

## Abstract

This paper considers the estimation of a nonparametric stochastic frontier model with composite error density which is known up to a finite parameter vector. Our primary interest is on the estimation of the parameter vector, as it provides the basis for estimation of firm specific (in)efficiency. Our model is similar to that of Fan et al. (1996), but here we extend their work in that: a) we establish the asymptotic properties of their estimation procedure, and b) propose and establish the asymptotic properties of an alternative estimator based on the maximization of a conditional profile likelihood function. The estimator in Fan et al. is asymptotically normally distributed but has bias which does not vanish as the sample size  $n \rightarrow \infty$ . In contrast, the estimator we propose is asymptotically normally distributed and correctly centered at the true value of the parameter vector. Furthermore, the estimator we propose is efficient in a broad class of semiparametric estimators. A simulation study performed to shed light on the finite sample properties of these competing estimators.