

## Corporate Finance, Module 23: “Advanced Option Valuation”

### *Readings for Ninth Edition*

(The attached PDF file has better formatting.)

Updated: November 19, 2007

The page numbers here are for the *ninth* edition of Brealey and Myers. You may also use the seventh or eighth editions of this text. The page numbers for the seventh and eighth editions are in separate postings.

{The Brealey and Myers textbook is excellent. We say to read certain sections and to skip others. This does not mean that certain sections are better; it means that the homework assignments and exam problems are based on the sections that you must read for this course. Some of the skipped sections are fascinating, but they are not tested.}

Review section 21.2, “Financial Alchemy with Options,” on pages 569-574. You read this for Module 20. Make sure the put call parity relation on page 572 is crystal clear. We use this relation to price the options.

Read the sub-section “Spotting the Option” on pages 574-576. When spotting options, ask a series of questions:

- What is the risky asset or liability? (This is the underlying security of the option.)
- What is the non-risky asset or liability? (This is the strike price.)
- How does volatility of the risky item affect the value of the option?
- What are the rights of the option holder that affect the option value?

Read section 21.3, “What Determines Option Values,” on pages 576-581. Understand and memorize table 21.2 on page 581. The understanding takes time and review of problems; first memorize the table so you know what to expect. The final exam poses multiple choice questions on these relations.

Read section 22.3, “The Black-Scholes Formula,” on pages 599-602, including the sub-section “Using the Black-Scholes Formula” on pages 600-602, but skipping the sub-section “The Black-Scholes Formula and the Binomial Method” on page 602. Black-Scholes has four formulas:

- the value of the call option (top of page 600 and Step 3 on page 602)
- the value of the put option (derived from call option by put call parity)
- the value of  $d_1$  (top of page 601)
- the value of  $d_2$  (which is  $d_1 - \sigma\sqrt{t}$ )

On CAS Exam 8 and SOA Course 8 Investments, we derive the Black-Scholes formula. For the on-line corporate finance course, know how to use the formula; that is, know what

each of the input parameters means. The final exam gives the equations (so you need not memorize them), but unless you have worked a few examples, you will be stumped.

Skip section 22.4, "Black-Scholes in Action," on pages 603-606. Read section 22.5, "Option Values at a Glance," on pages 606-607. American put options and American call options on dividend paying stocks are harder to price, and we do not have simple formulas that give exact values. The final exam does not ask you to price these options, but you must understand what each one means.