

Comparative Analysis of Pay-as-Bid and Uniform Auctions in Iran's Electricity Market

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After restructuring the power industry, choosing a proper auction rule has been considered as a main challenge. Uniform price auctions and discriminatory (pay-as-bid) auctions have been widely used. This paper tries to compare the costs of the Electricity market under uniform auction and pay-as-bid auction using agent based modeling. Using Roth-Erev algorithm and based on the data of Iran electricity market for 2014, cost of the electricity market has been simulated and compared under the two auction mechanisms. According to the results under pay-as-bid auction, diversion of players from their marginal costs is more likely mainly because of its settlement rules. Since Iran's electricity market is ruled under pay-as-bid auction, revision in its auction structure is recommended to the Electricity Market Regulatory Board.

Keywords: Uniform Auction, Discriminatory Auction (Pay-as-Bid), Agent-Based Modeling, Reinforcement Algorithms, Market Efficiency.