Corporate Finance, Module 2: “How to Calculate Present Values”

The page numbers here are for the *eighth* edition of Brealey and Myers. You may also use the sixth or seventh editions for this course. The page numbers for the seventh edition are in a separate posting.

*Readings*: from Brealey and Myers, chapter 3

(The attached PDF file has better formatting.)

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Module 2 deals with material that is covered in greater depth on SOA Course FM (CAS Exam 2). If you have already taken Course FM, you know this material; if you have not yet sat for Course FM, you must learn this material anyway.

Focus on section 3.2, perpetuities and annuities. Know especially the following formulas:

- Page 40: present value of perpetuity and growing perpetuity
- Pages 41-42: present value of annuity

The notation for Course FM is slightly different, but the formulas are the same. This course focuses on the financial theory, not on annuity valuation. The final exam questions can be solved by writing out the present values of each cash flow, but the annuity and perpetuity formulas simplify the mathematics.

Jacob: Where do we use these formulas in corporate finance?

Rachel: The present value of a perpetuity is the market value of perpetual debt. The debt always itself has a maturity; it is not permanent. Perpetual debt means that the firm intends to refinance the debt at its maturity. We use this formula to evaluate the tax shields from perpetual debt for the capital structure modules of this course.

The next module takes the present value of common stock dividends, assuming a steady growth rate and no maturity; this is the growing perpetuity. A growing perpetuity starting after N years is a stock that pays no dividends now, but will begin paying after N years, or a stock that will change its dividend yield in N years. The annuity formulas are used to value finite debt.

Read section 3.3, “Compound Interest and Present Values,” pages 44-48. Know the section on pages 47-48 regarding continuous compounding. This subject is covered on Course FM; know the three examples on pages 47-48. Option pricing on SOA Course 6 and CAS Exam 8 uses continuous compounding. Brealey and Myers show the formulas with annual compounding, since not all their readers can handle exponentiation. The final exam for this course follows the formulas in the Brealey and Myers text.

The Summary on pages 50-51 lists the major formulas. From the quiz on page 52, review questions 1-8; these do not require much arithmetic. Review questions 11 & 13 (pages 53-54).

The practice questions deal with Course FM material. The final exam for this course focuses on the finance aspects, not the annuity and bond aspects.