
Electricity Sector: Design to Ensure Energy Security

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Abstract

Energy is transformed into electricity through the use of different means it is a synonym of human, social and economic development. The provision of electricity service plays a significant role in the society's economical prosperity since it is vital to achieve a certain standard of living and at the same time covering simple daily needs. The different sources that a country uses for energy production create its power generation matrix which defines how much affordable is the price of the electricity service. Furthermore, the electricity sector governance, organization and ownership are important issues in order to provide lower prices for the customers. For the foregoing reasons, the proper design of these elements can play a vital role in ensuring energy security.

Introduction

There are different models used in many countries to organize, govern and own the electricity sector. These countries around the world are with conservative economic models, where they still utilize a state monopoly model that owning its electricity industry. In this type of models it is common that the State concentrates the different related activities to the electricity industry through one or several state-owned enterprises (SOEs). Furthermore, there are countries with open economies where it is possible to see private or mixed models, which comply with the fact that governments have been trying to increase their installed power capacity and modernize out of date infrastructure through engaging private investments. Yet, the application of one exclusive model does not guarantee a good performance; because from one side, the government could be restricted to provide the necessary monetary resources for improving the industry by itself and own resources; and from another side, being under the private sector ownership of the industry, the applied principle will be to draw the returns of its investments through increasing the prices of the services. Therefore, the objective of this paper is to analyze the achieved performance and economic contributions provided by a well balanced mixed model in comparison with an almost privatized model and a state monopoly model.

Method

There are prior studies in favor for the establishment of electricity sector models under major private sector ownership as in the case of Williams and Dubash (2004a, 2004b), who argued in favor for the attraction of investments, introducing innovation and procuring better managerial practices. Also, Sweeney (2002) indicated that previous to the California electricity crises, "the customers often appreciated deregulation and privatization in the electric sector as long as low rates were guaranteed". However, after the collapse of the California's electricity sector, a better model for designing this type of industry was not

proposed and it is apparent that there is no prior study which emphasizes the achieved performance by one efficient electricity industry based on a well balanced mixed model as it has been in South Korea's case. The preparation, data collection and interpretation of the information will be carried out using a qualitative approach, which also will be supported with historical background and with the support of statistical data from South Korea and other countries. This will be accomplished through an examination of the policies, laws, regulations implemented and established institutions also through the identification of how the electric industry is being organized, governed and owned, and through an analysis of the principal indicators of this type of industry. The main contribution that this thesis attempts is to share the experience with researchers, policy makers and government officials interested and related with this field.

Expected Results

- To show that through the establishment of proper targets, accurate planning, well electricity sector designing, it can be possible to reach energy security in the provision of the electricity service
- To show that designing and selecting one exclusive economic model for organizing the electricity industry does not guarantee a good performance of this.
- Proposing a better model based on the South Korea's experience.
- Emphasizing the government important role governing and owning this type of industry.
- To present that the South Korean government has ensured the attraction of investments for increase and modernizes the electrical infrastructure in its electricity sector.

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References

- Sweeney, James L. 2002. "Lessons from the California Electricity Crisis – a Book Report." *European Business Organization Law Review* 4: 483-487
- Williams, James H., and Navroz K. Dubash. 2004a. "Asian Electricity Reform in Historical Perspective." *Pacific Affairs* 77 (Fall): 411-436.
- Williams, James H., and Navroz K. Dubash. 2004b. "The Political Economy of Electricity Reform in Asia." *Pacific Affairs* 77 (Fall): 403-409.
- Zhang, Yin-Fang, Colin Kirkpatrick, and David Parker. 2002. "Electricity Sector Reform in Developing Countries: An Econometric Assessment of the Effects of Privatization, Competition and Regulation." *Journal of Regulatory Economics* 33 (April): 159-178.