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ELECTRICITY DISTRIBUTION BENCHMARKING IN TURKEY FOR REGULATORY PURPOSES: THE CASE OF TEDAS

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Overview

This paper performs both parametric and non-parametric relative efficiency comparisons using a Turkish sample of electricity distribution utilities from the currently state-owned network conglomerate TEDAS. By conducting Corrected Ordinary Least Squares (COLS) and Data Envelopment Analysis (DEA) benchmarking exercises on a cross-sectional sample of provincial distribution utilities, we discovered a degree of granularity in the efficiency scores of network operators, with a fringe of optimally behaving utilities possibly aided by the existence of regional structural factors.

Methods

We applied both econometric and linear programming techniques to a sample of 72 provincial distribution electricity utilities from mainland Turkey. The econometric technique being applied is a variation on standard OLS, namely Corrected Ordinary Least Squares (COLS). The linear programming technique being applied is the regulatory alternative to econometrics and is widely practiced in the real world: Data Envelopment Analysis (DEA). The two methodologies are used to fit the same data set in order for benchmarking results (efficiency scores) to be directly cross-checked.

Results

We found out that efficiency scores are quite granular and relatively dispersed throughout different regional territories within mainland Turkey, possibly hinting at the fact that regional differences might come into play within such large and diverse territories. We tested therefore for regional differences by means of both quantitative and binary (dummy) variables to come up with a few hints on which regional differences might eventually matter to regulatory benchmarking, when and if it is undertaken for policy purposes by the Turkish regulator.

Conclusions

The forecast introduction of incentive-based regulation to Turkey might change the efficiency behaviour of regional and provincial distribution utilities, as is expected by Turkey's nationwide energy and resources regulator EMRA. It is always recommendable, however, that regulatory authorities do not use economic benchmarking as their only instrument since individual relative efficiency analysis techniques can be influenced by data quality, methodology, and model specification. Rather, benchmarking should be employed as an effective and highly informative complementary instrument to monitor performance. The authors would like to thank the Turkish energy regulator EMRA for their availability to support this paper as part of a wider public policy project, but would also like to highlight that any opinions expressed in this paper and results thereof, including any possible errors, remain exclusively their own responsibility