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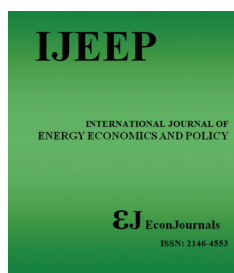
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Oligopoly and Collusion in the Colombian Electricity Market

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ABSTRACT

The Wholesale Electricity Market –WEM– in Colombia was created with Laws 142 and 143 of 1994 with the aim of promoting and preserving competition among agents and guaranteeing an efficient energy spot price. However, in practice the market works as an oligopoly in competition; evidence indicates there is market concentration, without reaching abuse of dominant position or price collusion, at least not explicitly. This paper develops a game model with incomplete information, in which there is at least a Perfect Bayesian Equilibrium with implicit collusion among agents. That is, it is highly likely that, under certain conditions, some generators tacitly follow the price strategies of agents with greater installed generation capacity (pivotal) and hence propose similar bid prices. The empirical analysis shows that scenarios of radical and similar increases in bid prices, for different generators, are a pattern present in the WEM.

Keywords: Electricity Markets, Oligopoly, Collusion, Incomplete Information, Bayesian Equilibrium

JEL Classifications: C70, C72, D43, D82, L13, L94, Q41

1. INTRODUCTION

With the enactment of Law 142 of 1994, and more specifically Law 143 of 1994 (Colombian Electricity Law), the Energy and Gas Regulatory Commission (CREG, for its name in Spanish) was granted by the Colombian Congress the power to regulate the provision of public utilities, including energy service; it also forced vertically integrated firms to separate their functions from the electricity production chain in order to promote competition and encourage greater participation of the private sector. Within the framework of the law, the Colombian State was seeking to meet demand for electricity guided by the economic criteria of financial viability and efficiency (Congreso de Colombia, 1994a, 1994b). A complete analysis and evaluation of the evolution of the deregulated market for electricity in Colombia since 1995 up to 2002, can be found in Larsen et al. (2004). The Wholesale Electricity Market (WEM) is currently made up of an oligopolistic structure with significant concentration rates in the activity, thus limiting efficiency to a certain extent. In Colombia, there are 16,998 MW

of installed generation capacity, 60 % of which is concentrated in four firms with multiple plants.

Given the structure of the Colombian electricity market and the presence of important agents in terms of installed power capacity, it is possible to identify factors that could favor strategic behaviors in prices. First, there is a degree of contraction in the generation market which would allow companies to take advantage of their dominant position and benefit from greater consumer surpluses. Second, there is no rule in the regulation requiring generators to declare their variable costs, facilitating to some extent the manipulation of the spot price of electricity in the pool. Third, constraints in the electric grid become an additional factor as it would encourage generation companies to abuse their dominant position, negatively affecting end users because (i) it can induce generation companies to “withhold” output and lead to a short-term supply shortage, and (ii) it distorts the trading signal of spot prices, resulting in inefficient energy dispatch and investment decisions (Twomey et al., 2005). Investigating whether there are indeed any conditions in the electricity market for the occurrence