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# Managing Renewable Energy Production Risk

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## Abstract

The growing share of renewables paired with their intermittent nature introduces significant new challenges for market participants along the value-chain in power markets. Taking the view of an owner of such a physical renewable asset we showcase the management of the associated stochastic production risks in Germany, one of the most dynamic electricity markets and the largest producer of renewable energy in the EU-28. We find that unhedged renewable portfolios are very risky and existing vanilla derivatives are poor hedges. New exotic quantity-related weather contracts proposed by major energy exchanges (EEX) show a lot of potential but are still very illiquid. Their hedging performance is heavily driven by the market wide renewable generation portfolio which, in its current state, favors specific regions. In the long-run price-related derivatives will transform into more useful hedging instruments due to the growing importance of renewables in the formation of wholesale market prices.

JEL classification: G10, G13, Q40, Q42

Keywords: Power markets; Risk management; Structural model; Hedging; Weather-risks; Climate change economics

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