Evaluation of Technical Efficiency of Thermal Power Units in Mexico: Data Envelopment Analysis and Stochastic Frontiers (capítulo), Modeling, Simulation, and Optimization.

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Resumen.

The present work develops an application of different methodologies for the estimation of technical efficiency, for a set of thermoelectric units in Mexico. As part of the recent reform in the Mexican electricity sector, the electricity market has been liberalized, so that the public supplier before the reform must guarantee competitiveness in order to participate in the electricity market. One of the key decisions for the public supplier is to define through robust methodologies the most efficient power plants and to reform their portfolio of generating units to compete in the best possible conditions in the electricity market. In the context of a liberalized market, it is necessary to take into account that it is not only important to determine the most efficient plants in a product input logic, it is also necessary to consider those plants that are more efficient in terms of costs and those will allow to offer energy at competitive prices with the lowest operating cost. The work developed compares the application of different methodologies:

data envelopment analysis (DEA) and stochastic frontiers (SF). Each methodology has pros and cons; for that reason the comparison of the results will allow to select the one that is the most robust possible and that adapts more to the Mexican case.

Abstract.

The present work develops an application of different methodologies for the assessment of the technical efficiency of a set of thermoelectric power stations in Mexico. The electricity market has been liberalized as part of the recent reform in the Mexican electricity sector so that the government supplier before the reform must be competitive to participate in the electricity market. One of the critical decisions for the government supplier is to define the most efficient power plants through robust methodologies and reform their portfolio of power facilities to compete under the best possible conditions in the electricity market. In the context of a liberalized market, it is worth considering that it is not only important to determine the most efficient facilities from a production perspective; but in terms of cost-effectiveness, to identify the power plants that will be able to offer energy at competitive prices with the lowest operating cost. This work compares the application of different methodologies: data envelopment analysis (DEA) and stochastic frontiers (SF). Each methodology has pros and cons; thus, the comparison of results will allow selecting the most robust method that is best suited for the Mexican case.

Bibliografía.