

## **The impact of EU accession on farms' technical efficiency in Hungary**

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In this research, the stochastic frontier analysis method is used to evaluate the technical efficiency of Hungarian farms before and after accession to the European Union (EU), and to investigate the efficiency determinants. The results show that EU membership has reversed the pre-accession process of efficiency decrease. But the other side of the coin is that access to higher post-accession subsidies contributes to lower efficiency of Hungarian farmers. The other remarkable finding is a seeming scarcity of labour on farms, which that constrains their production and efficiency. The Hungarian government may therefore have to design specific national policies if its aim is to promote a farming system that uses labour and at the same time is competitive.

In May 2004, Hungary joined the EU along with seven other CEECs. Hungarian farmers are now beneficiaries of the Common Agricultural Policy (CAP). They are entitled to receive direct payments per hectare, the Single Area Payments (SAP). While these payments are still lower than those received by farmers in the EU-15 (owing to the phasing-in period that will cease in 2013), they are higher than what Hungarian farmers used to receive from the national pre-accession budget. Moreover, since EU enlargement farmers can also receive additional payments from the national budget, in the form of topups that are coupled to specific production. The change in market conditions and in agricultural policies following accession to the EU is expected to enhance agricultural growth, by increasing farms' size and promoting technological growth. Various modelling exercises and surveys of farmers have indeed shown that farms would enlarge and produce more (e.g. Bach et al. 2000, Fuller et al. 2003, Douarin et al. 2007). The changes in farmers' decisions brought about by EU accession may however have a negative impact on their performance, by altering the

output and input mix. CAP subsidies in particular may decrease farms' performance, by reducing farmers' effort and thus increasing the waste of inputs. Such an effect of public support has already been observed in several Western and transition countries (e.g. Giannakas et al. 2001, Rezitis et al. 2003, Zhu et al. 2008).

The main findings of the research are:

- A Translog production function with time and heteroscedasticity effects is appropriate to model the Hungarian farm production frontier.
- within the stochastic frontier model, determinants of inefficiency are meant to explain changes in technical efficiency scores. A number of variables describing production conditions, farm legal form, locations, input ratios, dummy variables and cross-terms meant to capture accession effects, subsidies and specialisation were included.
- technical efficiency decrease before and increase post accession date
- companies are more efficient than individual farms
- farms with more labour-intensive production are less inefficient
- mixed farms are more efficient than specialised farms, within specialised farms livestock ones are more efficient than crop farms
- public subsidies decrease farms' efficiency scores.

The overall conclusion of this research is that, while EU membership along with the high CAP payments have the positive effect that they may contribute to keeping or attracting new labour in agriculture, they have the opposite effect that they reduce farms' performance. This suggests that the Hungarian government may have to design specific national policies if its aim is to promote a farming system that uses labour and at the same time that is competitive.

Keywords: Hungarian farm sector, Stochastic Frontier Analysis, determinants of technical efficiency, subsidies, EU accession