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<p>Tiivistelmä-Referat-Abstract</p> <p>In this study, aspects of the optimal pricing of electricity are investigated. The motivation for the topic is that the deregulation of electricity markets cause fundamental changes in electricity pricing, due to the market risk of the supply side that did not exist in the previous regulated, monopolistic markets.</p> <p>The guiding principle of this study is that while some basic characteristics of electricity tariffs, such as the two-part structure and the capacity constraints, remain to be there irrespective of the deregulation, the tariff formation undergoes a vigorous change from deterministic optimization to stochastic optimization. The study is divided into five chapters, of which the first one is an introduction to the topic.</p> <p>In Chapter 2, the basics of nonlinear pricing are reviewed from the point of view of Ramsey pricing. After a discussion of the Ramsey pricing rule, it is shown how optimal electricity tariffs are constructed by optimization under the constraints imposed by an access fee and capacity limitations. The analogy of Ramsey pricing to the outcome of the Cournot oligopoly is discussed, too. The basic references for Chapter 2 are Wilson (1993) and Brown-Sibley (1986).</p> <p>In Chapter 3, the tariff formation in competitive markets is discussed. The presentation concentrates on a dynamic model in which an electricity tariff is considered as a portfolio of options of different maturities (Keppo - Räsänen 1999). The basic references for the stochastic analysis needed to explain this model are Duffie (1992) and Oksendal (1995). The main contribution of this chapter is that the lemmas and the theorem, stated without proofs in the original article, are proved using the techniques of stochastic analysis.</p> <p>In Chapter 4, the structure and valuation of a single electricity option are discussed. The main emphasis is given to the analytically solvable case of an electricity exchange option (Deng et al. 2001). Further, the problematics of the mean-reversion and the stochastic volatility of electricity prices is described, and the model is extended to account for these special characteristics. The basic references for the extending discussion are Merton (1973) and Duffie - Gray (1998). The inclusion of up-to-date experimental results and the extension of the model to a more general context and further, to account for stochastic volatility, are the main contributions of this chapter.</p> <p>The last chapter summarizes the main issues of the study and points out future directions.</p>			
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