Y.K. KWOK: *Mathematical Models of Financial Derivatives*. Springer Finance, Singapore, ISBN 981 3083 255 (hardcover), 981 3083 565 (softcover), 1998.

This book is described on the cover as being suitable for degree programs in mathematical and computational finance. As one who delivers a masters level course in derivative pricing to *maths* graduates I can see that this is indeed an appropriate audience. At the same time, I suspect that the typical masters student in finance with a first degree in a less numerate subject would struggle with this book.

The book is well written and maintains a consistent approach throughout. Apart from an early mention of the martingale approach to the pricing of derivatives and risk-neutral valuation the author sticks firmly with the partial differential equation (PDE) approach. Whether one should take the PDE approach or the martingale approach is really a matter for personal preference which often is the result of the what background a student or researcher comes from (applied maths or applied probability). However, my own preference is for the martingale approach, not just because of my personal background but also because the martingale approach gives much more insight into the subject. In particular, the martingale approach makes it much easier, at least initially, to tackle any new problem which is thrown at you. The book also tends to avoid rigorous technical development and this can leave students less well prepared for new, perhaps more complex derivative-pricing problems.

My overall impression of the book is, therefore, that it was not one which I would recommend to students as the core textbook in a course on derivative pricing. However, it is one which I would happily recommend as supplementary text. There are a number of reasons why I make this recommendation. First, the book, throughout, has good descriptive introductions to each topic. This carries through many of the essentially more technical sections where the author includes descriptive passages which turn an abstract problem and analysis into something more understandable. Second, each chapter ends with a comprehensive set of exercises which, again, is very useful for students wishing to reinforce what they are learning about the subject.

Chapter 1 gives a general introduction to the subject of derivative pricing, and presents essentially model-free results such as put-call parity and lower and upper bounds for prices. It then proceeds to introduce the models, tools and concepts used in the remainder of the book.

Chapters 2 to 6 deal with equity options. Chapter 2 works on the basic European option with the Black-Scholes model and formula taking centre stage. There is also what is essentially a statement of the Greeks without much intuitive explanation of what they are or how they should be used. Chapter 3 looks at multi-asset options. Chapter 4 considers how to price American options. This includes good non-technical descriptions of the various issues. Chapter 5 deals with various numerical methods for tackling

these problems. It is a well written section and, of course, relates well to the dominant PDE approach in the book. Chapter 6 looks at a number of different exotic options.

Finally, Chapter 7 gives a short introduction (unfortunately common to many books in this field) to bond pricing and interest-rate derivatives.

In summary, therefore, this book is not perfect but there are many good things in it, so it is a worthwhile purchase.

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