



Kolloquium über Mathematische Statistik und Stochastische Prozesse

Dienstag, den 30.10.2012, 16.15 Uhr, Hörsaal 3

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"Frontier estimation in nonparametric location-scale models"

Zusammenfassung/Abstract

Conditional efficiency measures are very natural tools to capture the efficiency of firms facing heterogeneous environmental conditions. They are defined by the distance of a unit to the support of a conditional distribution, conditional to the level of these external factors. The traditional approach is to estimate nonparametrically this distribution and this requires the use of appropriate smoothing techniques. In this paper, we consider an alternative approach to estimate its support. We first assume flexible nonparametric location-scale models linking the inputs and the outputs to the environmental factors Z to eliminate in the inputs/outputs the dependence on Z . Then we use these “pre-whitened” inputs and outputs to define the optimal frontier function. This provides a “pure” measure of efficiency more reliable to produce rankings or benchmarks of units among themselves, since the influence of external factors has been eliminated. We estimate both the full frontier and its more robust version, the order- m frontier. The asymptotic properties are established. We can also recover the frontiers in the original inputs/outputs space and we give their asymptotic properties. The approach is illustrated with some selected simulated data but also with a real dataset from the bank industry. (This is joint work with Jean-Pierre Florens and Leopold Simar.)

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