation across organisational boundaries, a less hierarchical work organisation and a flexible working attitude. The British graduates came from all sorts of disciplines with only little or even no ICT specialisation and, as a consequence, British companies had to train new graduate recruits for longer and more intensively than was the case in Germany. This may also explain why at least 80 % of the enterprises preferred young people who could show evidence that they had gained some type of ICT experience. In this more open and liberal environment of British organisations the employment of foreign ICT specialists went smoothly, which was supported by English being a worldwide language. Willingness to train apprentices was low in British companies. A combination of factors can explain this behaviour. The first is a lack of information. Companies may not have sufficient information about apprenticeships to appreciate possible advantages. Second, anecdotal evidence from discussions with two British companies that have taken on ICT apprentices suggests that the regulations governing the assessment and certification of Modern Apprentices in Britain are burdensome and costly to companies. Third, evidence from two training providers who try to place young people on ICT apprenticeships suggests that insufficient young people with the requisite educational level are currently coming forward.

German graduate starting salaries were found to be higher than the British ones but the rate of salary increase in the first three years of employment in Great Britain was greater than in the corresponding German sector. The only exception was German motor manufacture. This suggests that the German graduates with their longer courses were more productive on recruitment than their British counterparts but that the on-the-job training and experience acquired by British graduates rapidly increased their productivity.

Looking ahead, if more young people in Germany choose a Bachelor degree course, the supply of well-qualified recruits to ICT apprenticeships could dry up. As a result, companies could find it more difficult to recruit apprentices. Currently, German companies bear most of the cost of training apprentices while Bachelor graduates are a 'free good', educated at public expense. German companies might, therefore, choose to employ Bachelor graduates rather than apprentices. Set against this advantage of Bachelor graduates is the fact that, unlike apprentices, who enter employment with a company 'ready for employment', Bachelor graduates will have a less thorough educa-

tion than the traditional 'Diplom' graduates and will require further training on the job. Companies will therefore be faced with difficult choices with important cost implications and it is not possible to predict which of these considerations will prevail in their recruitment decisions. It seems likely, however, that in future there will be greater convergence in recruitment practices between German and British companies and a certain amount of change in the organisational patterns in German companies.

*Günter Walden*

### **Short-term and long-term benefits as determinants of the training behaviour of companies**

The paper 'Short-term and long-term benefits as determinants of the training behaviour of companies' investigates the correlation between cost-benefit aspects and company decisions regarding training. A differentiation is drawn between the basic decision of whether a company should provide its own training and the stipulation of the number of trainees. The database used is information from companies providing training and companies not providing training from an investigation conducted by the Federal Institute for Vocational Education and Training in 2001.

If company training is viewed from an economic perspective, it is only worthwhile for a company to provide such training if the total benefits gained from training exceed the costs arising. A differentiation needs to be made here between the short-term and the long-term perspective. The first possibility is that training costs can be covered by the productive deployment of the trainees during the training itself. In such a production model case, employing trainees as workers (and as a replacement for regular workers earning a higher level of remuneration) may constitute an essential motive for providing training. The second possibility is that training costs cannot be covered during the training phase itself. In such a case, training is only worthwhile for a company if the trainees enter into an employment contract on completion of training, making it possible for benefits then to be realised on a longer-term basis. This would constitute the so-called investment training model.

The results of the analyses conducted show that the issue of whether a company provides training or not depends to a significant extent on cost-benefit aspects. With regard to a company commencing its own training, it is important that a longer-term benefit from training arising from the development of young skilled workers is perceived. Lower costs also foster the provision of training. It is also necessary to take into consideration the fact that the provision of training also depends to a large extent on the size of a company, larger companies providing training significantly more frequently than small companies. As far as the training rate is concerned (trainees as a proportion of all employees), company size is also shown to play an important role. If the training rates of companies providing training are taken into consideration, these are higher in small companies than in major companies. Cost-benefit aspects also exert an influence on training rates, although this is not independent of company size. Companies with lower costs (smaller companies tending to belong to this category), thus more frequently also have higher training rates. The overall tendency is for short term cost-benefit aspects to play a role for smaller companies, with longer-term aspects, on the other hand, tending to be significant for larger companies.

In respect of the suitability of vocational education and training policy measures aimed at increasing the supply of in-company training places, the analyses produce the following indications. In order to encourage additional companies to provide training, the most important thing seems to be to convince companies which have not hitherto provided training of the longer-term advantages of training. A decrease in training costs may also be of significance. On the other hand, using a decrease in training costs to increase the training intensity of companies already providing training appears very difficult in the light of the existing dependencies between costs and company size.

**Apprenticeship training in Germany – investment or productivity driven?**

The German dual apprenticeship system has come under pressure in recent years because enterprises have not been willing to offer a sufficient number of apprenticeship positions. A large amount of theoretical literature argues that in Germany firms are willing to invest in apprenticeship training, i. e. to incur net costs during the apprenticeship period. This is seen as an important requirement for providing apprenticeships in several occupations at all. Due to the specific German institutional situation, firms have the opportunity to recoup the net costs after apprentices have gained their qualification if they stay in the firm. Important arguments for the opportunity of firms to recoup their net costs incurred during the apprenticeship period are a large share of apprentices staying in the firms after the apprenticeship period, the market power of firms and information asymmetries that allow firms to pay a wage below productivity for “home-grown” skilled employees. It might be therefore argued that the gap on the apprenticeship market could be reduced if more German firms were willing to incur net apprenticeship costs (an indication of investment orientation) instead of trying to cover the training costs already during the time before the apprentice has gained his or her qualification (an indication of productivity orientation).

Until now no objective evidence has been available on the investment versus productivity orientation of German firms when it comes to their decision to provide apprenticeships. So far only the net costs of specific training occupations have been calculated on the basis of a limited number of interviews with managers on specific occupations. In these interviews, training firms were asked directly about their costs and benefits while non-training firms had to indicate their potential costs and benefits. This approach is, however, prone to measurement error.

A more reliable assessment of the net costs incurred during apprenticeship training might be achieved by estimating the costs and benefits on the basis of representative firm profit regressions. This paper therefore investigates for the first time whether German enterprises do indeed incur net costs on average during the apprenticeship period, including data from firms with and without apprentices. This is done by calculating whether the impact of (an increase in) the share of apprentices on contemporary net revenues minus wage costs is negative. A positive contemporaneous impact of the share of apprentices or the change in this share is interpreted as productivity orientation. If an increase in the share of apprentices decreases contemporaneous profits per employee (and increases lagged profits per employee), this is interpreted as investment orientation.

This paper uses the representative linked employer-employee panel data of the IAB (LIAB) and takes into account possible endogeneity of apprenticeship training intensity and unobserved heterogeneity in the profit estimation by employing panel system GMM methods. An increase in the share of apprentices in the years 1997–2003 had neither a contemporary nor a lagged effect on profits per employee. This is interpreted as a first indication that most establishments in Germany indeed do not invest more in apprentices during the apprenticeship period than the apprentices’ productivity effect. This evidence is in contrast to previous studies for Germany that indicate net costs for most occupations. Future research will have to show whether this result is genuine or a result of a mixture of occupations with net costs and other occupations with net benefits during the apprenticeship period.