

Corporate Finance, Module 23: "Advanced Option Valuation"

Readings for the Fourteenth Edition (2022) of the Brealey, Myers, Allen, and Edmans text

(The attached PDF file has better formatting.)

The sections in this posting are for the *fourteenth* edition of the Brealey, Myers, Allen, and Edmans text. You may also use the seventh through thirteenth editions; final exam problems can be answered from any edition.

{The Brealey, Myers, Allen, and Edmans 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," especially equation 21.3, the put call parity relation on page 621: " $c + PV(X) = p + S$." The textbook writes this as "value of call + present value of exercise price = value of put + share price." The Black-Scholes formula uses this relation.

Review Example 21.5, "Option values increase with share volatility; Figures 21.10 and 21.11 help you visualize volatility, which is a key parameter of the Black-Scholes formula.

Review Table 21.2 on page 629; these are the five inputs to the Black-Scholes formula.

Read section 22.3, "The Black-Scholes Formula." Black-Scholes has four formulas, shown on the bottom of page 650:

- ! the value of the call option
- ! the value of the put option
- ! the value of d_1
- ! the value of d_2 (which is $d_1 - \sqrt{t}$)

Focus on the sub-section "Using the Black-Scholes Formula" on pages 651-652, "How Black-Scholes Values Vary with the Stock Price" on pages 652-653, and "The Risk of an Option" on page 653.

For the CAS and SOA exams, you learn to 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.

Read section 22-4 "Early Exercise and Dividend Payments." 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.

Review end of chapter problems 11, 12, 13, and 15.

Illustrative test questions, problems, and homework assignments are shown separately on the discussion forum.