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options; 2.4 Commodity bonds and loans; 2.5 Multi-underlying options; 2.5.1 Basket options; 2.5.2 Spread options; 2.5.3 Quanto and composite options; 2.6 Spot price options; 2.6.1 Pricing spot price options; 2.6.2 Caps and floors; 2.6.3 Swing options; 2.6.4 Virtual storage; 3 Commodity Price Models; 3.1 Forward curves and the market price of risk; 3.1.1 Investment assets; 3.1.2 Consumption assets and convenience yield
3.1.3 Contango, backwardation and seasonality
3.1.4 The market price of risk; 3.1.5 Derivatives pricing and the risk-neutral measure; 3.2 Commodity spot price models; 3.2.1 Geometric Brownian motion; 3.2.2 The one-factor Schwartz model; 3.2.3 The Schwartz-Smith model; 3.3 Stochastic forward curve models; 3.3.1 One-factor forward curve models; 3.3.2 A two-factor forward curve model; 3.3.3 A multi-factor exponential model; 3.4 Electricity price models; 3.4.1 The hourly forward curve; 3.4.2 The SMaPS model; 3.4.3 Regime-switching model; 3.5 Multi-commodity models; 3.5.1 Regression analysis
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3.5.3 Cointegration; 3.5.4 Model building; 4 Fundamental Market Models; 4.1 Fundamental price drivers in electricity markets; 4.1.1 Demand side; 4.1.2 Supply side; 4.1.3 Interconnections; 4.2 Economic power plant dispatch; 4.2.1 Thermal power plants; 4.2.2 Hydro power plants; 4.2.3 Optimisation methods; 4.3 Methodological approaches; 4.3.1 Merit order curve; 4.3.2 Optimisation models; 4.3.3 System dynamics; 4.3.4 Game theory; 4.4 Relevant system information for electricity market modelling; 4.4.1 Demand side; 4.4.2 Supply side; 4.4.3 Transmission system
4.4.4 Historical data for backtesting

Sommario/riassunto

Mathematical techniques for trading and risk management. Managing Energy Risk closes the gap between modern techniques from financial mathematics and the practical implementation for trading and risk management. It takes a multi-commodity approach that covers the mutual influences of the markets for fuels, emission certificates, and power. It includes many practical examples and covers methods from financial mathematics as well as economics and energy-related models.
