

Swiss Leading House

Economics of Education • Firm Behaviour • Training Policies

Working Paper No. 14

**The Swiss Leading House
on Economics of Education, Firm
Behaviour and Training Policies**

Uschi Backes-Gellner and Johannes Mure



Universität Zürich
IBW – Institut für Betriebswirtschaftslehre

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by

Prof. Dr. Uschi Backes-Gellner and Johannes Mure

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University of Zurich
Institute for Strategy and Business Economics
and Swiss Leading House on Economics of Education, Firm Behaviour and Training Policies
Plattenstrasse 14
CH-8032 Zürich
Switzerland
Tel +41 44 634 4281
Fax +41 44 634 4370
backes-gellner@isu.uzh.ch

www.economics-of-education.ch

The Swiss Leading House on Economics of Education, Firm Behaviour and Training Policies

The Swiss Leading House on Economics of Education, Firm Behaviour and Training Policies is a joint project under the direction of Prof. Dr. Uschi Backes-Gellner (University of Zurich) and Prof. Dr. Stefan Wolter (University of Bern), financed by the Swiss Federal Office for Professional Education and Technology (OPET).¹ The aim of the Leading House is to ensure the long-term development of Swiss research on the economics of vocational education and training. *Nine research projects* on the economics of vocational education and training, particularly apprenticeship training are currently pursued. A short overview is presented below.

The Leading House also includes an advanced *study programme for young researchers* (PhD students) in the field. The course programme consists of four core courses and a variety of electives. Young economists are offered a wide range of study and research options as they work through the structured doctoral program in the economics of education. The courses are taught by prominent education economists from leading European research universities. Through required courses in microeconomics, business economics, econometrics and institutional settings, doctoral students are introduced to current theories, empirical methods and themes relevant to the economics of education. Doctoral students are also familiarized from the outset with current research projects in the field. This research is carried out within the framework of thematically specialized seminars or literature colloquia in which students discuss seminal and most recent publications with experts in the field of economics of education. Beyond that, students are expected to participate intensively in current research discussions. This is ensured by a regular research colloquium in which guest speakers - but also students or their tutors - present and discuss current research.

Finally the development of *network activities* is part of the Leading House objectives. Research is presented at international scientific conferences as well as on practitioner meetings. Some of these conferences are organised by or in cooperation with the Leading House. Due to the very international composition of the participants of the course programme for doctoral students in economics of education, the course programme itself provides also a great opportunity for young researchers to build a strong network in the field.

The following nine topics are currently on our research agenda

¹ For more information see: „www.economics-of-education.ch“

1. Vocational training and firm productivity

Since the willingness of firms to create training places is a compelling condition for the operability and the continuity of the dual training system, the question about effects of vocational training (apprenticeships) on firm productivity must be in the core of an economics of education research program (BACKES-GELLNER 2006). This project studies in a first part the share of companies training with an investment or a substitution motivation. A comparison of the company characteristics of respective types of firms shows that they significantly differ in important company characteristics such as internationalization or human resource management. This strongly supports the existence of two apprenticeship training motivations. A second part of the project studies productivity effects of apprenticeship training on company level using the German linked employer employee data of the IAB (LIAB). Apprenticeships are classified in three occupations: administrative, manufacturing and crafts occupations. Whereas apprenticeships in the administrative occupational group have no significant effect on firm performance, the effect of apprenticeships from the other two occupational groups is significantly negative in comparison to a reference group of unskilled workers. Occupation seems to be an important category for any type of productivity analysis because of large differences with respect to how companies regain training costs (MOHRENWEISER/BACKES-GELLNER 2006).

2. Quality of apprentices and effects on the net costs of training from the firm's perspective

In the past, research on the willingness of companies to train apprentices was heavily focused on the question of how to induce non-training companies to train apprentices. For this reason, little is known about the factors determining the quantitative demand for apprentices, once a company has decided to train apprentices. The aim of this project therefore is to find out what effect the quality of the apprentices has on the net costs of the training and thus on the willingness of the companies to train apprentices. The project is based on survey data gathered in the second round of the „cost-benefit“-project of the University of Berne (WOLTER/MÜHLEMANN/SCHWERI 2006). The analysis is focused -as a first step- on the profession of commercial employees and to technical professions of four year apprenticeships (like polymechanic). First results show that, according to the profession trained, we can observe distinctive models of training that differ substantially. While we can observe that in

commercial employee apprenticeships companies on average try to compensate for the lack of school competencies with an increase in the firms training effort (“compensation strategy”), we observe the complete contrary in the technical professions, where only the best apprentices get additional training (“efficiency strategy”) (MÜHLEMANN/WOLTER/FUHRER/WÜEST 2007).

3. *Regional mismatches in the demand for apprentices*

The research literature on supply factors in apprentice training has established that the regional economic environment of a company can exert a significant influence on the willingness of a company to train (MÜHLEMANN/WOLTER 2007B). In this, however, the mode of action is not clear. Theoretically the work in this project is based on the training literature of the human capital theory and its extensions. All quantitative econometric work in this project has been done on the base of the data from the first “cost-benefit” study (WOLTER/MÜHLEMANN/SCHWERI 2006). The innovative part of the research is the regionalisation of the data. Instead of using politically and administratively defined borders of regions, we constructed regions based on the idea that regional centres and all the territory that can be reached from such a centre within half an hour driving time constitutes an economically valid region. The first result is that regional data on the labour market and the educational system are important predictors of the probability of a firm to train apprentices. On the labour market side we found, as expected, that the number of competing firms in the same region has a detrimental effect on the training probability. For policy purposes three further results are of utmost importance. Firstly, the number of school-leavers directly affects the training probabilities of firms through the impact it has on the matching quality between school-leavers and potential training firms. Therefore, it has to be expected that due to the demographic decrease in the number of school-leavers the number of training firms will also decrease over the next coming years and that there will not be an automatic demographic ease in the apprenticeship market. Secondly, the results indicate a strong impact of the quality of school-leavers on the firms’ willingness to train and thirdly, this effect is increased when good pupils have more full-time schooling options. The last two results clearly indicate that the educational policy has via the quality of schooling and via the supply of full-time schooling options a non negligible influence on the number of training firms (MÜHLEMANN/WOLTER 2007A)

4. *An economic analysis of the causes and consequences of premature termination of apprenticeships*

This project is located in the area between companies and apprentices and investigates causes and consequences of training abandonment from an economic perspective. On the one hand, the rising number of aborted apprenticeships increases costs for companies and thus tends to lower the supply of initial training places (MÜHLEMANN/WOLTER/FUHRER/WÜEST 2007). On the other, the long and short-term economic consequences of abandonment for the apprentices themselves are still poorly understood. In this project, a German data set on apprenticeship dropouts (realized by the German Federal Institute for Vocational Training, BIBB) was reanalyzed in a first step in order to obtain new insights into various causes of dropouts. Results suggest that dropouts are too much guided by short-term considerations with respect to their decision-making. The current (also non-monetary) costs of an apprenticeship seem to be more important than the long term benefits: negative learning experiences, mental distress attached to exam taking (a form of non-monetary costs) and financial distress (which captures also the opportunity costs of an apprenticeship) are among the most important determinants of a dropout decision. Findings suggest (inter alia) that time-inconsistent preferences could be a reason for the most risky decision of a final dropout (BESSEY/BACKES-GELLNER 2007). Hence, the second step will be an empirical analysis of the relationship between health and education (as two forms of human capital investments) with a special emphasis on apprenticeship training in order to find whether risky “training” decisions and risky health behaviour follow an underlying general pattern. For the empirical analysis the Swiss Health Survey will be used.

5. *Returns to training in individual employment histories*

This project focuses on the learning worker and is geared to the specific content of vocational training (BACKES-GELLNER/MURE/TUOR 2007). The project consists of three research areas. In the first area we focus on firm-specific human capital, on its use on the labour market and - as a consequence- on firm’s incentive to invest in firm-specific human capital and on labour market mobility. In the first sub-project it turns out that the specificity of the firm’s and industry’s skill combinations, the breadth of the skill bundles as well as the thickness of the external labour market have an important impact on the incentive to invest in human capital (BACKES-GELLNER/MURE 2006) and on labour market mobility (MURE/BACKES-GELLNER 2006).

In the second area the analysis of lifelong education paths and the associated differences in achieved knowledge and competencies between individuals with different educational backgrounds are considered. The main focus lies on the consequences of starting with a basic vocational education. For the empirical investigation the Swiss Labour Force Survey (Panel 1996-2005) is used. Descriptive analyses show that among those people completing an apprenticeship there exist an increasing number of people who afterwards acquire either a vocational tertiary or even a general tertiary education. Preliminary results of the second sub-project (returns to different education paths) show that not only the wage level but also the rate of wage growth depends on the type of path chosen. Interestingly, the latter seems to mainly cause the observed significant difference between various education paths. However, no education path is strictly dominant. Particularly, some “mixed path” can be an attractive alternative to a straight education path. Thus, early occupational decisions must *not* be seen as irreversible decisions (which would be disastrous if students only find out later about their comparative advantages and interests). Just to the opposite, as our results show they may even foster an efficient matching process as long as the educational system is permeable. However, preliminary results do not support the hypothesis that mixed path always reduce the income risk associated with educational decision (TUOR/BACKES-GELLNER 2008).

In the third area we just recently started to analyse the changes and consequences in skill demand and supply over time. The focus will be on skill obsolescence and on vintage effects of apprentices on the basis of a detailed German data set (the BIBB/IAB Qualification and Career survey). First results of the third project (vintage effects in depreciations of human capital) show (as may be expected) that people in highly technological industries are faced with a greater rate of depreciation. But the results also indicate that employees in these industries are well aware of the problem and therefore invest more in their training after they finished their initial education to keep up with the innovative trends which counterbalances the first effect (JANSSEN/BACKES-GELLNER 2008).

6. *Analysis of governmental expenditures on education*

The project initially aimed at explaining public expenditures in the sector of vocational training and education. After a thorough analysis of the data available at Cantonal and sub-Cantonal level, we had, however, to change the project, because the data base is too thin. We have decided to analyse further the question of the impact of the demographic change on educational expenditures, drawing on the results of GROB/WOLTER (2007) who showed that

the share of elderly in a Canton had a significant negative impact on educational expenditures. The correlation between the share of elderly and educational expenditures can not a priori be interpreted as causal. Our research uses a representative survey of Swiss voters of all age groups to analyse the question, whether there is an age effect in the willingness of people to spend public money on education. Our analysis shows that the elderly people prefer to spend public resources on health and social security rather than on education, confirming a recent finding of researchers with Danish data. Furthermore the research shows that much of the negative correlation between shares of elderly and educational spending is the result of the elderly being politically more conservative and in general less inclined to pay for expenditures in the public sector as a whole (CATTANEO/WOLTER 2007).

7. *Supply of apprenticeships in start-up and innovative industries*

Start-up companies push structural change and will supply an increasing proportion of future jobs (BACKES-GELLNER/KAY/TUOR 2006). Therefore, the willingness of start-up companies to participate in the training of apprentices will be crucial for the survival of the dual initial training model, since in the future a large source of training places must be found within this segment. This project was called for tender by the Leading House in fall 2006. Contractor is the Swiss Economic Institute of the Swiss Federal Institute of technology Zurich (ETH-KOF). The KOF has specified and estimated micro-econometric models of the determinants at firm level of the propensity of training apprentices and the determinants of the extent of such training. These models help to characterize comprehensively the firm behaviour with respect to offering apprenticeships. So far, the project has first evidence for a positive but rather weak effect of innovation as well as a positive effect of firm age on the probability of offering apprenticeships.

8. *Individual returns to vocational education and training*

In this project, individual benefits of vocational training are to be examined using panel data. The main focus lies on formal training measures and further training achievements as well as on the consideration of participation in training over the whole course of working life. This project was also called for tender by the Leading House. Contractor is the Swiss Federal Institute for Vocational Education and Training (EHB). This empirical project is based on the data sets SLFS and TREE.

9. *International Comparison of Apprenticeship Training in Great Britain, Germany and Switzerland*

Some employers do not offer apprenticeship training, but instead rely on skilled recruitment and/or upgrade training of low skilled workers. The tendency is particularly marked in the UK. In Switzerland or Germany upgrade training remains non-permissible as a source of labour for many skilled occupations. The first question is on what strategies firms choose within the different countries to ensure an adequate number of qualified employees on an intermediate skill-level (BACKES-GELLNER/TUOR 2006). Potential recruiting strategies could be apprenticeship training, recruiting university graduates (e.g. bachelors) or relying on upgrade training of low skilled employees. The patterns of recruiting strategy depend on HRM strategies which are influenced by firm- or country-specific determinants (e.g. home-country vs. host-country effects) (BACKES-GELLNER/VEEN 2008). The second question is as a consequence what patterns of corporate finance, ownership, and governance influence the amount of training offered by employers. These issues are examined primarily by field-work: on-site visits and semi-structured interviews with managers, supplemented by interviews with experts and the analysis of secondary data.

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