Insurance and model uncertainty for measuring the risk premia in energy markets

Escobar, Debora Daniela
Department of Statistics and Operations Research, University of Vienna
Oskar-Morgenstern Platz, 1, 1090, Vienna, Austria
daniela.escobar@univie.ac.at

Pricing future contracts in energy markets do not have so far a closed form and therefore neither the risk premia. There are some properties that make this market different from a classic financial market as negative spot prices, non-storability of energy and negative risk premia values. Many authors studied the behavior of the risk premia in this market by directly explaining its values or first proposing an evaluation of future contracts. We follow the latter and propose to evaluate future contracts with insurance premium principles. In particular, we justify the choice of the distortion premium principle and extend its definition. With this formulation the risk premia can be measured in terms of a Wasserstein distance and we can prove convergence results. As a final step, we are concerned about the influence of the model estimated of the spot prices. For this reason, we incorporate model uncertainty and calculate a robust risk premium over Wasserstein balls. The results presented are applied to the European Power Exchange (EPEX SPOT) in the German/Austrian area and consider Future Phelix contracts of the European Energy Exchange (EEX).

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