DERIVATIVES, RISK MANAGEMENT & VALUE

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DEDICATION

I dedicate this book to the President of the Tunisian Republic, his Excellency Mr. Zine El Abidine Ben Ali, in recognition of his continuous and pivotal support for Science and its men in Tunisia. Over the last twenty-plus years, the scientific achievements of Tunisian researchers in various fields were of high importance. I do believe that the distinction of the scientific research in Tunisia, in relation to other countries in the Euro-Mediterranean region, is due to the particular efforts of Mr. Ben Ali.

In the field of Finance, the scientific community and I in Tunisia were lucky to benefit from his particular attention. Indeed, by placing the International Finance Conferences that I organized and headed under his high patronage, they gained a remarkable international reputation. With this opportunity, Ph.D. students, college professors and professionals were able to communicate with professors and experts from the best U.S. universities and institutions, alongside Nobel laureates such as H. Markowitz and J. Heckman.

Another important insight of Mr. Ben Ali's role is related to the setting of national awards to strengthen the mechanics of the scientific research at undergraduate and graduate levels. Such awards boost one's willingness to improve the Tunisian economy and its ability to meet the new challenges posed by the international context. Furthermore, the creation of Ben Ali's Chair for the dialogue of civilizations and religions in 2001 had a key role in the enrichment of knowledge and human values in a multi-religions context. In addition, it is considered as the Mecca of researchers from all over the world who are involved in bringing new approaches to make people closer.

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FOREWORD

by Edward C. Prescott (Arizona State University; Federal Reserve Bank of Minneapolis)

This book covers the main aspects regarding derivatives, risk, and the role of information and financial innovation in capital markets and in the banking system. An analysis is provided regarding financial markets and financial instruments and their role in the 2007–2008 financial crisis. This analysis hopefully will be useful in avoiding or at least mitigating future financial crises.

The book presents the principal concepts, the basics, the theory, and the practice of virtually all types of financial derivatives and their use in risk management. It covers simple vanilla options as well as structured products and more exotic derivative transactions. Special attention is devoted to risk management, value at risk, credit valuation, credit derivatives, and recent pricing methodologies.

This book is not only useful for specific courses in risk management and derivatives, but also is a valuable reference for users and potential users of derivatives and more generally for those with risk management responsibilities.

FOREWORD

by Harry M. Markowitz (University of California, San Diego)

Herein follows a remarkable volume, suitable as both a textbook and a reference book. Mondher Bellalah starts with an introduction to options and basic hedges built from specific options. He then presents an accessible account of the formulae used in valuing options. This account includes historically important formulae as well as the currently most used results of Black–Scholes, Merton and others. Bellalah then proceeds to the main task of the volume, to show how to value an endless assortment of exotic options.

Mondher Bellalah is to be congratulated for this tour de force of the field.

FOREWORD

by James J. Heckman (University of Chicago and University College Dublin)

Mondher Bellalah offers a lucid and comprehensive introduction to the important field of modern asset pricing. This field has witnessed a remarkable growth over the past 50 years. It is an example of economic science at its best where theory meets data, and shapes and improves on reality. Economic theory has suggested a variety of new and "exotic" financial instruments to spread risk. Created from the minds of theorists and traders guided by theory, these instruments are traded in large volume and now define modern capital markets.

Bellalah offers a step-by-step introduction to this evolving theory starting from its classical foundations. He takes the reader to the frontier by systematically building up the theory. His examples and intuition are splendid and the formal proofs are clearly stated and build on each other.

I strongly recommend this book to anyone seeking to gain a deep understanding of the intricacies of asset pricing.

FOREWORD

by George M. Constantinides (University of Chicago)

Both the trading of options and the theory of option pricing have long histories. The first use of option contracts took place during the Dutch tulip mania in the 17th century. Organized trading in calls and puts began in London during the 18th century, but such trading was banned on several occasions. The creation of the Chicago Board Options Exchange (CBOE) in 1973 greatly encouraged the trading of options. Initially, trading took place at the CBOE only in calls of 16 common stocks, but soon expanded to many more stocks, and in 1977, put options were also listed. The great success of option trading at the CBOE contributed to their trading in other exchanges, such as the American, Philadelphia and Pacific Stock Exchanges. Currently, daily option trading is a multibillion-dollar global industry.

The theory of option pricing has had a similar history that dates to Bachelier (1900). Sixty-five years after Bachelier's remarkable study, Samuelson (1965) revisited the question of pricing a call. Samuelson recognized that Bachelier's assumption that the price of the underlying asset follows a continuous random walk leads to negative asset prices, and thus makes a correction by assuming a geometric continuous random walk. Samuelson obtained a formula very similar to the Black–Scholes–Merton formula, but discounted the cash flows of the call at the expected rate of return of the underlying asset. The seminal papers of Black and Scholes (1973) and Merton (1973) ushered in the modern era of derivatives.

This is a lucid textbook treatment of the principles of derivatives pricing and hedging. At the same time, it is an exhaustively comprehensive encyclopedia of the vast array of exotic options, fixed-income options, corporate claims, credit derivatives and real options. Written by an expert in the field, Mondher Bellalah's comprehensive and rigorous book is an indispensable reference on any professional's desk.

ABOUT THE AUTHOR

After obtaining his Ph.D. in Finance in 1990 at France's leading University Paris-Dauphine, Mondher Bellalah began his career both as a Professor of Finance (HEC, INSEAD, University of Maine, and University of Cergy-Pontoise) and as an international consultant and portfolio manager. He started out as a market maker on the Paris Bourse, before being put in charge of BNP's financial engineering research team as Head of Derivatives and Structured Products. Dr. Mondher has acted as an advisor to various leading financial institutions, including BNP, Rothschild Bank, Euronext, Houlihan Lokey Howard & Zukin, Associés en Finance, the NatWest, Central Bank of Tunisia, Dubai Holding, etc., and has been Chief Risk Officer, Managing Director in Alternative Investments, Head of Capital Markets and Head of Trading.

Dr. Mondher has also enjoyed a distinguished academic career as a tenured Professor of Finance at the University of Cergy-Pontoise in Paris for about 20 years. During this time, he has authored more than 14 books and 150 articles in leading academic and professional journals, and was awarded the Turgot Prize for the best French-language book on risk management in 2005.

English-language books co-written/co-edited by Dr. Mondher include *Options, Futures and Exotic Derivatives: Theory, Application and Practice* published by John Wiley in 1998, and *Risk Management and Value: Valuation and Asset Pricing* published by World Scientific in 2008. His French-language books include *Quantitative Portfolio Management and New Financial Markets*; *Options, Futures and Risk Management*; and *Risk Management and Classical and Exotic Derivatives*.

Dr. Mondher is an associate editor of the *International Journal of Finance, Journal of Finance and Banking* and *International Journal of Business*, and has been published in leading academic journals including *Financial Review, Journal of Futures Markets, International Journal of Finance, International Journal of Theoretical and Applied Finance* as well as in the *Harvard Business Review.*

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