

How Effective Are We: Towards a More Convincing Stochastic Frontier Analysis

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Abstract

In many economic applications, it is desirable to estimate how effective is a given country, a given plant, a given farm. In some cases, such an estimate is easy: for example, if we have a similar farm which is much more productive, then it is clear than the original farm is not effective. However, in many situations, such a direct comparison is not possible: for example, most countries are different, so while their productivity is different, the difference in productivity may be due to difference in climate, etc., and not necessarily caused by insufficient effectiveness. To estimate effectiveness in such situations, special Stochastic Frontier techniques have been invented. The problem with the currently use Stochastic Frontier techniques is that these techniques are based on reasonably arbitrary assumptions about the probability distribution of effectiveness – assumptions which are motivated mostly by computational efficiency and which do not have any convincing economic motivations. Because of this arbitrariness, the conclusions of Stochastic Frontier analysis are often not convincing to users. To make these conclusions more convincing, we propose to use different families of distributions – families which *{it are}* economically motivated. Interestingly, while for the new families, the corresponding computational complexity may increase slightly, the corresponding estimation algorithms are still very efficient – especially since they are based on such actively-used-in-economics techniques as least squares and linear programming.

Full Text

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