Titel:	An Economic Efficiency Analysis of Crop Producing Farms in Uzbekistan
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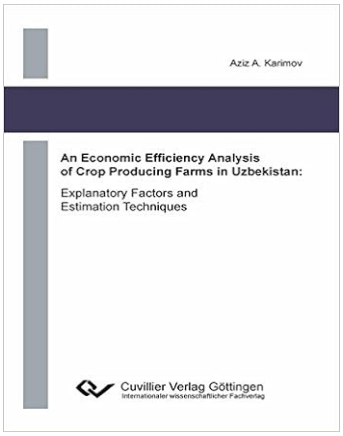
Bild:	

Beschreibung:

Explanatory Factors and Estimation Techniques

While increasing agricultural crop productivity depends on the performance of a country's entire economy, the efficient use of farm inputs plays an important role in the growth of the farming sector. This issue has often been mentioned in policy debates of transition countries. However, quantitative assessment of resource use efficiency studies has been very limited in the case of Central Asian (CA) countries in their ongoing transition period. This study is one of the first to provide empirical evidence on the efficiency levels in the production of cotton, wheat, and vegetables in Uzbekistan. It uses cross-sectional farm survey data for 2007 from the Khorezm and Fergana regions of Uzbekistan to study farm performance in resource utilization. Both parametric and nonparametric frontier techniques were used in the efficiency analysis. In the case of cotton production, a theoretically consistent stochastic frontier model (SFM) was developed to estimate technical efficiency (TE) levels and determine factors that are responsible for inefficiency. The analytical technique applied considered monotonicity and quasiconcavity restrictions in the semi-parametric setting. Model findings report TE scores of 85% and 88% in the Khorezm and Fergana regions. These results show the existence of potential enhancements in cotton production even before the introduction of new technologies.

The study methodologically extended Data Envelopment Analysis (DEA) to provide bias corrected efficiency scores on wheat and vegetable producing farms. Model findings show that these farms could increase their TE considerably. Moreover, efficient farms achieved higher crop yields in both regions. Farmers were more scale-efficient but not technically efficient in the case of all crops. This suggests that attention has to be paid not only to the scale of operations but also to better management of crop production both on small and large farms.

Interesting findings from SFM and DEA show that efficiency is greater in arable lands with lower bonitet scores in the cultivation of strategic crops and larger in lands with higher bonitet scores in the case of vegetables. Access to adequate irrigation is critical in the production of all crops as it substantially increases TE. Crop diversification seems to improve farm TE in the production of all crops. However, a statistically significant result is found only in the case of potato production. Regional differences show a geographical divide in terms of resource-use efficiency, with farmers in Khorezm being less efficient in the production of all crops. Other variables which showed positive significant result with TE in the case of cotton were farmers who were not involved in off-farm work; farmers with educational background and experience in agriculture; those satisfied with the services of the Water User Association (WUA) and who had a renovated drainage system; farmers with easier access to credit; and those who applied organic manure to cotton fields. In the case of wheat and vegetables, significant results were as follows: farmers with larger farm size only for potato producing farms); those who reported potential to work in larger crop growing areas (wheat and potato); those with farm fields far away from markets (wheat and potato); farmers using less chemicals in production (melon); and those with better canal systems (wheat). Using the duality between the directional distance function and the cost function, the study also finds allocative inefficiency (AI) in the vegetable farming system. Model results suggest that it is possible for vegetable-producing farms to substantially reduce input costs and quantities and still maintain current output levels. Model estimates show that vegetable producing farms cannot allocate their resources cost effectively. This implies that all producers have struggled to attain optimum input–output mixes. Finally, the model shows estimates of shadow prices of land and labor in the existence of inefficiencies which could be of great interest to policy makers and researchers. A benchmarking approach to set up frontier farms can be a useful analytical tool in identifying better performing farms with the purpose of improving technical and allocative efficiency (AE) of crop production in Uzbekistan. Insofar as market-based reforms could take place in the country and better incentives are provided to the farmers, inefficient farmers could learn from farming best practices and adopt explicit agronomic, innovative, and cost-effective ways of cultivating crops under the current institutional setting.