

# INTERMEDIATE FINANCIAL MANAGEMENT

FIFTH EDITION

EUGENE F. BRIGHAM  
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STUDY GUIDE



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INTERMEDIATE FINANCIAL  
MANAGEMENT

F I F T H E D I T I O N

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## P R E F A C E

This *Study Guide* is designed primarily to help you develop a working knowledge of the concepts and principles of financial management. Additionally, it will familiarize you with the types of true/false and multiple choice test questions that are being used with increasing frequency in finance courses.

The *Study Guide* follows the outline of *Intermediate Financial Management*. You should read carefully the next section, *How To Use This Study Guide*, to familiarize yourself with its specific contents and to gain some insights into how it can be used most effectively.

We would like to thank Bob Karp and Susan Sternberg for their considerable assistance in the preparation of this *Study Guide*.

We have tried to make the *Study Guide* as clear and error-free as possible. However, some mistakes may have crept in, and there are almost certainly some sections that could be clarified. Any suggestions for improving the *Study Guide* would be greatly appreciated. Since instructors almost never read study guides, we address this call for help to students!

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## HOW TO USE THIS STUDY GUIDE

Different people will tend to use the *Study Guide* in somewhat different ways. This is natural, because both intermediate finance courses and individual student's needs vary widely. However, the tips contained in this section should help all students use the *Study Guide* more effectively, regardless of these differences.

Each chapter contains (1) an overview, (2) an outline, (3) some definitional questions, (4) some conceptual questions, and (5) answers to the questions. In addition, all but the first chapter (Chapter 1) contain a set of problems with solutions. You should begin your study by reading the overview; it will give you an idea of what is contained in the chapter and how this material fits into the overall scheme of things.

Next, read over the outline to get a better fix on the specific topics covered in the chapter. It is important to realize that the outline does not list every facet of every topic covered in the textbook--the *Study Guide* is intended to highlight and summarize the textbook, not to supplant it.

The definitional questions are intended to test your knowledge of, and also to reinforce your ability to work with, the terms and concepts introduced in the chapter. If you do not understand the definitions thoroughly, review the outline prior to going on to the conceptual questions and problems.

The conceptual questions focus on the same kinds of ideas that the text book end-of-chapter questions address, but in the *Study Guide* the questions are less complex and set out in a true/false or multiple choice format. Thus, these questions can be used to practice for the types of tests that are being used with increasing frequency. However, regardless of the types of tests you must take, working through the conceptual questions will help drive home the key concepts of financial management.

The numerical problems are also written in a multiple choice format. Generally, the problems are arranged in order of increasing difficulty. Also, note that some of the *Study Guide* problems are convoluted in the sense that information normally available to financial managers is withheld, and information normally unknown is given. Such problems are designed to test your knowledge of a subject, and you must work "backwards" to solve them. Furthermore, such problems are included in the *Study Guide* in part because they provide a good test of how well you understand the material, and in part because you may well be seeing similar problems on your exams.

Finally, each *Study Guide* chapter provides the answers and solutions to the questions and problems. The rationale behind a question's correct answer is explained where necessary, but the problem solutions are always complete. Note that the answers to numerical problems were obtained using a financial calculator. You should not be concerned if rounding differences cause your answer to differ from ours by a small amount.

Of course, each student must decide how to incorporate the *Study Guide* in his or her overall study program. Many students begin an assignment by reading the *Study Guide* overview and outline to get the "big picture," then read the chapter in the textbook. Naturally, the *Study Guide* overview and outline is also used extensively to review for exams. Most students work the textbook questions and problems prior to tackling the *Study Guide* questions and problems, using the latter as a self-test and review tool. However, if you are stumped by a text problem, try the *Study Guide* problems first, because their detailed solutions can get you over stumbling blocks.

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# CHAPTER 1

## AN OVERVIEW OF FINANCIAL THEORY

### OVERVIEW

Chapter 1 provides an overview of financial theory, including a discussion of the following topics: (1) the concept of perfect capital markets, (2) discounted cash flow (DCF) analysis, (3) Modigliani and Miller's capital structure theory, (4) Modigliani and Miller's dividend theory, (5) portfolio theory and the Capital Asset Pricing Model (CAPM), (6) option pricing theory, (7) market efficiency and the risk/return tradeoff, (8) agency theory, (9) MVA and EVA, and (10) asymmetric information theory. Many of the topics in this chapter will be covered

in depth in later chapters -- portfolio theory in Chapter 2, the CAPM in Chapter 3, option pricing theory in Chapter 5, capital structure theory in Chapters 11 and 12, and dividend policy in Chapter 13. Other material is covered in depth in Chapter 1 and then drawn upon throughout the remaining chapters. In this chapter of the Study Guide, we focus on the material that is covered in depth in Chapter 1: DCF analysis, the efficient markets hypothesis, agency theory, MVA and EVA, and asymmetric information theory.

### KEY CONCEPTS

The process of valuing future cash flows is called *discounted cash flow (DCF) analysis*.

The rationale for discounted cash flow analysis is the *time value of money*: A dollar in hand today is worth more than a dollar due some time in the future. *Because you can invest it.*

Discounted cash flow analysis requires (1) future cash flow estimates and (2) a discount rate.

The *discount rate* must reflect the opportunity cost, the return foregone by choosing one investment over another. Thus, the discount rate is the expected rate of return on alternative investments of similar risk.



The discount rate must reflect the risk inherent in the cash flows to be discounted -- the higher the risk, the higher the discount rate. It also must reflect the prevailing level of returns in the economy and should consider the periodicity of the cash flows.

The *Efficient Markets Hypothesis (EMH)* states that stock prices reflect current information, and that it is impossible for an investor to consistently "beat the market."

The weak form of the EMH states that past trends in stock prices cannot be used to predict future prices. Empirical tests support weak-form efficiency.

The semistrong form of the EMH states that all publicly announced information is reflected in stock prices. This form is supported by empirical tests to a reasonable extent, especially for large companies that are followed by many analysts.

The strong form of the EMH states that all information, both public and private, is reflected in stock prices. This is not true, because insiders can and do make excess profits using private information, although such actions are illegal.

The EMH has implications for both investors and financial managers.

- Since security prices do appear to generally reflect all public information, most securities are fairly valued. Therefore, investors can only expect to receive a return that approximately compensates them for the risks involved.
- Since financial assets appear to be fairly valued, financial management decisions should, in general, not be made on the basis of the firm's securities being either under or over valued.

Financial markets are generally efficient, but product markets are not usually efficient, and hence excess returns can be earned in product markets. Thus, it makes sense for financial managers to seek real asset investment opportunities which provide excess returns (positive NPVs).

There are three key questions in every financial decision.

- What is the return involved?
- What is the risk involved?
- Is the return commensurate with the risk?

An *agency relationship* exists when one or more persons (the principals) hire another person (the agent) to act on their behalf, delegating decision-making authority to that agent. In the financial management framework, this relationship exists (1) between stockholders and managers and (2) between creditors and stockholders.

A potential agency problem exists whenever a manager owns less than 100 percent of the firm's common stock.

- Since the firm's earnings do not go solely to the manager, he or she may not concentrate exclusively on maximizing shareholder wealth. Also, because costs are borne by all stockholders, the manager may consume too many perquisites.
- Another potential conflict between management and stockholders arises in a management sponsored leveraged buyout, because management might attempt to minimize the stock price just prior to the buyout.

To insure that managers act in the best interest of shareholders, shareholders must incur agency costs, which include:

- Expenditures to monitor managerial actions.
- Expenditures to structure the organization to minimize undesirable managerial behavior.
- Opportunity costs associated with lost profits due to an organizational structure which does not allow managers to act on a timely basis.

Complete monitoring of managerial activity would solve the agency problem, but it would be costly and inefficient. Managerial compensation solely in the form of shares of the firm's stock would also solve the problem, but it would be difficult to hire managers on this basis. The optimal solution includes some monitoring as well as compensation that includes both a fixed salary and performance incentives.

Several mechanisms tend to force managers to act in the shareholders' best interest, thus minimizing the agency problem.

- Because stock ownership is becoming concentrated in the hands of large institutions, the firing of management by dissatisfied stockholders has become a reality. Shareholders can remove inefficient managers through a proxy fight in which proxy votes are obtained by a dissident group who install new management.
- Any managerial decision that results in the undervaluation of a firm's stock price makes the firm more likely to be the target of a hostile takeover. In a hostile takeover, management is either fired or else loses a great deal of autonomy.
- Tying managers' compensation to the company's performance motivates managers to operate in a manner consistent with stock price maximization. The main tool being

used now, which is based on factors over which managers have control, is performance shares (or bonuses). These are given to executives on the basis of performance as measured by such criteria as growth in earnings per share and return on assets.

An agency problem also exists between a firm's creditors (usually bondholders) and its stockholders (actually managers acting on behalf of stockholders). Conflict arises if (1) stockholders (management) take on projects that have greater risk than was anticipated by creditors or (2) the firm increases its level of debt without changing its assets. Both of these actions decrease the value of the debt outstanding. It is in the stockholders' best interest to deal fairly with the firm's creditors in order to assure future access to debt markets at reasonable interest costs.

The fair and ethical treatment of the firm's other *stakeholders*, including employees, suppliers, customers, and even the communities in which the firm operates, is also in the stockholders' best interest. Fair and ethical treatment of these parties promotes long-term profitability, and hence stock price maximization.

Two new analytical approaches have been developed that focus directly on management's success or failure in maximizing shareholders' wealth: Market Value Added (MVA) and Economic Value Added (EVA).

The primary goal of any firm should be shareholders' wealth maximization. Shareholders' wealth is maximized by maximizing the difference between the firm's total market value and the amount of capital that investors have supplied to the firm. This difference is called *Market Value Added (MVA)*.

- There is a direct tie between MVA and the net present value (NPV) capital budgeting rule.
- Since NPV measures the amount that a project can be expected to add (or subtract) from MVA, by following the NPV rule managers should, at a minimum, be able to avoid creating negative MVA.
- The companies with the highest MVAs have done a spectacular job of ferreting out high-NPV projects, which produce high MVAs.

Whereas MVA measures the combined effect of managerial actions to enhance shareholders' wealth since the inception of the company, *Economic Value Added (EVA)* focuses on managerial effectiveness in a given year. The basic formula for EVA is this:  $EVA = \text{Operating profit} - (\text{Total capital supplied} \times \text{Cost of capital})$ .

- EVA is an estimate of a business's true economic profit for the year, and it differs substantially from accounting profitability measures.
- EVA represents the residual income that remains after the opportunity cost of the employed capital has been deducted, whereas accounting profit is figured without imposing a charge for equity capital.
- EVA (but not MVA) can be applied to divisions as well as the entire company, but the charge for capital must reflect the risk of the business unit, be it the whole company or an operating division.
- EVA is a link in the chain that begins with the NPV of a individual project and ends with the firm's MVA. Each project's economic profitability, which is initially measured by its NPV, contributes to the firm's EVA for any given year, and MVA is the present value of the EVAs that the firm is expected to produce in the future.
- In the past few years, many highly successful firms have adopted incentive compensation systems based on EVA. The primary rationale is that EVA is linked both theoretically and empirically to shareholders' wealth. When executive compensation is tied to EVA, managers are given the proper incentive to take actions that contribute the most to shareholders' wealth.

An *asymmetric information* situation exists when a firm's managers know significantly more about the future prospects of their firm than do informed analysts and investors.

Since one of management's important goals is to maximize stock price, managers are motivated to announce inside information, especially when the information is favorable.

To support the announcement, management can signal the information regarding favorable future prospects so investors will take the news more seriously and use it to revalue the firm's stock. One example of signaling is a dividend increase.

The presence of asymmetric information can influence many managerial actions, including capital structure, dividend policy, and financing decisions.

### DEFINITIONAL QUESTIONS

1. An \_\_\_\_\_ relationship exists when one or more persons (the principals) hire another person (the agent) to act on their behalf, delegating decision-making authority to that agent.
2. Potential agency problems exist between a firm's shareholders and \_\_\_\_\_ and also between shareholders and \_\_\_\_\_.

3. \_\_\_\_\_ must incur agency costs to ensure managers act in their best interest.
4. According to the \_\_\_\_\_, stock prices reflect all public information, and hence investors without inside information cannot consistently beat the market.
5. Agency problems could be solved by complete monitoring of managerial activity, but this would be \_\_\_\_\_ and \_\_\_\_\_.
6. In order to perform discounted cash flow analysis, one needs to estimate \_\_\_\_\_ and a \_\_\_\_\_.
7. The opportunity cost of any investment is the return that can be earned on alternative investments of \_\_\_\_\_ risk.
8. Although capital markets are generally acknowledged to be efficient, \_\_\_\_\_ markets are not efficient, especially in the short run.
9. MVA stands for \_\_\_\_\_ and EVA stands for \_\_\_\_\_.

### CONCEPTUAL QUESTIONS

10. Managers always operate in the best interest of shareholders.
  - a. True
  - b. False
11. The existence of asymmetric information, where managers know more about their firms' prospects than the public, is inconsistent with the Efficient Markets Hypothesis (EMH).
  - a. True
  - b. False
12. In determining the best course of action, financial managers ultimately choose the alternative that has the highest return.
  - a. True
  - b. False
13. Which of the following statements about the Efficient Markets Hypothesis is true?
  - a. The U.S. capital markets are generally acknowledged to be semi-strong form efficient.

- b. Managers often have more information about their firm's prospects than do well-informed analysts and investors.
  - c. Past price, or interest rate, movements cannot be used to predict future price, or interest rate, movements.
  - d. Strong-form efficiency does not generally hold, because insiders can make excess profits.
  - e. All the above statements are true.
14. Which of the following factors tend to encourage management to pursue stock price maximization as a goal?
- a. Shareholders link management's compensation to company performance.
  - b. Managers' reactions to the threat of tender offers and proxy fights.
  - c. Managers do not have goals other than stock price maximization.
  - d. Statements a and b are both correct.
  - e. Statements a, b, and c are all correct.
15. How might a manager best signal his or her beliefs about an optimistic earnings future to the public?
- a. Declare a dividend decrease.
  - b. Hold a press conference to paint a rosy picture for the future.
  - c. Declare a dividend increase.
  - d. Declare a program to buy back debt, and hence decrease the firm's use of financial leverage.
  - e. Any of the above actions would provide the correct signal.
16. Why is EVA being used more and more in managerial incentive systems?
- a. It is linked directly to shareholders' wealth.
  - b. It can be applied to divisions as well as entire firms.
  - c. It measures economic rather than accounting profitability.
  - d. It gives managers the incentive to take those actions that contribute most to shareholders' wealth maximization.
  - e. All of the above statements are true.

## **ANSWERS**

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>1. agency</li><li>2. managers; debtholders</li><li>3. Shareholders</li><li>4. Efficient Markets Hypothesis</li><li>5. costly; inefficient</li></ul> | <ul style="list-style-type: none"><li>6. future cash flows; discount rate</li><li>7. similar</li><li>8. product</li><li>9. Market Value Added; Economic Value Added</li></ul> |
|---|---|
- 
- 10. b. Unfortunately, managers sometimes play it safe, or even purposely ignore stockholders' interests to pursue their own. However, in most circumstances, mechanisms exist which persuade managers to act in the shareholders' best interest.
  - 11. b. The Efficient Markets Hypothesis applies only to public information, and hence managers can hold inside information about their own firms.
  - 12. b. The correct choice must consider each alternative's risk as well as its expected return.
  - 13. e.
  - 14. d.
  - 15. c. By declaring a dividend increase, the manager clearly signals his or her positive beliefs. A press conference alone would not be regarded as a legitimate signal, because the announcement is not verifiable. A program to reduce debt, or a dividend decrease, is a signal of a poor earnings future.
  - 16. e.



# CHAPTER 2

## RISK AND RETURN: PART 1

### OVERVIEW

As we discussed in Chapter 1, neither an individual acting on his or her own behalf nor a manager acting for a firm's shareholders should make an investment decision solely on the basis of expected return. Decision makers must assess the riskiness of the investment, and then ask whether the return is sufficient to compensate for the risk assumed.

Since risk analysis is critically important, it is essential that one understand how risk is defined and measured. We will see in Chapter 2 that risk can be defined in two ways: (1) as *stand-alone* risk, which focuses on a single asset and which involves the dispersion of outcomes around the expected return on that asset, and (2) as *market* risk, which focuses on a portfolio of assets and which measures each asset's contribution to the riskiness of the portfolio.

Measuring risk is only one part of the task. We must be able to relate risk to expected returns, and to answer this question: How much return is required to compensate for a given degree of risk? As we shall see in Chapter 3, the Capital Asset Pricing Model (CAPM) provides one neat, precise answer to this question. However, the CAPM has not been and indeed cannot be confirmed empirically--it may or may not represent the way investors actually behave, so a CAPM-based analysis may or may not lead to a decision that will maximize the firm's stock price. This fact does not by itself invalidate the CAPM, but it does force us to consider alternative ways of specifying both how risk should be measured and how the expected return required to compensate for a given degree of risk should be established.

### KEY CONCEPTS

*Risk* refers to the possibility that some unfavorable event will occur. Investment risk is associated with the probability of low or negative returns.

The *probability distribution for an event* is the listing of all the possible outcomes for the event, with mathematical probabilities assigned to each.

Probability distributions may be either *discrete* or *continuous*.

Discrete distributions, which have a finite number of outcomes, are often used to specify risk. However, continuous distributions are also extensively used in financial analysis.

The expected rate of return,  $\hat{k}$ , is the sum of the products of each possible return times its associated probability -- it is a weighted average of the various possible returns, with the weights being their probabilities of occurrence:

$$\hat{k} = \sum_{i=1}^n P_i k_i .$$

*Stand-alone risk* is the riskiness of an asset held in isolation, whereas *market risk* is the asset's relevant risk if it is held as part of a well-diversified portfolio.

Stand-alone risk is measured by the dispersion of returns about the expected return. Market risk measures the stock's contribution to the overall riskiness of the portfolio.

In general, combining stocks into portfolios reduces risk, because returns on stocks that are less than expected will be offset to some degree by other stocks whose returns are greater than expected. Thus, a stock's market risk is generally less than its stand-alone risk.

*Variance* is a measure of the dispersion of a distribution around its expected value.

Variance is calculated using the following formula:

$$\sigma^2 = \sum_{i=1}^n (k_i - \hat{k})^2 P_i .$$

Variance is measured in the same units as the outcome--generally percent--but squared.

*Standard deviation* is another measure of the tightness of a distribution around its mean, and it is often used as an alternative to variance.

The standard deviation is found by taking the square root of the variance: