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Anomaly Detection and Market Power in Colombian Electricity Market

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Publication Date: Wednesday, 9 of November 2022 Abstract
We introduce a methodology for generating alerts of potential anti-competitive practices in the Colombian wholesale electricity market. The methodology is made up of two parts: (1) Based on the declared availability of the agents, those that can potentially have a high impact on the stock price are identified (i.e., pivotal in the sense of the residual supply index - IOR) and (2) Using machine learning methods, the energy offers (i.e., prices) of those pivotal agents are identified that, according to the state of the market and its history (i.e., past offers, water resources, generation technology, etc.) could be considered atypical or anomalous. Based on these two indicators, alerts of potential anti-competitive practices are generated. We report the results of the application of this methodology to the Colombian wholesale market in the period August 16, 2018 - July 30, 2019. An important characteristic of this methodology is that it can be applied with the information available from the system operator, 24 hours before that the results of the market are observed and generating alerts ex ante to the realization of the events. This possibility of generating alerts almost in real time is even more important in view of the new intra-day market that will soon come into force in the Colombian electricity system.

Fuente: https://www.banrep.gov.co/en/anomaly-detection-and-market-power-colombian-electricity-market