

Technical Efficiency of Para-Agriculture - the Case of Organic Farms in Switzerland, Austria and Southern Germany

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Abstract

Introduction: Farm diversification is one answer to the problem of shrinking agricultural sectors: In Switzerland, Austria and Southern Germany, farms are creating income by using activities like direct marketing (farm-shops), wine-marketing, rural tourism and other rural services (e.g. renting machinery). In Switzerland, agricultural policy is using the term ‘para-agriculture’ for describing this type of diversification. In organic farming, the trend towards farm-diversification is more pronounced than in conventional farming. The paper therefore investigates the impact of para-agriculture on the technical efficiency of organic farms in Switzerland (CH), Austria (AT) and Southern Germany (GER).

Data: The data-set consists of bookkeeping data with 1,704 observations in the years 2003 to 2005. We adjusted the different bookkeeping-systems and created output-variables for agriculture and para-agriculture. The data were deflated to the year 2000, the Swiss farm-data were price-adjusted to the EU-level by using single price-indicators for organic farming.

Methods: Technical efficiency is modelled using a stochastic output-distance-function in the three countries in combination with a metafrontier, which envelopes the joint group-frontiers of the three countries. We use revenues from agriculture (y_1) and para-agriculture (y_2) as two outputs and variable costs (x_1), capital (x_2), labour (x_3) and land (x_4) as inputs. Productivity is in that context defined as the relation of multiple outputs to multiple inputs. As technical efficiency we define the relation of observed output to the theoretical maximum output. We also model determinants of technical efficiency by a heteroscedasticity model.

Results: The results show just small efficiency differences among the farms in the three countries. Para-agriculture strongly contributes to farm productivity in Austria, and to a smaller extent in CH and GER. The share of para-agriculture shows a strong negative impact on farm’s efficiency in CH and GER. On the other hand, we find that specialization contributes to the farms technical efficiency in AT and GER. The results also document a strong negative impact of agricultural subsidies on technical efficiency. Lower efficiencies of subsidies might be explained by wrong allocation decisions of the farmers (direct-payments) and additional production restrictions (environmental payments) leading to lower outputs.

Conclusion: The study shows that para-agriculture contributes to the revenue of organic farms in all the three countries. But due to missing specialization, diversified farms have to cope with a lower technical efficiency. Therefore, farmers before diversifying have to take into account a reduced level of technical efficiency.

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