



Stochastic Frontier Analysis with Fat-tailed Error Models Applied to WHO Health Data

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The stochastic frontier analysis (Aigner, Lovell, and Schmidt, 1977, Meeusen and van den Broeck, 1977) has been widely used to estimate technical efficiency of firms. The basic idea lies in the introduction of a composed error term consisting of a noise V and an inefficiency term U . From there, technical efficiency of each firm is estimated by utilizing distributional assumptions on the two error components. In the literature, V is usually assumed to be normally distributed and the distribution of U can be exponential, truncated normal or Gamma. In this study, we will consider Cauchy-Half Cauchy model which is more realistic than the existing models in accounting for heavy-tailed data and accommodating outliers under both cross-sectional and panel data. We apply the models to two data sets: U.S. electric utility industry data and WHO health data for illustration.

Keywords: Technical Efficiency, Stochastic Frontier Analysis, Estimation, Fat-tailed Models, Maximum Likelihood Method, Cross-sectional Data, Panel Data.