

## Corporate Finance, Module 3: “The Value of Bonds and Common Stocks”

*Readings, Eighth Edition*

(The attached PDF file has better formatting.)

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Module 3 covers bond and common stock values. We use these formulas through the rest of the course. We might estimate three items: stock price, capitalization rate, or present value of growth opportunities; know all three formulas.

Finance has many unanswered questions, and common stock valuation is a good example. We don't always know why a stock's price increases or decreases. We assume that the stock price is the discounted value of future dividends, but there is no way to prove this, since we don't know the future dividends or the capitalization rate.

*Jacob:* Isn't this true by definition, since the capitalization rate is the internal rate of return of the common stock cash flows?

*Rachel:* We assume that the capitalization rate reflects the systematic risk of the stock, so it does not change unless the systematic risk changes. If the stock price changes, we infer that either the expected future stream of dividends has changed or the systematic risk has changed. But the frequency and magnitude of common stock fluctuations seems greater than can be ascribed to changes in expected future dividends or systematic risk.

The introduction on page 57 shows two perspectives for this module:

- An investor values common stocks to enhance the potential yield (make higher profits). You learn much about this subject from Brealey and Myers, but this is *not* the focus of the textbook. We cover common stock valuation on SOA Course 6 and CAS Exam 8 from this investment perspective.
- The firm's managers are expected to increase shareholders' value. To do this, they must understand what increases shareholders' value.

You might say: “This is obvious; to increase shareholder value, make more money.” Well, it is not obvious; many firms pursue objectives that do not enhance shareholder value. A firm may diversify to smooth its earnings. Its managers may say that smooth earnings are rewarded by higher stock prices; Brealey and Myers (supported by empirical evidence) say that firm diversification rarely enhances shareholder value and often lowers it.

*Jacob:* What are the activities of firms covered in this text that do not enhance its value?

*Rachel:* The major examples in this text are:

- Firms pay stockholder dividends, which may have negative net present value after considering federal income taxes; but firms that lower their dividend yields often have declines in their market values.
- Diversification generally reduces a firm's market value, but firms diversify. Similarly, mergers and acquisitions generally reduce a firm's market value, but firms frequently engage in such mergers and acquisitions.
- Corporate debt often raises a firm's market value, yet few firms seem to hold sufficient debt to maximize their values.

*Jacob:* If managers do not seek to enhance shareholder value, what is their objective?

*Rachel:* Managers (like everyone else) seek to enhance their own wealth. The Board of Directors structures manager compensation (e.g., bonus plans) to enhance shareholder value. Brealey and Myers discuss this in the capital structure modules.

Read Section 4.1 on pages 57-60, and focus on the subsection "What happens when interest rates change?" on page 59. This is also covered in Courses FM, Course 6, and CAS Exam 8. The capital structure modules of this course use the *market values of debt and equity*. For equity, we use the stock price, not the book value of the firm. For debt, we discount future interest payments at the proper capitalization rate.

For valuing the tax shield of debt, we must know how changes in interest rates affect bond values. If the debt is perpetual, we need just the market value, not the yield to maturity; if the debt has a limited life, we need the yield to maturity as well.

Section 4.2 on pages 60-61 covers facts on stock trading; it is not tested on the final exam.

Read Section 4.3 on pages 61-65, which derives the formula for common stock values, given on the bottom of page 64. In this course, most final exam questions and homework assignments use the simplifications on page 65 for the stock price and capitalization rate.

Read Section 4.4 on pages 65-70, stopping before "DCF valuation with varying growth rates" on page 70. Pages 70-71 extend the formula to more complex scenarios, which are not tested on the final exam. We can rarely project dividend changes in future years. We focus on the intuition of the formulas, not the details.

The practice problems and final exam questions may ask you to derive the theoretical price for a stock given next year's dividend, the capitalization rate, and the dividend growth rate. We do this for heuristic purposes, to make sure you understand the logic. In truth, the stock price is known; the capitalization rate and the dividend growth rate are unknown. For mature stocks, the dividend growth rate can sometimes be estimated from past experience, and we derive the market capitalization rate; Tables 4.2, 4.3, 4.4, and 4.5 on pages 68, 70, and 71 shows the procedures.

Section 4.5 on pages 72-76 has the most important *concepts* in this module. Know the formula for the present value of growth opportunities (PVGO) at the bottom of page 74.

*Jacob:* If a firm tries to grow faster, does its value generally increase?

*Rachel:* Rapidly growing firms have two attributes that affect their value: (i) the expected future growth raises their value but (ii) the attempt to grow faster often raises its systematic risk and its capitalization rate, lowering its value.

The PVGO is embedded in the current stock price, as we see when firms announce earnings. Suppose the expected earnings for the *average* firm is 12%.

- Firm A is a growth stock with expected earnings of 18%. If it announces earnings of 15% (above average), its stock price should fall.
- Firm B is an income stock with expected earnings of 8%. If it announces earnings of 10% (below average), its stock price should rise.

The example of Fledgling Electronics of page 73-75 makes this clear. We can think of the present value of growth opportunities in two ways; the examples shows they are the same.

Many problems assume that dividends grow steadily; if you understand the dividend growth model, you can solve more complex problems as well. But constant growth is not realistic. Firms has life cycles, with rapid growth, high mortality, and low dividend yields for new firms, moderate growth and low mortality for mature firms, and low growth for declining industries.

The Summary on pages 76-77 reviews the major formulas. Know especially the last three formulas: stock price, capitalization rate, and present value of growth opportunities.

Review questions 2, 4, and 5 from the quiz on page 78, and questions 6, 7, and 8 from the practice questions on page 79. (The illustrative test questions, practice problems, and homework assignments for this module are posted separately on the discussion forum.)

The Reeby Sports mini-case on page 82 is not required. It is worth reading, since it shows how these principles are used; but the final exam does not test this material.

*Jacob:* What formulas should we know from this Module?

*Rachel:* A separate posting lists the major formulas. We explicitly identify many formulas that you must know, but these lists are not all-inclusive. We do this to ensure that you can focus on the most important parts of each reading. The list of formulas does not replace the concepts and intuition in each Module.