


1993

Book Reviews

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Sharif, Hoque A., "Book Reviews" (1993). *Journal of Actuarial Practice 1993-2006*. 162.
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Book Reviews

Options and the Management of Financial Risk, Phelim P. Boyle
(Society of Actuaries, 1992), 210 pp.

Reviewer: A. Hoque Sharif*

Option pricing has been an active area of research in the field of finance during the past 20 years. There are several textbooks that cover options pricing theory in great detail (including texts by Cox and Rubenstein (1985), Bookstaber (1991), Hull (1993), Jarrow and Rudd (1983), and Ritchken (1987)). Do we need another textbook? Yes, for actuaries there is a need for a book that explains the management of financial risk at an introductory level. There is no similar text written for actuaries.

In recent years, actuaries have become more involved in various aspects of corporate finance. In fact, the Society of Actuaries has already incorporated some courses on investment and finance in its education program and has opened a finance track (fall of 1993) for its Fellowship examination process. One expects Professor Boyle's *Options and the Management of Financial Risk* to play an important role in this process and in the education of a new generation of actuaries.

There are two major topics covered in this text: (1) models of the term structure of interest rates, and (2) the analysis and valuation of derivative securities. Only a few basic concepts in finance are introduced, and they are dealt with at an introductory level with numerical examples. Unfortunately, Professor Boyle does not refer the reader to any introductory level text. The only other textbooks referenced are by Malliaris (1982), Merton (1990), and Van Horne (1970). None of these can be considered as an introductory text. It

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Figure 1
Term Structure

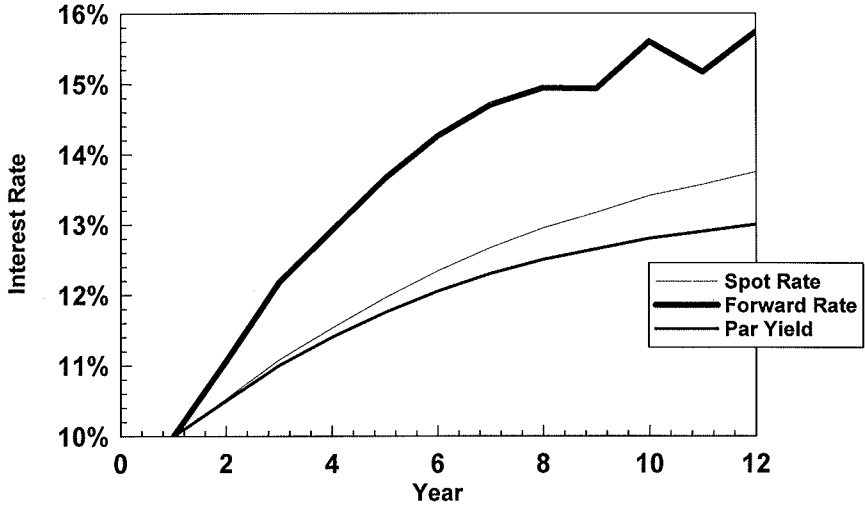
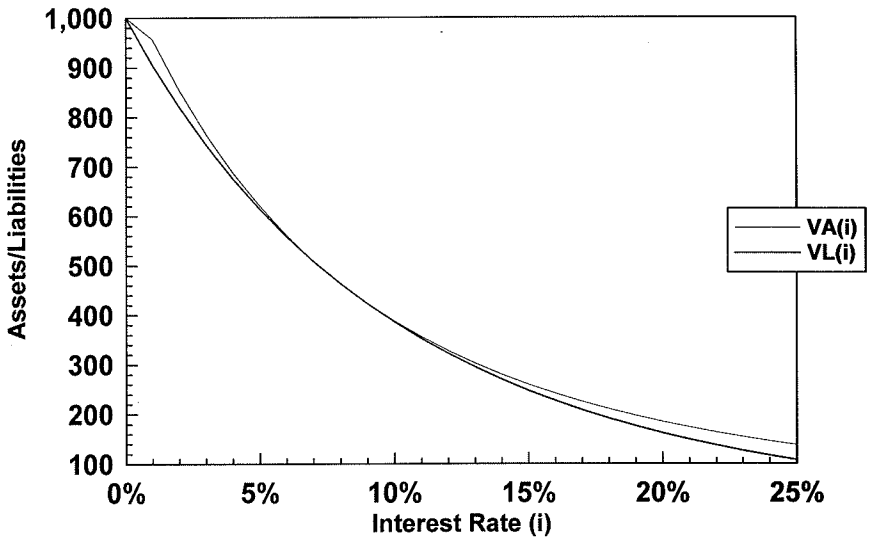


Figure 2
Value of Assets and Liabilities



should be pointed out that the actual reference to Malliaris should be Malliaris and Brock (1982). In addition, a more recent edition to Van Horne's text was published in 1990.

My only criticism of *Options and the Management of Financial Risk* is that it lacks exercises, graphs, and a subject index. None of the chapters has any exercises for readers. This is inconsistent with the philosophy of learning in the mathematical sciences, where doing actual problems is of vital importance. I hope that Professor Boyle corrects this by developing a companion text consisting of worked examples and exercises. Graphs are an efficient means of quickly communicating information, but they are used infrequently in this book. For example, inclusion of the two figures above (drawn using tables 2.2 and 2.6 on pages 28 and 35, respectively, of Professor Boyle's text) would have conveyed the essential information at a glance and would have helped to buttress his excellent points. There are several other places where graphs would have expedited communication with the reader. A subject index would have benefited readers.

Options and the Management of Financial Risk covers a sufficiently broad range of topics to provide a sound introduction to the management of financial risks. The book is well written and can be covered easily in a one semester university or college course. An elementary knowledge of interest theory and probability theory is sufficient background for understanding the material presented.

The book consists of eight chapters. Chapter 1 provides an introduction to the subjects of insurable risk, financial securities, financial risk, and financial risk management. It also provides an overview of the text. Chapter 2 introduces the framework for analyzing the term structure of interest rates in a deterministic setting. Classical definitions of duration and convexity are covered in Chapter 3. Derivative securities (options, forwards, futures, and options futures) are discussed at the grassroots level in Chapter 4. In Chapter 5 several relationships that option prices must obey (namely, put-call parity) are derived using the no-arbitrage principle. Chapter 6 assembles several results from probability and statistics, including the central limit theorem, normal and lognormal distribution, and a simple random walk model, all of which are useful in option pricing. The famous Black-Scholes formula for pricing European call options is analyzed in great detail in Chapter 7. The concluding chapter deals with stochastic interest rate models and their applications.

There are several existing textbooks on option pricing, but Professor Boyle's *Options and the Management of Finance Risk* provides an excellent starting point for actuaries, especially those unfamiliar

with modern finance theory. This book will be welcomed by actuaries.

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