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Efficiency Analysis Application to financing of municipalities in Morocco

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Abstract.

The efficiency analysis consists of the comparison between the Decision Making Units DMU (firms, for example) in order to know how the inputs are used to produce outputs. Since 1957 efficiency measures have been proposed in the literature such as the efficiency scores of Farrell and Shephard noted respectively θ and $\delta = \frac{1}{\theta}$.

In this presentation we will focus on traditional nonparametric approaches which are the Data Envelopment Analysis (DEA) and the Free Disposal Hull (FDH). However, these approaches present a limitation because they don't take into consideration the noise in the analysis.

In this first application, we try to determine the efficiency of the Moroccan rural districts of the oriental region. The initial DEA efficiency estimators indicate that among 91 districts only three are fully efficient. Since a bias correction is almost always done, the bias corrected estimators $\hat{\theta}$ are computed. After bias correction, the results indicate that there is no rural district efficient and that only 6% of the districts are close to the efficiency frontier with a score estimated above 0.70. However, 8 districts are considered as efficient using the FDH approach. On the other hand, both DEA and FDH efficiency scores indicate that generally rural districts having a small population size also have a weak efficiency scores and are consequently far from the efficiency frontier. The effect of the population size is tested by the estimation in two-stages described in Wilson and Simar (2007)