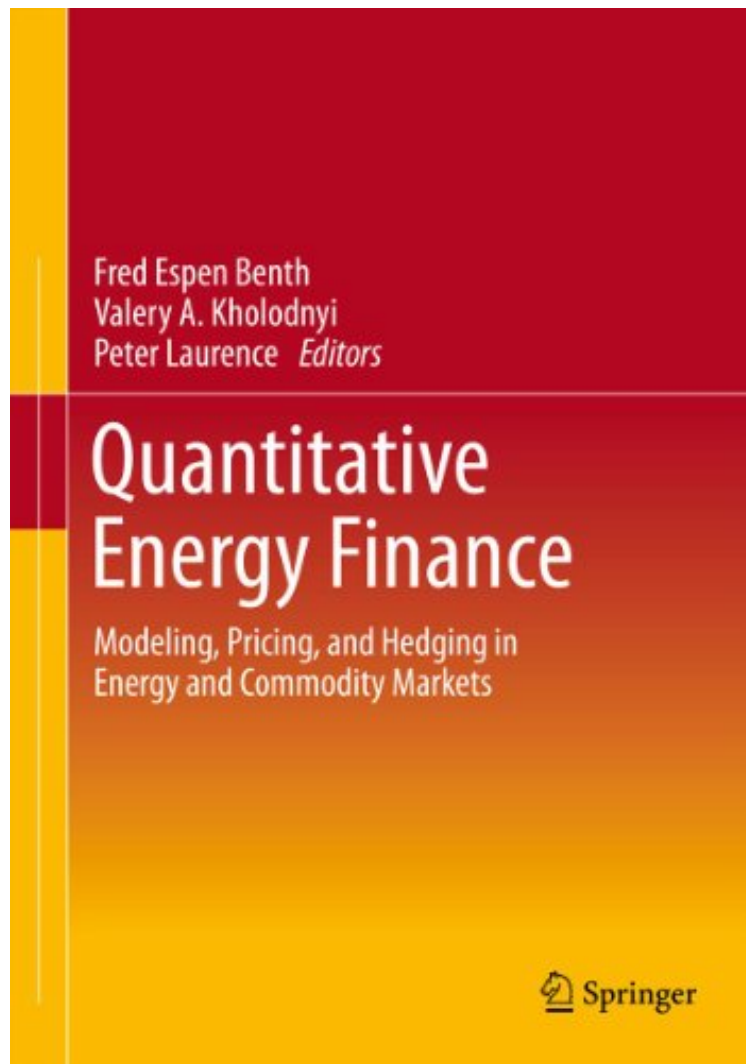


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# Quantitative Energy Finance: Modeling, Pricing, and Hedging in Energy and Commodity Markets

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Finance and energy markets have been an active scientific field for some time, even though the development and applications of sophisticated quantitative methods in these areas are relatively new and referred to in a broader

context as energy finance. Energy finance is often viewed as a branch of mathematical finance, yet this area continues to provide a rich source of issues that are fuelling new and exciting research developments. Based on a special thematic year at the Wolfgang Pauli Institute (WPI) in Vienna, Austria, this edited collection features cutting-edge research from leading scientists in the fields of energy and commodity finance. Topics discussed include modeling and analysis of energy and commodity markets, derivatives hedging and pricing, and optimal investment strategies and modeling of emerging markets, such as power and emissions. The book also confronts the challenges one faces in energy markets from a quantitative point of view, as well as the recent advances in solving these problems using advanced mathematical, statistical and numerical methods. By addressing the emerging area of quantitative energy finance, this volume will serve as a valuable resource for graduate-level students and researchers studying financial mathematics, risk management, or energy finance.

From the Back Cover Finance and energy markets have been an active scientific field for some time, even though the development and applications of sophisticated quantitative methods in these areas are relatively new and referred to in a broader context as energy finance. Energy finance is often viewed as a branch of mathematical finance, yet this area continues to provide a rich source of issues that are fuelling new and exciting research developments. Based on a special thematic year at the Wolfgang Pauli Institute (WPI) in Vienna, Austria, this edited collection features cutting-edge research from leading scientists in the fields of energy and commodity finance. Topics discussed include modeling and analysis of energy and commodity markets, derivatives hedging and pricing, and optimal investment strategies and modeling of emerging markets, such as power and emissions. The book also confronts the challenges one faces in energy markets from a quantitative point of view, as well as the recent advances in solving these problems using advanced mathematical, statistical and numerical methods. By addressing the emerging area of quantitative energy finance, this volume will serve as a valuable resource for graduate-level students and researchers studying financial mathematics, risk management, or energy finance.

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Peter Laurence is an associate Professor of Mathematics at the University of Rome, "La Sapienza"; and a visiting scholar at the Courant Institute. He completed his PHD in 1981 in applied mathematics at the University of Wisconsin, Madison after undergraduate courses at the Wharton School of Finance and Commerce and the University of Pennsylvania. He has published in leading international Journals in a large spectrum of areas in applied mathematics and of partial differential equations as well as in leading Math-Finance Journals like *Risk*

Magazine, Energy Risk, Mathematical Finance, International Journal of Theoretical and Applied Finance, Quantitative Finance, Applied Mathematical Finance, Insurance Mathematics and Economics, European Journal of Finance. He first became interested in mathematical finance in 1997 and in 1999 co-authored with Marco Avellaneda a book on option pricing Quantitative Modeling of Derivative Securities. He has taught mathematical finance at the graduate level at New York University's Courant Institute, Columbia University and at Universities of Rome I and II. To gain direct market experience, in 2001-2002 he was a consultant in Standard and Poor's Risk Solutions group where he specialized in Portfolio Credit Risk. His most research focus has been on pricing and hedging basket options and asymptotic methods for stochastic volatility models. This year he is co-organizing (with Rene' Aïd, Fred Benth, Valery Kholodnyi and Almut Veraart) a third special year on Energy and Commodities at the Wolfgang Pauli Institute in Vienna, a unique initiative offering high level intensive mini-courses on quantitative methods in Commodity Research, held by leading experts, free of charge to participants. nbsp;