

Financial Portfolio Optimization in Electricity Markets: Evaluation via Sharpe Ratio

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Abstract : Electricity plays an indispensable role in human life and the economy. It is a unique product or service that must be balanced instantaneously, as electricity is not stored, generation and consumption should be proportional. Effective and efficient use of electricity is very important not only for society, but also for the environment. A competitive electricity market is one of the best ways to provide a suitable platform for effective and efficient use of electricity. On the other hand, it carries some risks that should be carefully managed by the market players. Risk management is an essential part in market players' decision making. In this paper, risk management through diversification is applied with the help of Markowitz's Mean-variance, Down-side and Semi-variance methods for a case study. Performance of optimal electricity sale solutions are measured and evaluated via Sharpe-Ratio, and the optimal portfolio solutions are improved. Two years of historical weekdays' price data of the Turkish Day Ahead Market are used to demonstrate the approach.

Keywords : electricity market, portfolio optimization, risk management in electricity market, sharpe ratio

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