Modeling the Stochastic Frontier with a Nonparametric Criterion

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Modeling the peak performance or frontier of economic entities may be accomplished by either deterministic or stochastic modeling. In this paper, we focus on the efficiency of 10,000 banks in the U.S.A. during 1994. Since these data are noisy and contain a number of outliers, we prefer to use a stochastic model of the frontier that is resistant to bad data. We describe a minimum-distance approach, based upon the ideas in Scott (2001), for fitting a model to the banking data. An interesting aspect of the model is that a semiparametric form of the frontier function is employed. Furthermore, the model attempts to estimate the fraction of banks at each size that are determining the stochastic frontier equation. An alternative approach using percentile regression would require predetermination of the fraction of efficient banks. Some sensitivity analyses are also performed.

Bibliographie

[1] Scott, D.W. (2001). Parametric Statistical Modeling by Minimum Integrated Square Error, *Technometrics*, 43, 274–285.