The analysis is also conducted entirely at the plant level. Some (more recent) studies have used the firm (or reporting unit) level as the basis for analysis but this is inappropriate because RSA is provided to specific plants rather than to units which may contain several plants. Failure to use plant-level data will again bias the results.

In terms of econometric analysis, the largest problem is that of self-selection into the treatment group. This can lead to biased results due to the fact that the treatment group is not a random sample of the population. If those in the treatment group choose to receive assistance because they expect to benefit more (in terms of the outcome variable) than those that do not receive assistance, and this cannot be controlled for in the regression, the estimated treatment effect will be biased. In this paper, three different approaches for overcoming this problem are used: matching, instrumental variables (IV) and the control-function approach.

Endogeneity of regressors in the production function is controlled for using a GMM systems estimator. The data is also weighted in order to obtain results relevant to the population of plants rather than to the stratified sample of plants surveyed in the ARD.

Efficiency of German Universities: A Stochastic Frontier Analysis Accounting for Environmental Factors
Maria Olivares and Heike Wetzel

In 1999 the so called Bologna Declaration has been signed by 29 European states with the aim to establish a common European Higher Education area by 2010. In order to promote competition and improve efficiency among the higher education institutions (HEIs) in Europe, the reform has focused on international mobility and on international comparability of degrees. Many German universities have already implemented some aspects of the reform by offering international education programs, by shorting the duration of university education and especially by changing university degrees from diploma to bachelor and master degrees. In order to investigate the influence of the Bologna reform we apply stochastic frontier analysis (SFA) and estimate the technical efficiency of a sample of 72 German universities for the period 1998-2003. Specifying a multi-output distance function panel model, including variables reflecting the reform as well as other environmental factors, along with a time trend, we compare efficiency across German universities and efficiency change over time. Our data set includes detailed information on input and output measures such as total expenditures, academic and non-academic personnel, enrolled students, research grants, graduates and doctoral students, as well as information on several environmental factors, such as the regional economic situation, location in East/West-Germany, size of the higher education institution and especially the students composition in the sense of gender, nationality, subject field and kind of degree.

Economic Efficiency and a Metafrontier Analysis of Lowlands in Benin (West Africa): Evidence from Stochastic Frontier Approaches
Alphonse Singbo and Alfons Oude Lansink

As a result of trade liberalization, the agricultural sector of developing countries including Benin Republic is increasingly influenced by developments in world markets. For that reason, a sustained growth/increase of agricultural production is required in order to ensure an economic development of the country in the long run. Furthermore, the growth of global productivity constitutes one of the main determinants of agricultural growth. In this context, estimation of the efficiency of farming systems enables a better understanding of productivity growth and the effects of market regulation on these farming systems.

This study aims to evaluate the efficiency of farming systems in the lowlands located in Central Benin (West Africa). Increasing production from lowlands areas is one of the avenues towards fully satisfying the national demand in rice and vegetables. Overall, three farming systems have been identified and analyzed. The sample consists of 93 farming systems randomly selected with allowance to the system used. Stochastic production frontier analysis and a self-dual functional form were used to evaluate the level of technical and allocative efficiency among farms. Moreover, the metafrontier production function was carried out to compare the potential output obtained by each farming system.

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