

# Efficiency Analysis of Energy Networks: An International Survey of Regulators

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Incentive regulation for energy networks has been an important part of the reform agenda in a number of countries. As part of this regulatory process, incentives are put in place to improve the cost efficiency of network companies by rewarding good performance relative to a pre-defined benchmark. The techniques used to establish benchmarks are central to the efficiency improvements that are ultimately achieved. Much experience has been gained internationally in the application of benchmarking techniques and we now have a solid understanding of the main indicators of best practice. These include the use of frontier-based methods; a large and high quality dataset; panel data; and bootstrapping techniques. What we are lacking is a more complete understanding of the factors that influence choice of methods by regulators, i.e. characteristics that may encourage or discourage regulators to adopt best practice methods.

In order to shed light on the factors that influence the choices of regulators, we conducted an international electronic survey of energy regulators in 40 countries between June and October 2008. Regulators from European, Australasian and Latin American countries are represented in the survey. The survey questions fall into two main categories. The first set of questions relates to the specific benchmarking techniques used for electricity and gas transmission and distribution. The aim here is to get a sense of whether there is agreement on specific techniques by industry and also to allow regulators to explain if they use alternative benchmarking methods or why they do not use any at all. The second set of questions involves a closer look at the benchmarking analysis process, including whether the analysis is conducted internally or externally; the use of international and panel data; and the incorporation of environmental factors.



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In this paper, we present the results of our survey, firstly by looking at the main findings for each question. As an extension of this and in order to facilitate cross-country comparison, we compile a best practice index based on the survey responses and compute scores for each of the countries involved by industry. Our results show that benchmarking techniques are now widespread in the regulation of gas and electricity networks. The application of a number of best practice methods, however, is limited to a small number of regulators. We expected to find some clear consensus on the techniques favoured by regulated industry. Instead we found that in the gas industry it appears to be too early to say. In the electricity industry we can certainly see a clearer trend towards the use of process/activity and DEA in both transmission and distribution over other advanced benchmarking techniques; however alternatives to best practice techniques are prevalent, particularly in electricity distribution.

We conclude by offering some observations on developments that would help best practice methods to become more widespread, including advancing cooperation between regulators to overcome often cited problems with the use of international data; and improvements in free efficiency analysis software packages to contribute to increased transparency.

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