

Firms' incentives to provide apprenticeships

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7. Conclusion

7.1 Summary of main findings

The contribution of firms is pivotal for the functioning of the dual system of apprenticeship training. Therefore, firm's incentive to train apprentices is an important field of research. Various studies have shown that the decision to train depends on the expected costs and benefits. Two major training benefits are short-term benefits in the form of productive contributions of apprentices and the long-term benefits in the form of a wedge between productivity and wages. It remained to be analyzed what in turn determines these benefits. In this thesis, I have analyzed a variety of framework conditions that act as such determinants.

In the *third* chapter, I investigated how school competencies of apprentices influence the short-term benefits of training. As the productive contributions of apprentices directly reduce firms' training investments, it is crucial to analyze whether these benefits are affected by apprentices' initial competencies. The analysis is based on data from the BIBB Cost-Benefit-Survey for the year 2007. I analyze four pre-training competencies that apprentices have obtained during their prior schooling: Oral and writing competencies, mathematical knowledge, IT competencies, and problem-solving competencies. The estimation results show that especially problem-solving competencies and oral and writing competencies lead to a higher productivity of apprentices at the workplace. Mathematical knowledge and IT competencies are of minor importance. The analysis also shows that apprentices with better school competencies are allocated more often to tasks on a skilled worker level. This additionally increases the short-term benefits of training in the form of productive contributions. These findings have valuable implications for the recruitment process of firms when selecting apprentices. Further, the results suggest that a good compulsory schooling system could alleviate the economic burden of the private sector in financing the apprenticeship system by equipping the apprentices with the necessary skills.

The *fourth* chapter addresses the effect of labor market institutions on the amount of training investments. In particular, it addresses the effect of the laws¹¹⁴ which came into effect between 2003 and 2005 in the course of the labor market reform Agenda 2010 and which dampened employment protection regulations. I used data on the costs and benefits of apprenticeship training from Germany and Switzerland. Switzerland, where no such reforms occurred, serves as the counterfactual. In Germany, the data refer to the years 2000

¹¹⁴ Gesetze zur Liberalisierung des Arbeitsmarktes im Rahmen der Agenda 2010.

and 2007, while in Switzerland the data refer to the years 2000 and 2009. The results show that after the introduction of the labor market reform, German firms – in contrast to Swiss firms – allocated their apprentices more often to productive tasks, which led to a decrease in net training costs. Many extensions of classical human capital theory regard labor market rigidities as a prerequisite for firms to invest in general training. From this perspective, the German labor market reforms should have reduced their willingness to support the apprenticeship training system. The findings of this chapter show that weaker labor market regulations will not necessarily lower the willingness of firms to train if firms are able to make their training more beneficial in the short term by allocating apprentices more often to productive tasks. The results further show that the increase in the apprentices' working time is not at the expense of deterioration in training quality.

Also the *fifth* chapter addresses the long-term benefits by arguing that their realization is affected by the design of the training curricula. The empirical approach to test this hypothesis is rather indirect as I observe the supply of apprenticeship places in a given occupation. I argue that the higher the potential for short and long-term benefits in a given occupation, the higher is ceteris paribus also the number of supplied apprenticeship places in this occupation. Building on Lazear's skill weights approach (Lazear, 2009), I study the effect of modernizations, which change the number of choice options in training curricula, on the supply of and demand for apprenticeship places in Germany in all occupations from 2004 to 2014. The modernizations provide me with a quasi-experimental setting as these modernizations can be seen as a relatively exogenous shock. I argue that firms will train more apprentices when they have more choice options in the training curriculum because of the higher productivity of graduates who have acquired more skills that are relevant for the firm and firms' higher market power in the wage bargaining process with graduates. I find that a more heterogeneous curriculum increases both firms' supply of and students' demand for apprenticeship places.

Benefits of apprenticeship training do not only accrue to the firms themselves but are also realized by the apprentices and society as such. If decision-makers of firms are altruistic, which means that external benefits are incorporated in their utility function, these external benefits can be internalized and constitute benefits for the firms. Likewise, the fact that most firms first invest in their apprentices shows that training activities involve an intertemporal trade off decision. Therefore, the *sixth* chapter extends the cost-benefit framework by considering social and time preferences as factors influencing a firm's training investments. The analysis is based on the BIBB Cost-Benefit Survey for the reference training year 2012/13, which contains questions on the economic preferences of the decision-makers. The results show that firms are more likely to train when they employ altruistic decision-makers. I also find that the amount of training investments is highest in firms that employ decision-makers who are not only altruistic but also have a high preference for the future.

7.2 Integration

The thesis adds to the existing literature by analyzing various determinants of training benefits and by examining how those potential training benefits eventually influence the training decision. While all four chapters analyze different aspects of the apprenticeship framework conditions they all aim to describe the complex incentive structure in which firms are placed. The thesis shows how different aspects of costs and benefits are related and how benefits can partially substitute each other. For example, a firm that is aware of the potential long-term benefits of apprenticeship training might be willing to incur much higher short-term training costs. To gain a comprehensive picture, it is important to look at the several types of benefits and how these are related to the decision to provide and invest in apprenticeships. The results of all four empirical studies confirm that cost-benefit considerations are indeed important for firms' training decisions.

Even though apprenticeship framework conditions affect the ability to realize different training benefits, the firm itself also has an important influence on the training benefits by arranging their training organization accordingly. For example, chapter four shows that firms adjust their training organization, when the possibility to make long-term benefits diminishes. Chapter six shows that in firms with more altruistic decision-makers, trainers spend more hours per week supervising and training the apprentices. Chapter three gives another example of how the firm can affect the benefits of training: apprentices with better school competencies are not only more productive because they reach the same productivity level as a skilled worker more easily, but also because the firm can allocate them more often to productive work.

Although the thesis mainly focuses on the firm's perspective, the work could also reveal some insights that concern the interests of the apprentices. On the one hand, the thesis has partly tackled the issue of training quality. Chapter three shows that allocating apprentices more often to productive work on the skilled worker level might have a positive effect on training quality. Chapter six demonstrates that altruistic decision-makers are more likely to provide a higher training quality by providing apprentices with more trainer hours. On the other hand, the thesis has considered the interest of apprentices regarding the amount of choice options firms have in the training curriculum. Accordingly, chapter five shows that if firms have more choice options in the training curriculum this can also be beneficial for apprentices. These additional analyses show that even though firms and apprentices can partially have conflicting interests, a careful setting of the framework conditions can yield benefits for both parties.