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The Electricity Market Agents Decisions within the New Iberian Electricity Market and the EU Emissions Trading Scheme

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Abstract

The main purpose of this paper is the modelization and the analysis of the impact of the CO2 prices expected for the Kyoto and Post-Kyoto periods on the Iberian electricity market (MIBEL) decisions of their agents. It is expected that the technological combination currently used to generate electricity will change, as the recent generation structure was mainly intended to secure supply according to marginal costs of production (without the CO2 balance), maximizing each companies profits. Further, the integration of Portugal and Spain in a single market may as well change the generation scheduling, and generate, in coordination with CO2 pricing, important impacts on the value of the different generation technologies, and even on the benefits of integration as a whole.
The first step was to develop a classical model for the scheduling of plants by a system operator aiming to minimize the social cost of electricity generation, and, in a second set of experiments we develop a Cournot game to model separately the Portuguese and Spanish markets and the MIBEL.
At a technical level, the contribution of this paper is the development of a complex a detailed agent-based model (e.g., Bunn and Oliveira, 2001, 2003) of the Iberian electricity market, taking into account ramp-rates and start-up costs. The use of this method enabled us to develop a detailed model of the industry taking into consideration the technical constraints that make this a very hard problem to analyse.

Keywords

Energy markets, Emissions Trading.