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风险管理中的期货和期权

Futures and Options in Risk Management

第2版

Terry J. Watsham
University of Brighton/著

北京大学出版社
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·院长寄语·

北京大学光华管理学院秉承北大悠久的人文传统、深邃的学术思想和深厚的文化底蕴，经过多年努力，目前已经站在中国经济发展与企业管理研究的前列，以向社会提供具有国际水准的管理教育为己任，并致力于帮助国有企业、混合所有制企业和民营企业实现经营管理的现代化，以适应经济全球化趋势。

光华MBA项目旨在为那些有才华的学员提供国际水准的管理教育，为工商界培养熟悉现代管理理念、原理和技巧的高级经营管理人才，使我们的MBA项目成为企业发展致富之源，为学员创造迅速成长和充分发挥优势的条件和机会。

为了适应现代人才需求模式和建立中国的一流商学院，北京大学光华管理学院正在推出国际MBA“双语双学位”培养方案；同时，为了配合北大MBA教育工作的展开，光华管理学院与北大出版社联合推出本套《当代全美MBA经典教材书系（英文影印版）》，并向国内各兄弟院校及工商界人士推荐本套丛书。相信我们这些尝试将会得到社会的支持。而社会对我们的支持，一定会使光华MBA项目越办越好，越办越有特色。

北京大学光华管理学院院长

出版者序言

2001年12月10日中国加入了世界贸易组织，从此，中国将进一步加大与世界各国的政治、经济、文化各方面的交流和合作，这一切都注定中国将在未来世界经济发展中书写重要的一笔。

然而，中国经济的发展正面临着前所未有的人才考验，在许多领域都面临着人才匮乏的现象，特别是了解国际贸易规则、能够适应国际竞争需要的国际管理人才，更是中国在未来国际竞争中所必需的人才。因此，制定和实施人才战略，培养并造就大批优秀人才，是我们在新一轮国际竞争中赢得主动的关键。

工商管理硕士(MBA)，1910年首创于美国哈佛大学，随后MBA历经百年风雨不断完善，取得了令世人瞩目的成绩。如今，美国MBA教育已经为世界企业界所熟知，受到社会的广泛承认和高度评价。中国的MBA教育虽起步较晚，但在过去10年里，中国的MBA教育事业发展非常迅速，也取得了相当显著的成绩。现在国内已经有50多所高等院校可以授予MBA学位，为社会培养了3000多名MBA毕业生，并有在读学员2万多人。

目前，国内的MBA教育市场呈现一片繁荣景象，但繁荣的背后却隐藏着种种亟待解决的问题。其中很大一部分问题的成因是因为目前我国高校使用的教材内容陈旧，与国外名校的名牌教材差距较大，在教学内容、体系上也缺乏与一流大学的沟通。为适应经济全球化，国家教育管理部门曾要求各高校大力推广使用外语讲授公共课和专业课，特别是在我国加入WTO后急需的上百万人才中，对MBA人员的需求更是占1/3之多，所以，大力开展双语教学，适当引进和借鉴国外名牌大学的原版教材，是加快中国MBA教育步伐，使之走向国际化的一条捷径。

目前，国内市场上国外引进版教材也是新旧好坏参差不齐，这就需要读者进行仔细的甄别。对于国外原版教材的使用，在这里我们要提几点看法。国外每年出版的教材多达几万种，如果不了解国外的教材市场，不了解国外原版教材的品质就可能找不到真正适合教学和学习的好的教材。对于不太了解外版教材的国内读者来说，选择教材要把握以下几点，即：选择国外最新出版的书；选择名校、名作者的书；选择再版多次并且非常流行的书。综合以上几点来看，目前国内市场上真正出新、出好、出精的MBA教材还是不多的。基于以上认识，北京大学出版社推出了《当代全美MBA经典教材书系(英文影印版)》，本套丛书的筛选正是本着以上提到的几点原则，即：出新、出好、出精。经过北京大学及国内其他著名高校的知名学者的精心挑选，本套丛书汇集了美国管理学界各个学科领域专家的权威巨著，称得上是一套优中选精的丛书。本套丛书现在已经推出了MBA主干课程、会计专业、金融专业课程教程三个系列，共45个品种。以后，我们还将陆续推出更多专业的英文影印版书籍。

致谢

本套教材是我社与国外一流专业出版公司合作出版的，是从大量外版教材中选出的最优秀的一部分。在选书的过程中我们得到了很多专家学者的支持和帮助，可以说每一本书都经过处于教学一线的专家、学者们的精心审定，本套英文影印版教材的顺利出版离不开他们的无私帮助，在此，我们对审读并对本套图书提出过宝贵意见的老师们表示衷心的感谢，他们是(按拼音排序)：

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本套丛书是对国外原版教材的直接影印，由于各个国家政治、经济、文化背景的不同，原作者所持观点还请广大读者在阅读过程中加以分析和鉴别。我们希望本套丛书的出版能够促进中外文化交流，加快国内经济管理专业教学的发展，为中国经济走向世界做出一份贡献。

我们欢迎所有关心中国 MBA 教育的专家学者对我们的工作进行指导，欢迎每一位读者给我们提出宝贵的意见和建议。

北京大学出版社政经法编辑部

2003 年 1 月

关 于 本 书

适用对象

本书是金融学专业高年级本科生和研究生以及在银行、公司负债管理部门从事衍生产品和风险管理人员的必读课本。同时金融和资本市场管理者、咨询者和研究者对本书也会有极大的兴趣。

内容简介

风险管理中的期货和期权(第2版)对定价原则和套期保值衍生工具(期货、远期、期权和互换)以及它们在国债和投资组合风险管理中的应用进行了深入介绍。本版还进行了广泛的修订并增添了新的内容,其中包括奇异期权、涉及衍生工具交易的风险管理,并对价格波动性提供了更为详尽的分析。

本书通过一种直觉、严格的方法来论述概念和模型,同时更加强调它们在实践中的应用。这种清晰、逐步的描述方法对那些缺乏数学基础的学生来说非常适合,而那些数学功底很好的学生通过阅读本书也将受益匪浅。

作者简介

Terry J. Watsham 是英国 the University of Brighton 金融学的首席讲师,学校金融教学团、资本市场项目组的负责人。他还是金融公共机构的顾问和教师,负责经理人员的培训和衍生工具产品的发展研究。目前他是证券协会金融期货和期权证书考试的主考官。他还是两本教材的作者:《国际投资组合管理:一种现代方法》(朗曼出版社 1993)和《金融学中的计量方法》(与 Keith Parramore 合著,国际汤姆森商务出版社 1996)。

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Preface

The last two and half decades have witnessed increasing sophistication in the management of financial risk. The breakdown of the Bretton Woods system, the increasing importance of monetary policy in national macroeconomic policy and the increasing reliance on interest rates as the major instrument of monetary policy have contributed to unprecedented concerns about the volatility of financial markets.

The substantial volatility of recent years have been accompanied by an increasing globalization of financial markets. This in turn has lead to an increasing awareness of the benefits, and the costs, of managing assets and liabilities traded on overseas markets and/or denominated in foreign currencies. This globalization has itself created a new dimension to the task of financial risk management for asset and liability managers in many countries.

The development of derivative instruments such as forwards, futures, options and swaps has proceeded apace as a response to these trends. Whether traded on established exchanges or over the counter, financial derivatives have become increasingly important instruments in risk management. Moreover, these instruments continue to evolve at an ever quickening pace. Consequently, a full understanding of the principles underlying the pricing, valuation, trading and application of futures, options, swaps and other derivative instruments is essential for all who manage financial assets or liabilities in an increasingly global and competitive financial environment.

My aim in writing this book has been to make available to the widest possible audience the theory and the practice of the role of derivative instruments in the management of international portfolios of assets and/or liabilities. To achieve that objective, this book is unashamedly a teaching (or learning!) vehicle. It is written in a style that combines theory with applications in such a way that will make it as applicable to practitioners in the financial markets as to postgraduate and specialist final-year undergraduate students in finance, financial economics and related disciplines.

In recognition of the international nature of the financial markets and the global applicability of much that is written here, applied examples have been drawn from several countries. In general, however, specific currency denomination has been omitted from many of the numerical examples, reflecting the international nature of their application.

I am aware of the hindrances to the wider understanding of derivatives, particularly options, because of the rigorously quantitative nature of much of the relevant literature. Therefore, in order to make this subject accessible to as many readers as possible, a separate chapter has been written which covers the basic quantitative techniques necessary. Chapter 2 will allow the reader who is not particularly mathematical to brush up on some of the quantitative concepts that will be encountered in the book. Moreover, I have, where it will aid clarification, provided numerical examples to accompany algebraic expressions. For those readers who are comfortable with quantitative techniques, Chapter 2 may be omitted.

This book has 16 chapters. Chapter 1 introduces the various derivative instruments and their markets. Chapter 2 refreshes those quantitative parts that other books have not reached! The general theories of the pricing of futures and options are introduced in Chapters 3 and 4. Chapter 5 is devoted to the topic of volatility which is so important in option pricing and risk management. Chapter 6 discusses the applications of options with regards to risk management and has numerous examples of option strategies. Chapter 7 analyses the manner in which the option pricing models need to be adapted to apply to equities, while Chapter 8 analyses and applies both options and futures on equity indices. The analysis of currency derivatives and currency risk management is covered in Chapters 9 and 10, the former covering currency forwards and futures, and the latter, currency options. Chapter 11 analyses the pricing and application of futures on short term interest rates, while Chapter 12 similarly deals with bond futures. Interest rate options are covered in Chapter 13, first, by looking at Black's model in relation to options on interest rate futures and long-term bonds, and second, by looking at some well-known models that apply the whole term structure of interest rates to pricing these options. Chapter 14 analyses swaps; interest rate swaps, currency swaps, equity swaps and commodity swaps are all covered. Chapter 15 looks at a number of exotic options that have become popular in the last five to ten years. The book closes with Chapter 16 which illustrates and discusses the various ways in which types of risk exhibited by the derivative instruments themselves can be managed.

There are several ways in which this book can be approached. First, of course, it could be read from cover to cover, in order to gain an overall knowledge of derivative instruments. Alternatively, the reader may study Chapters 1–5 (including 2 if necessary), together with those subsequent chapters that relate to his or her immediate needs. For example, an international equity manager may read Chapters 1–5 and Chapters 6, 7, 8, 9 and 10. On the other hand a corporate treasurer may read Chapters 1–5, plus 9–16. An international bond portfolio manager may read 1–5, plus 9 and 10, together with 12–15.

This approach allows both students and practitioners to concentrate on their immediate interest in the derivatives of one asset class at a time if that is appropriate. As a consequence the reader who covers the whole book may find a small amount of repetition with regard to the quantitative aspects of the theory; however, this does have the advantage of reinforcing the principles involved and is a valuable part of the learning process.

教辅材料说明

北京大学出版社出版的《当代全美 MBA 经典教材书系(英文影印版)》会计专业、金融专业教材系汤姆森学习出版集团(Thomson Learning)独家授权之英文影印版本，选自汤姆森学习出版集团旗下的国际知名教育图书出版公司 South-Western，South-Western 在 2001 年成功地收购了 Harcourt 出版社旗下的世界著名品牌——Dryden 出版社之后，一跃成为全球第一的经济管理类专业教材出版社。

汤姆森学习出版集团以"为学习者提供学习的完全解决方案"为公司的战略目标，不断为老师提供更完善的教学辅助产品，汤姆森学习出版集团出版的教材为老师提供了配套的教辅材料，如教师指导手册(Instructors Manual)、答疑手册(Solution Manual)、习题库(Test Bank)、演讲幻灯片(Powerpoint Presentation Slides / Powerpoint)、资源指导光盘(Instructor's Resource CD-ROM)、学生答疑手册(Student Solutions Manual)以及学习指导(Study Guide)等。

上述教辅材料，我社特获汤姆森学习出版集团授权独家复制以上部分教辅材料，我社可以根据老师开课的情况，在教师身份得到确认后(即填写一份随附的《教辅资料支持表》，加盖系院章)向老师提供。

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1

An introduction to derivatives

Chapter Outline

What are derivative instruments?
- Definitions of futures, forwards, options, warrants, swaps

An intuitive explanation of the uses of futures and options

A brief history of derivatives

The institutions and mechanisms of the futures markets
- Operations of the exchange
- Types of exchange members
- Types of orders and transactions
- Open outcry, screen-based trading
- Operations of the clearing-house
- The SPAN margining system
- The credit risk of the clearing-house

The institutions and mechanisms of the options markets
- The exchange and clearing-house
- The mechanics of options trading

An intuitive introduction to the use of futures, options and swaps

OBJECTIVES OF THIS CHAPTER

The objectives of this chapter are: to define the various derivative instruments that are the subject of this book; to give a brief history of their development; to describe the mechanisms of the markets in which those derivatives are traded; and, finally, to give an intuitive explanation of how they are used in risk management.

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