SECTION ONE
Questions

PART I
Cost of Capital Basics

Chapter 1

Defining Cost of Capital

This chapter presents a variety of concepts about the nature of cost of capital and how it is measured.

MULTIPLE CHOICE QUESTIONS

1. Cost of capital usually is expressed:

   a. In percentage terms, as a percentage of the face value of the investment.

   b. In percentage terms, as a percentage of the amount invested.

   c. In dollar terms, in real dollars.

   d. In dollar terms, in nominal dollars.

2. The components of a company's capital structure include:

   a. Accounts payable, long-term debt, and preferred stock.

   b. Accounts payable, preferred stock, and common stock.

   c. Accounts payable, long-term debt, and common stock.

   d. Long-term debt, preferred stock, and common stock.

3. Cost of capital for an acquisition or a project is a function of:

   a. The company's marginal overall cost of capital.

   b. The company's average overall cost of capital.

   c. The company's marginal cost of equity capital.

   d. The investment (the use to which the capital is put).

4. Which of the following items are referred to as the "time value of money"?

   a. The expected "real" rate of return, expected inflation, and risk.

   b. The expected "real" rate of return and expected inflation but not risk.

c. Expected inflation and risk but not the expected "real" rate of return.

d. The expected "real" rate of return and risk but not expected inflation.

5. Which of the following is a correct statement?

a. Cost of capital is based on market value and usually is stated in real terms.

b. Cost of capital is based on book value and usually is stated in real terms.

c. Cost of capital is based on market value and usually is stated in nominal terms.

d. Cost of capital is based on book value and usually is stated in nominal terms.

6. Which of the following terms are often (properly) interchangeable?

a. Cost of capital, discount rate, and required rate of return.

b. Cost of capital and discount rate but not required rate of return.

c. Cost of capital and required rate of return but not discount rate.

d. Required rate of return and discount rate but not cost of capital.

7. Which of the following is used as a divisor to convert a single element of return to an estimate of present value?

a. Cost of capital.

b. Discount rate.

c. Capitalization rate.

d. Required rate of return.

TRUE OR FALSE QUESTIONS

8. Cost of capital is market driven. True False

9. Cost of capital is based on historical returns. True False

10. The discount rate is the link that equates expected future returns for the life of the investment with the present value of the investment at a given date. True False

Chapter 2

Introduction to Cost of Capital Applications: Valuation and Project Selection

This chapter discusses using the cost of capital as the discount rate in valuation and project selection. It gives the present value formula and an example of applying it to estimate the value of a bond. It discusses briefly the relationship between a discount rate and a capitalization rate.

MULTIPLE CHOICE QUESTIONS

1. For valuation and capital investment project selection, what is the measure of economic income on which most analysts today prefer to focus?

   a. Net cash flow.

   b. Net income.

   c. EBIT.

   d. EBITDA.

2. If a company's overall cost of capital is 10%, and a project the company is considering is riskier than the average of the company's overall risk, the rate at which the expected returns from the project should be discounted would be:

   a. Less than 10%.

   b. 10%.

   c. More than 10%.

   d. The rate that the proposed project manager recommends.

3. The *discount rate* represents:

   a. The reciprocal of the price/net cash flow ratio.

   b. The total expected rate of return.

c. The current yield on the investment.

d. The reciprocal of the capitalization rate.

TRUE OR FALSE QUESTIONS

4. The procedure for using cost of capital to evaluate an acquisition is basically similar to the procedure used for project selection. True False

5. Cost of capital is used to convert expected future returns to present value. True False

FILL-IN-THE-BLANK QUESTIONS

6. Net cash flow is also referred to as:

_____

7. A yield rate used to convert a single payment or measure of economic income into a present value is called:

_____

EXERCISES

Given the following:

Face value of bond:	$1,000
Interest rate on face value:	7%
Bond pays interest once a year, at end of year.	
Bond matures, from valuation date:	4 years
Market yield on bonds of comparable risk and other characteristics as of valuation date:	10%

8. Compute the value of this bond at the valuation date.

9. What is the company's embedded cost of capital for this bond?

10. What is the company's market cost of capital for debt such as this?

Chapter 3

Net Cash Flow: The Preferred Measure of Return

This chapter defines net cash flow, both to equity and to invested capital, and explains why it is considered the preferred measure of return for valuation and capital budgeting. It also states that the estimates of net cash flow should be probability-weighted expected values and shows how to calculate them.

MULTIPLE CHOICE QUESTIONS

1. Which of the following must be subtracted from EBITDA to compute net cash flow to invested capital?

   a. Depreciation, interest (tax-affected), capital expenditures, and additions to working capital.

   b. Depreciation, capital expenditures, and addition to working capital but not interest.

   c. Capital expenditures, additions to working capital, and interest (tax-affected) but not depreciation.

   d. Capital expenditures and additions to working capital, but neither depreciation nor interest.

2. The net cash flows that theoretically should be discounted in future periods are:

   a. The most likely outcomes.

   b. Amounts based on extrapolation of historical net cash flows.

   c. The probability-weighted expected values.

   d. The most conservative estimates of net cash flows.

TRUE OR FALSE QUESTIONS

3. In a symmetrical distribution of possible outcomes, the cash flow most likely to occur is the expected value of the probability distribution. True False

4. Net cash flow is the amount of money available to be distributed without disrupting the projected ongoing operations of the enterprise. True False

5. Net cash flow is the economic income measure for which we have the best historical data available for estimating cost of equity capital. True False

EXERCISES

Use the following balance sheet and income statement for questions 6 and 7.

Old Stable Consulting Co.
Balance Sheet as of 12/31/XX

Assets	
Current Assets	$1,000,000
Furniture, fixtures, & equipment (net of depreciation)	500,000
Total Assets	$1,500,000

Liabilities and Equity	
Accounts payable	200,000
Current portion of long-term debt	100,000
Total current liabilities	$300,000
Long-term debt	400,000
Stockholders' equity	800,000
Total liabilities and equity	$1,500,000

Old Stable Consulting Co.
Income Statement for Year Ending 12/31/XX

Revenue		$9,000,000
Cost of direct labor		3,600,000
Gross margin		5,400,000
General & administrative expenses:		
Depreciation	$100,000	
Other G&A	3,700,000	3,800,000
Operating profit		$1,600,000
Interest expense		50,000
Pretax income		$1,550,000
Corporate income taxes (federal and state)		620,000
Net income		$930,000

Assume the following:

Target working capital: 8% of last year's revenue
Expected capital expenditures: $120,000

6. Compute the net cash flow to equity.

7. Compute the net cash flow to invested capital.

8. Given the following distribution of possible outcomes (unrelated to questions 6 and 7), compute the expected value (probability-weighted value):

–$100	10%
0	20%
+$100	40%
+$150	20%
+$200	10%

9. What is the most likely outcome of the above distribution?

Chapter 4

Discounting versus Capitalizing

Chapter 2 briefly introduced the present value formula, which is at the heart of the discounting method, while this chapter presents the capitalization method. The reason the discounting method was presented first, even though the capitalization method is simpler, is that the capitalization method is merely a shortcut version of the discounting method. The student should have a firm understanding of the discounting method to intelligently determine whether results produced by the capitalization method are within a reasonable range of value.

This chapter presents the functional relationship between discounting and capitalizing and a formula for converting a discount rate to a capitalization rate if certain assumptions are met. It also introduces the Gordon Growth Model. It shows how discounting and capitalization models can be combined by using a capitalization model for the "terminal value" in a discounting model.

Finally, the chapter introduces the "midyear convention," which assumes that cash flows are realized more or less evenly throughout the year rather than at the end of the year.

MULTIPLE CHOICE QUESTIONS

1. Which of the following statements is true about the discount rate?

   a. It is the reciprocal of the capitalization rate.

   b. It represents the total compound rate of return that an investor in that class of investment expects to achieve over the life of the investment.

   c. It represents the current yield.

   d. Both (b) and (c) are true.

2. Which of the following statements is true about the relationship between discount and capitalization rates?

   a. The discount rate equals the capitalization rate only for an investment whose returns are growing at a constant rate over time.

   b. The discount rate and the capitalization rate are terms that are properly used interchangeably.

   c. The discount rate equals the capitalization rate only when the expected returns in each period are equal in perpetuity.

   d. The discount rate never equals the capitalization rate.

3. Which of the following is a correct statement?

   a. In discounting, changes in expected returns are reflected in the numerator, while in capitalizing, changes in expected returns after the first year are reflected in the denominator.

   b. In discounting, changes in expected returns are reflected in the denominator, while in capitalizing, changes in expected returns after the first year are reflected in the numerator.

   c. In both discounting and capitalizing, changes in expected returns after the first year are reflected in the numerator.

   d. In both discounting and capitalizing, changes in expected returns after the first year are reflected in the denominator.

4. If the expected rate of growth is constant in perpetuity, which of the following is a correct statement about the relationship between the discounting and capitalizing models?

   a. The discounting model would be expected to produce a higher value than the capitalizing model.

   b. The discounting model would be expected to produce the same value as the capitalizing model.

   c. The discounting model would be expected to produce a lower value than the capitalizing model.

   d. Not enough information is provided to determine what the relationship would be.

5. Which of the following is a correct statement about the midyear convention versus the year-end convention?

   a. The midyear convention always produces a higher value than the year-end convention.

   b. The year-end convention always produces a higher value than the midyear convention.

   c. The midyear and year-end conventions produce the same value only when the cash flows are the same in every year.

   d. Sometimes the midyear convention produces a higher value and sometimes the year-end convention produces a higher value, depending on the pattern of the cash flows.

TRUE OR FALSE QUESTIONS

6. In the discounting model, the terminal value is discounted for $n + 1$ periods. True False

7. In the discounting model, the longer the discrete projection period, the greater the impact of the terminal value on the total present value. True False

8. When the midyear convention is used in the discounting model for the discrete cash flows, it is appropriate to use it for the terminal value as well. True False

FILL-IN-THE-BLANK QUESTIONS

9. The procedure by which the latest year's actual return is increased by a constant rate of growth and the result is divided by a capitalization rate is called:

_____

10. The capitalization value of expected cash flows after the discrete projection period is called:

_____

EXERCISES

11. Given the following:

A noncallable perpetual preferred stock
Pays $10 dividend per share at the end of each year
Market yield rate for preferred stocks of similar risk: 8%

Value the stock by the capitalization formula.

12. Given the following:

Discount rate	10%
Growth rate in perpetuity	4%

What is the capitalization rate?

13. Given the following:

Dividend in base period ($period_0$)	$1.00
Growth rate in dividend (compounded annually in perpetuity)	5%
Discount rate	12%

Using the Gordon Growth Model, what is the value of one share of stock?

14. Given the following:

Net Cash Flows	
Year 1:	$1000
Year 2:	$1200
Year 3:	$1400
Year 4:	$1550
Year 5:	$1700

Growth in perpetuity beyond year 5: 6%
Discount rate: 20%

Compute the present value using the year-end discounting convention.

15. Given the same set of facts as in Exercise 13, compute the present value by the midyear capitalization convention.

16. Given the same set of facts as in Exercise 14, compute the present value by the midyear discounting convention.

Chapter 5

Relationship between Risk and the Cost of Capital

This chapter defines risk and gives the three types of risk in the economic sense as used in the conventional methods of estimating cost of capital. It also tells us that as risk goes up, the cost of capital goes up. Finally, it tells us that common equity capital, preferred equity capital, and debt are components of total invested capital and that the blended cost of these is the weighted average cost of capital (WACC).

MULTIPLE CHOICE QUESTIONS

1. The cost of capital is comprised of which of the following factors?

   a. The "risk-free rate," plus a holding period premium, plus a premium for risk.

   b. The "risk-free rate," plus a premium for potential changes in interest rates, plus a premium for risk.

   c. The "risk-free rate," plus a maturity premium, plus a premium for risk.

   d. The "risk-free rate," plus a premium for risk.

2. "Unsystematic risk" encompasses all of the following EXCEPT:

   a. Industry risk.

   b. Company-specific risk.

   c. The risk of changes in the general level of market returns.

   d. Risk arising from leverage.

3. In which of the following methods of estimating the cost of equity capital is a risk premium explicitly added to a risk-free rate?

   a. The build-up method, the Capital Asset Pricing Model, and the DCF method.

   b. The build-up method and the Capital Asset Pricing Model but not the DCF method.

   c. The build-up method and the DCF method but not the Capital Asset Pricing Model.

   d. The Capital Asset Pricing Model and the DCF method but not the build-up method.

4. The risk-free rate:

   a. Excludes any type of risk.

   b. Excludes the risk of default, but not the risk of changes in interest rates.

   c. Excludes the risk of default, but not the risk of changes in the general prices of equities in the market.

   d. Excludes the risk of default, the risk of changes in interest rates, and the risk of changes in the general prices of equities in the market.

TRUE OR FALSE QUESTIONS

5. Arguably, the most widely accepted definition of risk in the context of business appraisal is "the degree of uncertainty as to the realization of expected future economic income." True False

6. As risk increases, the cost of capital increases, and vice versa. True False

7. Uncertainty is in the minds of investors; therefore, we cannot measure it directly. True False

FILL-IN-THE-BLANK QUESTIONS

8. In an economic sense, as used in the conventional sense of estimating the cost of capital, capital theory divides risk into what three components?

   _____

   _____

   _____

9. What is the name of the factor commonly used to measure systematic risk?

   _____

10. The overall cost of a company's capital (blended cost of common equity, preferred equity, and long-term debt) is called what?

    _____

Chapter 6

Cost Components of a Company's Capital Structure

In the last chapter, it was said that the weighted average cost of capital (WACC) is the blended cost of the components of the capital structure. In this chapter we explore each of those components.

MULTIPLE CHOICE QUESTIONS

1. The relevant market "yield" in calculating the cost of debt is:

   a. Yield to maturity, yield-to-call date, or current yield.

   b. Yield to maturity or yield-to-call date but not current yield.

   c. Yield to maturity or current yield but not yield-to-call date.

   d. Current yield or yield-to-call date but not yield to maturity.

2. In estimating the after-tax cost of debt for a potential new project, the best rate to use is usually:

   a. The current marginal rate.

   b. The marginal rate over the life of the investment.

   c. The average statutory rate.

   d. The average effective rate.

3. In the late 1990s in the sale of small businesses and professional practices with at least 30% down, what was the typical percentage of the balance that insurance companies were charging to the buyer to guarantee the seller paper?

   a. 1%

   b. 3%

   c. 5%

   d. 6% or more

TRUE OR FALSE QUESTIONS

4. Some companies, especially smaller ones, use short-term debt as if it were long-term debt. In such cases, it is a legitimate exercise of the analyst's judgment to reclassify the short-term debt as long-term debt. True False

5. Research shows that the majority of corporations do not pay the marginal statutory tax rate. True False

FILL-IN-THE-BLANK QUESTIONS

6. The major components of capital structure are:

_____

_____

_____

7. In addition to the major components of capital structure, list five other possible variations of securities in a company's capital structure:

_____

_____

_____

_____

_____

8. The cost of convertible debt or preferred stock can be analyzed as a combination of what two elements?

_____

_____

9. What are the two components of return on common stock or partnership interests?

_____

_____

EXERCISE

10. If a company's pretax cost of debt is 8% and the applicable tax rate is 20%, what is the company's after-tax cost of debt?

Chapter 7

Weighted Average Cost of Capital

This chapter tests concepts such as when to use the weighted average cost of capital (WACC), how to compute WACC for both public and private companies, and what capital structure is appropriate in different valuation scenarios.

MULTIPLE CHOICE QUESTIONS

1. All of the following statements about the use of WACC are true EXCEPT:

   a. The most obvious instance in which to use WACC is when valuing the entire capital structure of a company.

   b. WACC is commonly used in discounting or capitalizing returns to common equity holders.

   c. Sometimes WACC is used to value the entire capital structure and then subtract the market value of debt to estimate the value of equity.

   d. WACC is especially appropriate for project selection in capital budgeting.

2. Which of the following is appropriate to use as the after-tax cost of debt for a public company with bonds issued and outstanding?

   a. The coupon rate on the face value of the bonds.

   b. The current yield on the market value of the bonds.

   c. The yield to maturity of the bonds.

   d. None of the above.

TRUE OR FALSE QUESTIONS

3. If a minority interest is valued by first valuing the overall capital and then subtracting debt, then a hypothetical capital structure (e.g., an industry-average capital structure) may be used in the calculation of WACC. True False

4. The cost of capital may be greater for a private company than for a public company, even though they are in the same industry and are the same size, because the private company may not have equivalent access to the capital markets. True False

FILL-IN-THE-BLANK QUESTIONS

5. The relative weightings of debt and equity or other capital components used in calculating the WACC for a company are based on the _____ values of each component, not on the _____ values.

6. The weighted average cost of capital (WACC) is based on the cost of each capital component _____ of any corporate-level tax effect on that component.

7. One of the processes used to estimate market value weights for the capital structure of a private company is an _____ one.

8. Assuming that the book value of equity is lower than its market value, then using the capital structure weightings at book values tends to _____ the WACC and _____ the value of equity.

EXERCISES

The following are known about public Company XYZ:

4 million shares of common stock issued and outstanding
Closing common stock price per share: $10
2 million shares of preferred stock issued and outstanding
Closing preferred stock price per share: $16
$10 million face value of bonds issued and outstanding
Closing bond price: 80 (80% of face value)
Cost of common equity for XYZ: 25%
Cumulative, nonparticipating dividend on the preferred stock: $2.40 per share every year
Cost of debt before tax effect: 10%
Combined federal and state income tax rate: 40%

9. The cost of preferred equity for Company XYZ is:

   a. 24%

   b. 15%

   c. 9%

   d. 14.4%

10. The after-tax cost of debt for Company XYZ is:

    a. 4%

    b. 10%

    c. 9%

    d. 6%

11. Compute the market value of invested capital (MVIC) and the weights for each capital structure component for Company XYZ.

12. The WACC for Company XYZ is:

    a. 19.5%

    b. 17.1%

    c. 19.1%

    d. 18.9%

13. Given the following:

Pretax cost of debt	10%
Cost of preferred stock	9%
Cost of common equity	20%
Shares of common stock	1,000,000
Price per share of common stock	$7.00
Shares of preferred stock	500,000
Price per share of preferred stock	$4.50
Face value of debt (same as market value)	$3,000,000
Tax rate	30%

    Compute the WACC.

PART II
Estimating the Cost of Equity Capital

Chapter 8

Build-up Models

This chapter reviews the inputs to the build-up model for estimating the cost of common equity capital.

MULTIPLE CHOICE QUESTIONS

1. The typical build-up model for estimating the cost of common equity capital may consist of all of the following components EXCEPT:

   a. A risk-free rate.

   b. Beta.

   c. A general equity risk premium.

   d. A size premium.

2. The risk-free rate component of the build-up model reflects which of the following components?

   I. Rental rate.

   II. Inflation.

   III. Default risk.

   IV. Maturity or investment risk.

      a. I, II, III

      b. I, III, IV

      c. II, III, IV

      d. I, II, IV

3. Which of the following are reasons why financial analysts prefer the 20-year U.S. Treasury yield to maturity as the risk-free rate in the build-up method?

   I. It approximates the assumption of perpetuity for an equity investment.

   II. Shorter-term rates fluctuate less than longer-term rates.

   III. Longer-term yields fluctuate less than shorter-term ones.

   IV. Longer-term yields contain maturity risk.

   a. I, II, III

   b. I, III, IV

   c. II, III, IV

   d. I, II, IV

4. All of the following are factors that may impact company-specific risk EXCEPT:

   a. Volatility of returns

   b. General equity risk premium

   c. Leverage

   d. Size smaller than the smallest size premium group

TRUE OR FALSE QUESTIONS

5. U.S. Treasury obligations with maturities of 1, 10, and 20 years typically are used to represent the risk-free rate in the build-up model for estimating the cost of equity capital. True False

6. The view that the long-term arithmetic average equity risk premium is the best proxy for today's equity risk premium is universally accepted. True False

7. An alternative to using the historical average equity risk premium data (Ibbotson data) to estimate the current equity risk premium is the discounted cash flow method. True False

8. It is empirically proven that the degree of risk and the cost of capital increase with decreasing company size. True False

FILL-IN-THE-BLANK QUESTIONS

9. The differential in expected return on the broad stock market over U.S. Treasury obligations is called _____ .

10. A common method of estimating the equity risk premium is to use _____ data.

11. Mathematically, the geometric mean is always _____ than the arithmetic mean, unless all observations are _____ .

12. The cost of equity capital can be regarded as composed of two major components: a _____ rate and a _____ premium.

13. When applying the build-up method in an international setting, a country _____ _____ may be added to reflect uncertainties in the particular country.

14. The risk-free rate component of the build-up model for estimating the cost of equity _____ include inflation.

EXERCISES

The following are annual returns on the stock market (as measured by a broad market index) and on short-term U.S. Treasury obligations for five consecutive years.

Year	Returns on the Market	Returns on U.S. Treasury Obligations
1	43%	3%
2	15%	6%
3	20%	2%
4	–30%	5%
5	2%	6%

15. Compute the short-term arithmetic mean equity risk premium over the five years of data given.

16. Compute the short-term geometric mean risk premium over the five years of data given.

17. Use the build-up method to calculate the cost of equity capital for Company XYZ using the following known variables:

Risk-free rate	6%
Equity risk premium	7%
Size premium for Company XYZ	8%
Company-specific risk premium	2%

Chapter 9

Capital Asset Pricing Model

Despite many criticisms, the Capital Asset Pricing Model (CAPM) is still widely used to estimate the cost of equity capital, especially for large companies. This chapter reviews the inputs to CAPM, differentiates between systematic and unsystematic risk, and presents an expanded CAPM.

MULTIPLE CHOICE QUESTIONS

1. Compared to the traditional CAPM model, the expanded CAPM model includes which of the additional following factors?

   a. Beta and the general equity risk premium for the market.

   b. Risk-free rate, risk premium for small size, and company-specific risk.

   c. Risk premium for small size and company-specific risk premium.

   d. Risk-free rate, beta, and the general equity risk premium for the market.

2. A stock that pays no dividends has a beta of 1.4 and the market is down 10%. The beta for the market is considered to be equal to 1.0. According to CAPM, the price of the stock will be expected to:

   a. Be up 14%.

   b. Be up 10%.

   c. Be down 10%.

   d. Be down 14%.

3. A stock that pays no dividends has a beta of 0.75 and the market is down 10%. The beta for the market is considered to be equal to 1.0. According to CAPM, the price of the stock is expected to:

   a. Be down 7.5%.

   b. Be up 7.5%.

   c. Be up 10%.

   d. Be down 10%.

4. The risk that CAPM assumes is diversified away by investors holding well-diversified portfolios is:

   a. Systematic risk.

   b. Investment risk.

   c. Default risk.

   d. Unsystematic risk.

5. The equity risk premium for a security equals:

   a. The security's beta times a general equity risk premium for the market as a whole.

   b. The beta for the market as a whole times a general equity risk premium for the market as a whole.

   c. The risk-free rate plus the product of the security's beta and the general equity risk premium for the market as a whole.

   d. The security's beta or systematic risk.

6. The unsystematic risk of an investment in a particular company is a function of:

   I. The characteristics of the industry.

   II. The characteristics of the company.

   III. The systematic risk of the investment.

   IV. The type of investment interest.

      a. I, II, III

      b. I, II, IV

      c. II, III, IV

      d. I, III, IV

7. Beta measures:

   a. Unsystematic risk.

   b. The general equity risk premium.

   c. Systematic risk.

   d. The specific (company) equity risk premium.

TRUE OR FALSE QUESTIONS

8. Generally, for a security, a higher beta signifies higher systematic risk and results in a higher estimated equity risk premium and cost of equity capital. True False

9. Since privately held companies have no market price, their betas can be directly observed and measured. True False

10. A fundamental assumption of CAPM is that investors do not require compensation for the systematic risk because they can easily diversify it away. True False

11. For a security with a beta lower than 1.0, when market rates of return move up or down, the rates of return for the subject security tend to move in the opposite direction and with lower magnitude. True False

FILL-IN-THE-BLANK QUESTIONS

12. One difference between the build-up method and CAPM is the introduction of _____ as a modifier to the general risk premium.

13. _____ measures the sensitivity of excess total returns on any individual security to the total excess returns on some measure of the market, such as the New York Stock Exchange (NYSE) Composite Index or the Standard & Poor's (S&P) 500 Index.

14. CAPM concludes that the equity risk premium for a security is a linear function of the security's _____ .

15. For a security with a beta higher than 1.0, when market rates of return move up or down, the rates of return for the subject security tend to move in the _____ direction and with _____ magnitude.

EXERCISES

The following are known:

Risk-free rate as of the valuation date (R_f):	6%
Beta for security XYZ (B):	1.5
Equity risk premium for the market as a whole (RP_m):	8%

16. Compute the equity risk premium for security XYZ.

17. Compute the expected return (cost of capital) for security XYZ based on CAPM.

18. The expected return in excess of the risk-free rate for security ABC is 12% and the equity risk premium for the market as a whole is 8%. Compute the beta for security XYZ.

Chapter 10

Proper Use of Betas

This chapter focuses on beta estimation methodology in the context of the Capital Asset Pricing Model (CAPM). Topics to master in this chapter include the differences between systematic and unsystematic risk, the factors that impact the beta measurement process, and how to compute levered and unlevered betas. The chapter also introduces some methodologies employed by Ibbotson Associates in the calculation of its betas.

MULTIPLE CHOICE QUESTIONS

1. If betas for all guideline companies are not available from one source, the best solution is to use:

   a. For each guideline company, an average beta computed from all betas available from all sources.

   b. For each guideline company, the most conservative value offered by various sources.

   c. The source providing betas for the greatest number of guideline companies and do not use betas for the others.

   d. For each guideline company, the median beta from all betas provided by various sources.

2. Which of the following is NOT one of the steps in adjusting for leverage differences between the public guideline companies and the subject private company?

   a. Compute unlevered betas for guideline companies.

   b. Compute an arithmetic average of the levered betas of the public guideline companies.

   c. Decide where the subject company's risk would fall relative to guideline companies, assuming all had 100% equity capital structures.

   d. Relever the beta for the subject company on the basis of one or more assumed capital structures.

TRUE OR FALSE QUESTIONS

3. The unlevered beta for a highly leveraged company could be highly underestimated if the levered beta was measured over a period of low or no leverage. True False

4. Beta is a modifier to the equity risk premium in the build-up model and in CAPM to estimate cost of equity capital. True False

5. The length of the total period over which returns are measured is not a factor that has considerable influence on the beta measurement. True False

6. The process of estimating a levered beta for a private company involves computing an average levered beta for the guideline companies from published beta values and then levering it again with the capital structure of the subject private company. True False

FILL-IN-THE-BLANK QUESTIONS

7. There is empirical evidence that, over time, a company's beta tends toward its _____ average beta.

8. Levered betas reflect two risk factors: _____ risk and _____ risk.

9. For a leveraged company, unlevered beta is always _____ than the levered beta.

10. The Ibbotson (adjusted) beta calculated by Ibbotson Associates is computed by a technique called _____ .

11. Beta can be computed by using either _____ or _____ returns on the individual security and on the market. Ibbotson uses _____ returns in all its computations.

12. For computing beta, the Ibbotson Associates *Beta Book* uses _____ months for most stocks. If data is not available for this length of time, then data for _____ months is used as the minimum acceptable.

13. Betas for publicly traded stocks that reflect the capital structure of the companies are referred to as _____ betas.

EXERCISES

14. We know the following about Company ABC:

Unlevered beta:	1.25
Debt:	$75 million
Equity:	$25 million
Tax rate:	40%

Compute the levered beta for Company ABC.

15. We know the following about private Company XYZ:

Unlevered beta:	0.50
Levered beta:	1.40
Tax rate:	40%
Total market value of capital:	$100 million

What is the market value of the equity for Company XYZ?

Chapter 11

Size Effect

This chapter tests basic concepts about the size premium and about Ibbotson Associates' methodology for computing it. The topic is explored further in Chapter 13, "Using Ibbotson Associates Cost of Capital Data."

MULTIPLE CHOICE QUESTIONS

1. The size premium as calculated by Ibbotson Associates is supposed to be used in which of the following models to estimate the cost of equity capital?

   a. CAPM only.

   b. The build-up model only.

   c. Both CAPM and the build-up model.

   d. None of the above.

2. The size premium as calculated by Ibbotson Associates equals:

   a. The product of beta and the arithmetic mean return minus the CAPM-estimated return in excess of the riskless rate.

   b. The product of beta and the arithmetic mean return minus the realized return in excess of the riskless rate.

   c. The realized return minus the CAPM-estimated return.

   d. The realized return in excess of the riskless rate minus the CAPM-estimated return in excess of the riskless rate.

TRUE OR FALSE QUESTIONS

3. CAPM makes no distinction between the general equity risk premium for the market as a whole and the equity risk premium for a specific security. True False

4. The Ibbotson Associates studies and the Standard & Poor's Corporate Value Consulting (S&P CVC) studies on the size effect cover the same size categories over the same period of time and thus yield similar results. True False

FILL-IN-THE-BLANK QUESTIONS

5. The size effect refers to the general idea that smaller size is associated with _____ risk and, therefore, with _____ cost of capital.

6. The smallest decile in the Ibbotson Associates analysis of the size effect is the _____ decile.

EXERCISES

The following are known about the 10th decile of a market:

Realized return in excess of the riskless rate:	16%
CAPM-estimated return in excess of the riskless rate:	11%
Beta:	1.5
Risk-free rate:	6%

7. Compute the size premium according to the methodology employed by Ibbotson Associates.

8. Compute the general equity risk premium for the market as a whole.

9. Compute the equity risk premium for the 10th decile, according to CAPM.

10. Compute the CAPM-estimated return for the 10th decile.

11. Given the risk-free rate of 6% and the general equity risk premium for the market as computed in question 9, what should beta for the 10th decile be for CAPM to be accurate?

Chapter 12

Discounted Cash Flow Method of Estimating Cost of Capital

The discounted cash flow (DCF) method of estimating the cost of capital is so named because it rearranges the DCF formula so the present value is known and the cost of capital is the unknown. It uses the current market prices of stocks along with dividends and analysts' growth estimates to get an implied cost of capital.

MULTIPLE CHOICE QUESTIONS

1. Which of the following is a correct statement about the DCF method of estimating the cost of capital?

   a. It can only be applied directly to private companies.

   b. It can only be applied directly to public companies.

   c. It can be applied directly to either public or private companies.

   d. It cannot be applied directly to either public or private companies.

2. The cost of capital estimates by the DCF method:

   a. Represent the company's overall cost of capital (WACC).

   b. Represent the equity risk premium.

   c. Represent the entire cost of equity.

   d. Represent the risk-free rate and the equity risk premium but not the size effect.

3. Which of the following is NOT an assumption of the DCF method of estimating the cost of capital?

   a. The company's current stock price embodies the market's expectation of the rate of return that will be realized by investing in that stock.

   b. The company's current stock price is actually the sum of the present values of the expected returns to the investors (dividends and stock price change).

c. The company's current stock price is equal to its expected future returns discounted to a present value at a discount rate that represents the cost of equity capital for that company.

d. Rational investors seek to hold efficient portfolios, that is, portfolios that are fully diversified.

TRUE OR FALSE QUESTIONS

4. A weakness of the DCF method of estimating the cost of capital is that most published estimates come from "buy-side" stock analysts, which may be biased. True False

5. Most multistage DCF models for estimating the cost of capital are more reliable than single-stage models. True False

FILL-IN-THE-BLANK QUESTIONS

6. What are the two main types of models used to implement the DCF method as it is applied to estimating cost of capital?

_____

_____

7. What is a published source of industry average costs of equity capital that are based on the DCF model?

_____

EXERCISES

8. Given the following about Company ABC:

Dividend latest 12 months:	$1.00 per year
Analysts' growth estimate:	5%
Stock price:	$10.00 per share

Estimate ABC's cost of equity capital using the single-stage DCF model.

9. You have been asked to estimate the cost of equity capital for public Company XYZ. In the course of your research, you observe that analysts following Company XYZ estimate that it will grow at 7.0% over the next five years. Furthermore, the growth rate estimate for Company XYZ's industry is expected to approximate 10.7% over the next 10 years, which you can use for the second stage (years 6 through 10) of the DCF method. Provided that long-term macroeconomic growth should approximate 6.5%, XYZ's current stock price of $61.70, and an annual dividend of $1.60 (assuming a constant dividend payout ratio), calculate XYZ's cost of equity capital using a multistage DCF model.

Chapter 13

Using Ibbotson Associates Cost of Capital Data

This chapter gives an overview of the various Ibbotson Associates publications useful in the estimation of cost of capital with emphasis on its benchmark publication, *Stocks, Bonds, Bills and Inflation® (SBBI) Valuation Edition Yearbook*. Topics to master in this chapter are: the types of data available in each of Ibbotson's publications; the accepted uses of data within the models for estimating the cost of equity; the methodologies Ibbotson uses to derive its data; and, finally, the applicability of the data in specific valuation situations.

MULTIPLE CHOICE QUESTIONS

SBBI Classic and Valuation Editions

1. The most commonly used models for estimating the cost of equity capital are:

   a. The build-up method and the Capital Asset Pricing Model (CAPM).

   b. The Fama-French three-factor model and the discounted cash flow (DCF) model.

   c. The build-up method and the DCF model.

   d. CAPM and the DCF model.

2. The build-up method and CAPM are very similar, with the major exception of:

   a. The risk-free rate.

   b. The equity risk premium.

   c. The firm size premium.

   d. Beta.

3. The "size effect" or "size phenomenon" refers to the fact that:

   a. Different risk-free rates exist for large versus small companies.

   b. Historically, small stocks have shown greater risk and greater return than large stocks.

   c. Large companies usually have a higher cost of equity than small companies.

   d. Historically, small stocks have shown greater risk and lower return than large stocks.

4. The method for computing the firm size premium (measuring the size effect) currently employed by Ibbotson Associates is:

   a. The difference between Ibbotson Small Company stock series returns and the Standard & Poors (S&P) 500 Index total returns.

   b. The difference between Ibbotson Small Company stock series returns and the New York Stock Exchange (NYSE) total returns.

   c. The difference between Ibbotson Small Company stock series returns and the returns for each of the 10 deciles of the NYSE.

   d. The actual return in excess of what CAPM predicts given the beta for a decile, otherwise known as the beta-adjusted premium.

5. The micro-cap size group is a consolidation of which of the following ranges of deciles?

   a. Deciles 1 and 2.

   b. Deciles 3 through 5.

   c. Deciles 6 through 8.

   d. Deciles 9 and 10.

6. The low-cap size group is a consolidation of which of the following ranges of deciles?

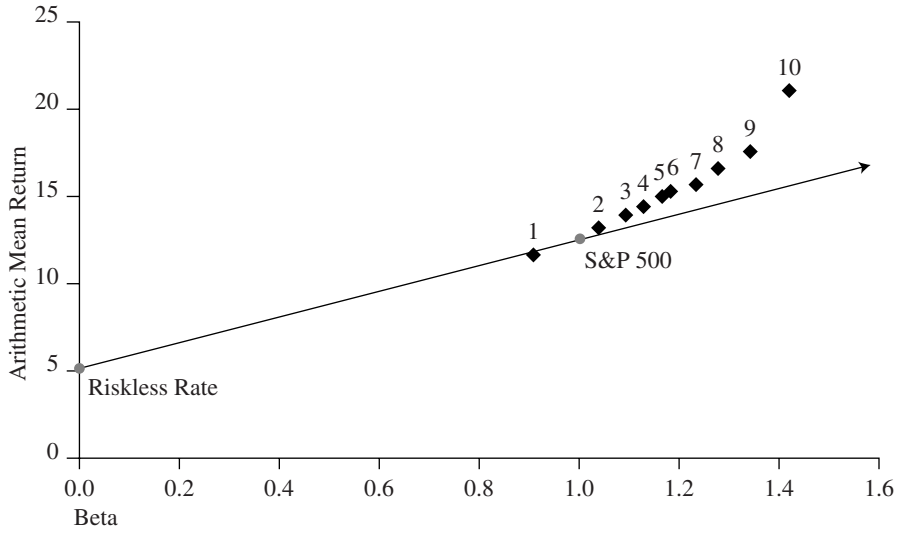
   a. Deciles 1 and 2.

   b. Deciles 3 through 5.

   c. Deciles 6 through 8.

   d. Deciles 9 and 10.

Exhibit 13.1 Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ (1926–2000)



Source: Stocks, Bonds, Bills and Inflation® Valuation Edition 2001 Yearbook, © 2001 Ibbotson Associates, Inc. Used with permission. All rights reserved.

Questions 7, 24, and 25 refer to Exhibit 13.1.

7. Exhibit 13.1 supports the existence of a firm size premium by showing that:

   a. As companies get smaller, their beta and CAPM-predicted return increase.

   b. As companies get smaller, their beta and CAPM-predicted return decrease.

   c. The full return of small companies is not fully explained by CAPM, and that a size premium must be added.

   d. Both (a) and (c).

8. Ibbotson's position on the use of the firm size premium in connection with CAPM and the build-up method is that:

   a. The beta-adjusted size premium is appropriate for application only in CAPM because the beta-adjusted premia are construed in the context of CAPM.

   b. The beta-adjusted size premium is appropriate for application in CAPM without an industry adjustment and in build-up models in conjunction with other premia, including an industry adjustment.

c. The beta-adjusted size premium is appropriate to use only in the build-up model.

d. The non–beta-adjusted size premium is appropriate to use in the build-up model because the build-up method does not include a beta.

9. The most common way of arriving at the expected equity risk premium is by:

a. Measuring the historical relationship of small stocks to large stocks.

b. Comparing the historical yields of long-term bonds to short-term notes and bills.

c. Measuring the difference in performance of a market aggregate over time.

d. Measuring the historical relationship of stocks to U.S. government obligations.

10. The long-term government bond rate used in the computation of the equity risk premium is typically most appropriate for business valuation purposes because (select the *best* answer):

a. The data are readily available in daily financial publications such as *The Wall Street Journal*.

b. The longer-term yields usually are higher than the short-term ones, leading to a more conservative equity risk premium estimate.

c. Ibbotson chose the long-term rate because its equity risk premium calculations start as far back as 1926.

d. Because most companies do not have a defined life span, they usually are valued as going concerns with indefinite lives.

11. The long-term equity risk premium is calculated by Ibbotson Associates as:

a. The geometric average total return on the S&P 500 less the geometric average income return on long-term Treasury bonds, using annual data for the last 30 years.

b. The arithmetic average total return on the S&P 500 less the arithmetic average income return on long-term Treasury bonds, using annual data from 1926 to the present.

c. The arithmetic average total return on the S&P 500 less the arithmetic average total return on long-term Treasury bonds, using annual data from 1926 to the present.

d. The arithmetic average total return on the S&P 500 less the arithmetic average income return on long-term Treasury bonds, using annual data for the last 30 years.

12. Exponential weighting of historical data is a method that places:

a. Higher weighting on more important events in the past.

b. Lower weighting on less important events in the past.

c. Higher weighting on the present and recent past.

d. No weighting on extreme events.

Beta Book

13. All of the following are conditions a company must meet to be included in the Ibbotson Associates *Beta Book* EXCEPT:

    a. The company must have a beta lower than 1.5.

    b. The company must have sales greater than $100,000 in the most recent year.

    c. The company must have at least 36 months of return data.

    d. The company must have a market capitalization greater than $10,000 for the most recent month.

14. Beta, the systematic risk for a company or a decile, is used in all of the following calculations EXCEPT:

    a. The build-up method to estimate the cost of equity capital.

    b. The Fama-French three-factor model to estimate the cost of equity.

    c. CAPM to estimate the cost of equity.

    d. The CAPM-predicted return in the calculation of the size premium by decile of NYSE/AMEX/NASDAQ.

15. In the context of CAPM, a beta of 1.0 for a company means that:

    a. The company's estimated cost of equity is equal to the returns on the risk-free asset.

    b. CAPM is unable to predict a meaningful result given the imperfect data available.

    c. When the stock market goes down by a certain percentage, the company's return goes up by the same amount.

    d. The expected movement in return on an equity investment in the company is equal to that of the market.

16. Beta can be characterized as all of the following EXCEPT:

    a. Company-specific, unsystematic risk in CAPM.

    b. The slope of the best fit line between the (excess) return on the individual security and the (excess) return on the market.

c. The modifier of the equity risk premium in CAPM.

d. A measure of the sensitivity of the movement in returns on a particular stock to movement in returns on some measure of the market.

17. All the following methods can be used to find a proxy for a beta for a private company EXCEPT:

a. Using an average beta for the industry as provided in the Ibbotson Associates *Cost of Capital Yearbook.*

b. Selecting specific guideline public companies and using some composites such as the median or average of their betas as provided in the Ibbotson Associates *Beta Book.*

c. Using a peer group beta as illustrated in the Ibbotson Associates *Beta Book.*

d. Regressing readily available excess returns on the private company against excess returns on the market.

18. Which of the following are true about the industry risk premia data developed by Ibbotson Associates and included in the *SBBI Valuation Edition*?

I. CAPM has the ability to incorporate industry risk into the beta measure.

II. For the build-up method, it is possible to incorporate industry risk into a company-specific premium.

III. The non–beta-adjusted size premium is more appropriate than the simple excess returns size premium to use in conjunction with an industry premium.

IV. The method Ibbotson uses for its industry risk premia relies on the full information beta estimation process.

a. I, II, III

b. I, III, IV

c. I, II, IV

d. II, III, IV

TRUE OR FALSE QUESTIONS

SBBI Classic and Valuation Editions

19. Readily available empirical data sources exist for betas of private companies. True False

20. In the Ibbotson Associates publications for valuation analysts, there is no distinction in meaning, computation methodologies, or applications between the "size premium" (beta-adjusted size premium) and the "small stock premium" (non–beta-adjusted premium). True False

21. The 10th decile used in the calculations of the size premium is the decile formed by the companies with the highest market capitalization (the top decile). True False

22. A stock's market capitalization is calculated as the number of shares of stock outstanding times the price per share of stock. True False

23. 10a and 10b refer to the breakout of the 10th decile into two components. True False

Exhibits 13.1 and 13.2 show the actual returns achieved by the 10 deciles and the security market line on which CAPM would predict the decile portfolios would fall.

24. The fact that most of the decile portfolios fall above the security market line depicts (graphically) that the smaller the decile, the higher the returns in excess of the CAPM-predicted return. True False

Exhibit 13.2 Long-term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ (1926–2000)

Decile	Beta*	Arithmetic Mean Return	Realized Return in Excess of Riskless Rate**	Estimated Return in Excess of Riskless Rate***	Size Premium (Return in Excess of CAPM)
1-Largest	0.91	12.06%	6.84%	7.03%	–0.20%
2	1.04	13.58%	8.36%	8.05%	0.31%
3	1.09	14.16%	8.93%	8.47%	0.47%
4	1.13	14.60%	9.38%	8.75%	0.62%
5	1.16	15.18%	9.95%	9.03%	0.93%
6	1.18	15.48%	10.26%	9.18%	1.08%
7	1.24	15.68%	10.46%	9.58%	0.88%
8	1.28	16.60%	11.38%	9.91%	1.47%
9	1.34	17.39%	12.17%	10.43%	1.74%
10-Smallest	1.42	20.90%	15.67%	11.05%	4.63%
Mid-Cap, 3–5	1.12	14.46%	9.23%	8.65%	0.58%
Low-Cap, 6–8	1.22	15.75%	10.52%	9.45%	1.07%
Micro-Cap, 9–10	1.36	18.41%	13.18%	10.56%	2.62%

*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926-December 2000.

**Historical riskless rate is measured by the 75-year arithmetic mean income return component of 20-year government bonds (5.22 percent)

***Calculated in the context of the CAPM by multiplying the long-horizon equity risk premium by beta. The equity risk premium is estimated by the annual arithmetic mean total return of the S&P 500 (12.98 percent) minus the annual arithmetic mean income return component of 20-year government bonds (5.22 percent) from 1926–2000.

Note that all data has been rounded for presentation purposes and any calculation discrepancies are due to rounding.

Source: Stocks, Bonds, Bills, and Inflation® Valuation Edition 2001 Yearbook, © 2001 Ibbotson Associates, Inc. Used with permission. All rights reserved.

25. The fact that the returns for the largest companies fall below the security market line may be a sign that the CAPM overestimates the returns on these stocks. True False

26. The expected equity risk premium is defined as the additional return investors expect to receive to compensate for the additional risk associated with investing in equities as opposed to riskless assets. True False

27. The equity risk premium as a forward-looking measure of what investors can expect in the market is directly observable in the market. True False

28. For the purposes of computing the equity risk premium, the total return on the chosen Treasury security is riskless because both its income return and its net gain/loss from its sale are riskless. True False

29. Ibbotson Associates provides equity risk premium estimates for the short-, intermediate-, and long-term horizons. True False

30. Ibbotson Associates uses the last 30 years of data for the purpose of computing the long-horizon equity risk premium. True False

31. The equity risk premium preferred by Ibbotson Associates is a geometric average risk premium, as opposed to an arithmetic average risk premium. True False

Beta Book

32. The *Beta Book* provides cost of equity estimates for more than 5,000 companies. True False

33. The difference between the levered and the unlevered beta is that the unlevered beta excludes the business risk of a company and only reflects its financial risk. True False

34. The Ibbotson (adjusted) beta calculated in the *Beta Book* using the Vasicek Shrinkage Technique is based on the theory that, in time, a company's beta tends toward its industry-average beta. True False

35. The peer group betas as calculated by Ibbotson Associates can be helpful either for comparison purposes or in place of a company beta displaying poor regression results. True False

36. Individual company betas, adjusted betas, Ibbotson betas, and peer group betas are different names for one type of beta included in the Ibbotson *Beta Book*. True False

FILL-IN-THE-BLANK QUESTIONS

SBBI Classic and Valuation Editions

37. The _____ is the market benchmark most used throughout Ibbotson publications because it represents a large sample of companies across a large sample of industries.

38. Ibbotson Associates uses the income return on the _____ as the benchmark for the riskless asset in computing the long-horizon equity risk premium.

39. In Ibbotson's view, _____ averages are better forward-looking point estimates, and _____ averages are better for historical analysis of a defined date range.

40. The _____ method for estimating the equity risk premium consists of interviewing academics, money managers, or other professionals about the expected direction of the market.

41. The _____ model estimates the equity risk premium by looking at what the economy can supply in the future as opposed to its historical performance.

42. The higher the standard error of the beta company estimate, the _____ the weight assigned to the company beta in the Vasicek Shrinkage Technique to calculate the Ibbotson (adjusted) beta.

43. The Ibbotson (adjusted) beta is calculated using the Vasicek shrinkage technique, which takes the statistically weighted average of the _____ beta and the _____ beta.

44. The _____, _____, and _____ are components shared by both the build-up method and CAPM to calculate the cost of equity capital.

45. All of the risk premium statistics presented in any Ibbotson Associates publication are derived from returns after _____ taxes but before _____ taxes.

46. The *Cost of Capital Yearbook* from Ibbotson Associates presents statistics such as cost of equity, cost of capital, capital structure ratios, growth rates, industry multiples, and other financial data for over 300 _____.

EXERCISES

Beta Book

47. Chapter 13 explains how Ibbotson Associates calculates its peer group beta in the *Beta Book*.

    Using the same procedure, calculate the peer group beta for Company A that has sales in four different SIC codes as follows:

SIC Code	% Sales in Industry	Industry OLS Beta
15	25.00	0.60
30	14.75	1.10
31	60.00	0.70
67	0.25	0.40

48. Using the following inputs, calculate the Ibbotson (adjusted) beta for Company XYZ:

Peer group beta:	1.25
XYZ Company beta:	1.75

The statistical significance of the XYZ beta is quite low, resulting in a 0.20 weight.

49. Given the following known variables, calculate the expected industry risk premium (IRP) for industry XYZ:

Full information beta for industry XYZ:	0.90
Expected equity risk premium:	7.8%

What can be said about industry XYZ's riskiness compared with the market?

50. Given the following known variables, calculate the pretax capitalization rate for Company XYZ:

After-tax capitalization rate for Company XYZ:	15%
Tax rate for Company XYZ:	35%

Cost of Capital Yearbook

Questions 51–56 refer to Exhibit 13.3.

51. The sample page (Exhibit 13.3) from the Ibbotson Associates *Cost of Capital Yearbook* presents each statistic in the following forms: Median, SIC Composite, Large Composite, and Small Composite. You are valuing a private Company, XYZ, in SIC code 275 with the following sales and total capital figures:

Last Year	Million
Sales	$10
Total capital	$8

Which of the forms for the statistics (Medium, SIC Composite, Large Composite, Small Composite) reported on this page are you likely to use Company XYZ for and why?

52. You are trying to estimate a cost of equity capital for Company XYZ in question 51 by looking at what comparable companies in the industry have done. What numbers in Exhibit 13.3 are you more likely to look at and why?

53. You are trying to compute the WACC for Company XYZ. After analysis you have concluded that XYZ has a cost of equity of 20% and a cost of debt after tax of 10%. Use data reported in Exhibit 13.3 to estimate the WACC for Company XYZ.

54. Using the price/sales multiples shown in Exhibit 13.3, estimate the market capitalization for Company XYZ. (Remember that Company XYZ had sales of $10 million.)

55. Calculate the cost of equity for Company XYZ given the following known variables and data reported in Exhibit 13.3:

Risk-free rate	= 5.6%
General equity risk premium for the market as a whole	= 7.8%

56. Assuming that you know the debt/equity ratio of Company XYZ to be 1.25 and the tax rate to be 40%, use the appropriate unlevered beta for the industry in Exhibit 13.3 and relever it to reflect XYZ's capital structure.

Questions 57 and 58 refer to Exhibit 13.4.

57. Using the raw beta and the Ibbotson beta, calculate the cost of equity under the CAPM for OCTEL Corp. (use $R_f = 5.6\%$; $RP_m = 7.8\%$).

58. Using the information presented for OCTEL Corp., calculate the weight assigned to the raw beta in order to calculate the adjusted Ibbotson beta.

Exhibit 13.3 Sample Page from the 2001 *Cost of Capital Yearbook*

STATISTICS FOR SIC CODE 275

Commercial Printing

This Industry Comprises 12 Companies

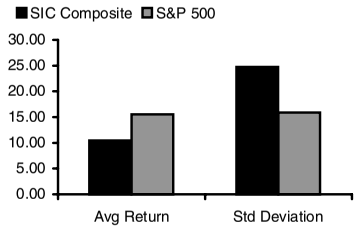
Industry Description

Establishments primarily engaged in commercial printing by the lithographic process and in gravure printing.

Sales (million$)	
Total	9,425
Average	785.4
Three Largest Companies	
DONNELLEY (R R) & SONS CO	5,764.3
BANTA CORP	1,537.7
BOWNE & CO INC	1,010.8
Three Smallest Companies	
GEOGRAPHICS INC	27.3
LASER MASTER INTL INC	17.5
DIMENSIONAL VISIONS GRP LTD	1.0

Total Capital (million$)	
Total	6,061
Average	505.1
Three Largest Companies	
DONNELLEY (R R) & SONS CO	4,161.8
BANTA CORP	830.4
CONSOLIDATED GRAPHICS INC	429.1
Three Smallest Companies	
SUCCESSORIES INC	18.5
LASER MASTER INTL INC	11.5
DIMENSIONAL VISIONS GRP LTD	1.1

SIC vs. S&P 500 for Last 10 Years (%)



Number of Companies & Total Capital (billion$)

S&P Debt Rating	Large Cap	Mid Cap	Low Cap	Micro Cap	Totals	
AAA, AA, A	0	1	0	0	1	(companies)
	0.0	4.2	0.0	0.0	4.2	(capital)
BBB	0	0	0	0	0	
	0.0	0.0	0.0	0.0	0.0	
BB, B, CCC, CC, D	0	0	0	0	0	
	0.0	0.0	0.0	0.0	0.0	
Not Rated	0	0	2	9	11	
	0.0	0.0	1.2	0.7	1.9	
Totals	0	1	2	9	12	
	0.0	4.2	1.2	0.7	6.1	

Annualized Statistics for Last 10 Years (%)

	Avg Return	Std Deviation
S&P 500	15.50	15.86
SIC Composite	10.46	24.72
Large Composite	8.85	25.29
Small Composite	20.75	102.82

Compound Annual Equity Return (%)

	5 Years	10 Years
75th Percentile	6.02	6.51
Median	-1.26	4.74
25th Percentile	-29.89	2.85
SIC Composite	3.61	6.12
Large Composite	0.71	6.03
Small Composite	-10.16	NMF

Sales, Income & Market Capitalization (billion$)

	Sales	Operating Income	Net Income	Equity Capital	Debt Capital
Current Yr.	9.4	1.3	0.4	4.4	1.6
Last Yr.	8.2	1.3	0.4	3.9	1.7
2 Yrs. Ago	7.7	1.2	0.4	6.3	1.4
3 Yrs. Ago	7.1	1.1	0.3	8.7	1.5
4 Yrs. Ago	8.5	1.0	-0.1	7.0	1.7

Growth Over Last 5 Years (%)

	Net Sales	Operating Income	Net Income
Median	17.97	6.07	-2.26
SIC Composite	2.54	1.45	1.86
Large Composite	0.99	-0.94	-1.62
Small Composite	19.08	9.58	-35.20

Capital Structure Ratios (%)

	Debt/Total Capital		Debt/MV Equity	
	Latest	5-Year Avg	Latest	5-Year Avg
Median	28.56	24.17	39.98	31.87
SIC Composite	22.22	19.67	28.57	24.49
Large Composite	23.24	19.58	30.27	24.35
Small Composite	46.81	43.68	88.01	77.55

Distribution of Sales & Total Capital (million$)

	Distribution of Sales		Total Capital	
	Latest	5-Year Avg	Latest	5-Year Avg
90th Percentile	1,485.0	1228.2	790.3	847.7
75th Percentile	721.4	401.7	419.8	535.1
Median	98.8	83.7	44.9	63.5
25th Percentile	46.5	44.0	18.5	30.4
10th Percentile	18.5	15.1	12.2	14.6

Margins (%)

	Operating Margin		Net Margin		Asset Turnover		Return on Inv. Cap.		Return on Assets		Return on Equity	
	Latest	5-Year Avg	Latest	5-Year Avg	Latest	5-Year Avg	Latest	5-Year Avg	Latest	5-Year Avg	Latest	5-Year Avg
Median	10.04	8.85	3.01	2.71	150.73	138.57	5.56	5.40	4.13	3.97	9.08	5.31
SIC Composite	13.64	14.34	4.40	3.58	150.83	135.88	8.09	6.87	6.63	4.86	9.01	4.57
Large Composite	13.44	14.51	4.25	3.57	155.14	136.09	9.28	7.08	6.60	4.86	8.39	4.67
Small Composite	6.57	-2.64	-0.50	-13.48	114.22	95.77	-1.88	-15.78	-0.57	-12.91	-0.76	-22.75

Equity Valuation Ratios (Multiples)

	Price/Earnings		Market/Book		Price/Sales		Price/Cash Flow		Price/Operating Income		**Dividend Yield** (% of Price)	
	Latest	5-Year Avg	Latest	5-Year Avg	Latest	5-Year Avg	Latest	5-Year Avg	Latest	5-Year Avg	Latest	5-Year Avg
Median	11.02	18.84	1.27	2.08	0.36	0.68	9.47	18.01	3.27	4.52	0.00	0.00
SIC Composite	11.10	16.47	1.60	2.39	0.49	0.78	8.66	19.69	3.58	5.46	3.20	2.12
Large Composite	11.91	15.72	1.82	2.40	0.51	0.77	9.49	19.02	3.77	5.28	3.41	2.35
Small Composite	NMF	NMF	0.70	1.92	0.66	0.59	11.26	NMF	9.99	NMF	0.00	0.00

Growth Rates (%) | **Cost of Equity Capital** (%) | **Weighted Average Cost of Capital** (%) | **Levered Betas** | **Unlevered Betas**

	Analysts' Estimate	CAPM	CAPM + Size Prem	3-Factor Fama-French	Discounted Cash Flow 1-Stage	Discounted Cash Flow 3-Stage	CAPM	CAPM + Size Prem	3-Factor Fama-French	Discounted Cash Flow 1-Stage	Discounted Cash Flow 3-Stage	Raw Beta	Adjusted Beta	Adjusted Beta
Median	11.63	9.79	11.32	13.96	11.63	14.40	9.80	11.62	13.27	11.81	13.11	0.55	0.54	0.27
SIC Composite	11.63	10.03	11.10	15.93	11.87	17.30	9.77	10.57	14.19	11.15	15.22	0.61	0.57	0.46
Large Composite	11.44	9.93	10.51	15.97	11.98	17.20	9.66	10.10	14.26	11.22	15.20	0.61	0.56	0.47
Small Composite	11.63	10.16	12.78	14.56	11.63	6.50	11.02	12.08	12.80	11.61	9.53	0.95	0.59	0.26

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Exhibit 13.4 Sample Page from the *Beta Book,* Second 2001 Edition

Ibbotson Associates' Beta Book
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		CAPM: Ordinary Least Squares				
		Levered				
Ticker	Company	Raw Beta	t-Stat	R-Sqr	Pr Grp Beta	Ibbotson Beta
OTL	OCTEL CORP*	**0.44**	1.11	0.03	0.66	**0.46**
OCLR	OCULAR SCIENCES INC*	**0.56**	1.20	0.03	0.79	**0.60**
OCN	OCWEN FINANCIAL CORP*	**0.85**	2.20	0.08	0.97	**0.86**
ODETA	ODETICS INC -CL A	**1.22**	1.92	0.06	1.77	**1.34**
ODWA	ODWALLA INC	**-0.13**	-0.32	0.00	0.58	**-0.05**
ODP	OFFICE DEPOT INC	**1.30**	3.26	0.16	0.92	**1.26**
OMX	OFFICEMAX INC	**1.11**	3.03	0.14	0.93	**1.09**
OLOG	OFFSHORE LOGISTICS	**0.97**	2.49	0.10	0.99	**0.97**
OGE	OGE ENERGY CORP	**0.02**	0.14	0.00	0.12	**0.02**
OGLE	OGLEBAY NORTON CO	**0.49**	1.73	0.05	0.58	**0.50**
OCAS	OHIO CASUALTY CORP	**0.60**	1.88	0.06	0.75	**0.61**
OVBC	OHIO VALLEY BANC CORP	**0.08**	0.55	0.01	0.97	**0.10**
ODC	OIL DRI CORP AMERICA	**0.26**	1.06	0.02	1.02	**0.30**
OLGR	OILGEAR CO	**0.06**	0.18	0.00	1.60	**0.19**
ODFL	OLD DOMINION FREIGHT	**0.00**	0.01	0.00	0.66	**0.03**
OLDB	OLD NATIONAL BANCORP	**0.56**	3.22	0.15	0.97	**0.57**
ORI	OLD REPUBLIC INTL CORP	**0.52**	2.16	0.07	0.75	**0.53**
OSBC	OLD SECOND BANCORP INC/IL	**0.19**	1.30	0.03	0.97	**0.21**
OLN	OLIN CORP	**0.69**	2.10	0.07	0.90	**0.71**
OLY	OLYMPIC CASCADE FINL	**1.23**	1.92	0.06	1.84	**1.37**
ZEUS	OLYMPIC STEEL INC	**0.24**	0.57	0.01	0.79	**0.30**
OMG	OM GROUP INC	**0.62**	2.90	0.13	0.66	**0.62**
OMEF	OMEGA FINL CORP	**0.36**	2.28	0.08	0.97	**0.38**
OHI	OMEGA HEALTHCARE INVS INC	**0.75**	2.06	0.07	0.30	**0.71**
OME	OMEGA PROTEIN CORP*	**0.60**	0.99	0.03	0.58	**0.60**
OMM	OMI CORP*	**0.65**	0.86	0.02	0.81	**0.70**
OMNI	OMNI ENERGY SERVICES CORP*	**-0.59**	-0.65	0.01	0.87	**-0.03**
3ZONE	OMNI NUTRACEUTICALS INC	**-0.07**	-0.07	0.00	0.65	**0.24**
3ORXR	OMNI RAIL PRODUCTS INC	**-0.19**	-0.25	0.00	0.83	**0.12**
OUSCD	OMNI USA INC	**0.99**	1.50	0.04	1.41	**1.10**
OCR	OMNICARE INC	**0.81**	1.78	0.05	0.90	**0.82**
OMC	OMNICOM GROUP	**1.00**	5.50	0.34	1.74	**1.01**
OMTL	OMTOOL LTD*	**2.32**	2.63	0.13	1.74	**2.11**
ASGN	ON ASSIGNMENT INC	**0.66**	1.92	0.06	1.74	**0.74**
ONCO	ON COMMAND CORP*	**0.64**	1.61	0.04	1.40	**0.72**
3ONST	ON STAGE ENTERTAINMENT INC*	**0.31**	0.19	0.00	0.75	**0.59**
ONTC	ON TECHNOLOGY CORP	**2.46**	2.71	0.11	1.74	**2.19**
ONSS	ON-SITE SOURCING INC*	**0.04**	0.07	0.00	1.61	**0.38**
OLP	ONE LIBERTY PROPERTIES INC	**0.10**	0.92	0.01	0.30	**0.10**
ONPR	ONE PRICE CLOTHING STORES	**0.10**	0.19	0.00	1.10	**0.28**
3ONCL	ONECLASS SYNERGY CORP	**-3.33**	-1.47	0.04	0.79	**-0.07**
OCQ	ONEIDA LTD	**0.57**	1.57	0.04	0.55	**0.57**
OKE	ONEOK INC	**0.42**	1.83	0.05	0.30	**0.41**
3OGAM	ONLINE GAMING SYS LTD	**1.56**	1.94	0.06	1.74	**1.62**
3ONSE	ONSITE ENERGY CORP -CL A	**-1.25**	-1.06	0.02	0.66	**-0.29**

OCTEL CORP*

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Exhibit 13.4 (Continued)

Second 2001 Edition
Data Through June 2001

Unlevered		Fama-French Three-Factor Model						
Raw Beta	Ibbotson Beta	FF Beta	FF t-Stat	SMB Prem	SMB t-Stat	HML Prem	HML t-Stat	FF R-Sqr
0.29	**0.22**	**0.79**	1.93	**1.58**	3.29	**3.45**	9.63	0.16
0.56	**0.59**	**1.02**	2.12	**1.75**	3.07	**4.59**	10.39	0.15
0.69	**0.63**	**1.18**	2.86	**1.03**	2.06	**3.39**	8.48	0.15
0.85	**0.77**	**0.61**	1.03	**3.18**	4.40	**-6.54**	-11.20	0.33
-0.13	**-0.05**	**-0.13**	-0.31	**2.81**	5.32	**-0.24**	-0.57	0.11
1.09	**1.01**	**1.46**	3.52	**3.46**	6.87	**1.39**	3.43	0.26
0.88	**0.76**	**1.45**	3.98	**4.18**	9.47	**3.21**	9.02	0.31
0.71	**0.61**	**0.98**	2.28	**-1.07**	-2.04	**0.22**	0.53	0.11
0.01	**0.01**	**0.18**	1.29	**-0.45**	-2.57	**1.73**	12.42	0.25
0.28	**0.13**	**0.80**	2.80	**3.02**	8.66	**2.99**	10.64	0.22
0.50	**0.48**	**0.72**	2.02	**0.23**	0.53	**1.17**	3.36	0.07
0.06	**0.06**	**0.13**	0.76	**0.14**	0.72	**0.45**	2.79	0.01
0.18	**0.15**	**0.57**	2.21	**1.32**	4.20	**3.11**	12.25	0.15
0.04	**0.08**	**0.41**	1.11	**2.54**	5.69	**3.36**	9.35	0.10
0.00	**0.01**	**0.12**	0.47	**1.93**	6.12	**1.08**	4.26	0.10
0.38	**0.29**	**0.59**	3.10	**-0.51**	-2.21	**0.36**	1.93	0.18
0.49	**0.49**	**0.65**	2.54	**-0.48**	-1.52	**1.45**	5.77	0.14
0.17	**0.18**	**0.35**	2.23	**0.81**	4.24	**1.56**	10.15	0.12
0.56	**0.54**	**0.85**	2.33	**1.12**	2.53	**1.50**	4.22	0.09
1.11	**1.21**	**1.17**	1.69	**2.46**	2.91	**-0.76**	-1.12	0.10
0.14	**0.11**	**0.69**	1.60	**3.48**	6.66	**4.42**	10.50	0.14
0.47	**0.43**	**0.80**	3.50	**0.48**	1.73	**1.86**	8.32	0.19
0.31	**0.31**	**0.45**	2.57	**0.44**	2.07	**0.86**	4.99	0.11
0.39	**0.06**	**1.25**	3.34	**2.36**	5.22	**4.94**	13.52	0.22
0.48	**0.45**	**0.90**	1.39	**2.36**	3.11	**3.17**	5.61	0.08
0.44	**0.38**	**0.46**	0.61	**4.48**	5.05	**-1.08**	-1.64	0.20
-0.42	**-0.02**	**-0.27**	-0.27	**0.51**	0.42	**3.20**	3.58	0.03
-0.05	**0.10**	**-0.47**	-0.47	**7.39**	6.14	**-4.81**	-4.95	0.21
-0.12	**0.01**	**-0.94**	-1.16	**-1.77**	-1.80	**-7.65**	-9.66	0.10
0.67	**0.38**	**1.10**	1.51	**2.88**	3.26	**0.89**	1.25	0.07
0.62	**0.58**	**1.20**	2.50	**0.22**	0.38	**4.09**	8.71	0.14
0.92	**0.93**	**0.90**	4.53	**-0.31**	-1.29	**-0.95**	-4.86	0.36
2.31	**2.10**	**2.20**	2.40	**4.76**	4.40	**-1.29**	-1.55	0.23
0.66	**0.74**	**0.67**	1.77	**0.85**	1.85	**0.03**	0.09	0.07
0.45	**0.33**	**0.90**	2.11	**2.77**	5.39	**2.34**	5.67	0.12
0.19	**0.24**	**-0.42**	-0.24	**0.52**	0.26	**-7.34**	-4.68	0.05
2.32	**2.05**	**3.05**	3.31	**9.43**	8.43	**5.32**	5.90	0.26
0.03	**0.20**	**-0.27**	-0.47	**4.31**	6.10	**-4.00**	-7.05	0.26
0.06	**0.03**	**0.23**	2.10	**1.22**	9.12	**1.25**	11.57	0.21
0.06	**0.05**	**0.15**	0.26	**1.56**	2.14	**0.38**	0.65	0.02
-2.50	**-0.04**	**-2.13**	-0.86	**6.22**	2.06	**11.94**	4.90	0.06
0.38	**0.30**	**1.01**	2.70	**2.22**	4.88	**4.43**	12.10	0.17
0.25	**0.14**	**0.66**	2.80	**-0.07**	-0.23	**2.49**	10.86	0.20
1.05	**0.54**	**2.56**	3.16	**7.75**	7.87	**9.82**	12.35	0.23
-1.08	**-0.24**	**-1.09**	-0.84	**0.96**	0.61	**1.55**	1.21	0.02

ONSITE ENERGY CORP -CL A

Chapter 14

Arbitrage Pricing Model

The arbitrage pricing model (based on the arbitrage pricing theory) was first introduced academically in 1976. In 1988 it first became available in a commercially usable form. It relies on risk factors of a pervasive economic nature.

MULTIPLE CHOICE QUESTIONS

1. All of the following are risk factors commonly considered by the arbitrage pricing model EXCEPT:

   a. Company-specific risk.

   b. Confidence risk, measured as the difference between long-term corporate bond expected returns and long-term government bond expected returns.

   c. Interest rate (time horizon) risk.

   d. Inflation risk.

2. Which of the following best describes the arbitrage pricing model?

   a. A linear model.

   b. A multivariable model.

   c. A discounted cash flow (DCF) model.

   d. A build-up model.

TRUE OR FALSE QUESTIONS

3. The arbitrage pricing model does not specify its risk factors. True False

4. The arbitrage pricing model works better for individual stocks than for groups of stocks. True False

5. The arbitrage pricing model is used less than the build-up model, the Capital Asset Pricing Model, or the DCF model. True False

6. The arbitrage pricing model would work well for estimating the cost of equity capital for a regional chain of doughnut shops. True False

PART III
Other Topics Related to Cost of Capital

Chapter 15

Minority versus Control Implications of Cost of Capital Data

The subject of this chapter is the relationship between the merger market and the public stock market, and the implications of that relationship—that is, the extent to which an income approach to valuation, based on cost of capital, produces a minority value or a control value.

MULTIPLE CHOICE QUESTIONS

1. In which of the following methods of estimating the cost of equity capital are data gathered from transactions in public stock?

   a. The build-up method and the Capital Asset Pricing Model (CAPM) but not the discounted cash flow (DCF) method.

   b. The build-up method and the DCF method but not CAPM.

   c. CAPM and the DCF method but not the build-up method.

   d. The build-up method, CAPM, and the DCF method all gather data from transactions in public stocks.

2. Whether the income approach produces a control or a minority value:

   a. Depends primarily on the nature of the cash flows being discounted or capitalized.

   b. Depends primarily on the discount or capitalization rate.

   c. Depends about equally on the nature of the cash flows and the discount or capitalization rate.

   d. Is disputed, that is, there is no consensus as to the extent to which it depends primarily on the nature of the cash flows or the discount or capitalization rate.

3. Over the period 1998 to 2001, about what percentage of takeovers of public companies were at less than the public trading price immediately prior to the takeover?

   a. Less than 5%.

   b. Between 5% and 10%.

c. Between 10% and 15%.

d. Over 15%.

4. The cost of capital as viewed by the investor rather than the investment is a function of what standard of value?

   a. Fair market value.

   b. Investment value.

   c. Fair value.

   d. Intrinsic value.

5. Which of the following is the most accurate statement about the relative characteristics of the public stock market and the merger market?

   a. The stock market is more liquid, has a higher tolerance for risk, and generally has a longer investment horizon.

   b. The stock market is more liquid, has a lower tolerance for risk, and generally has a shorter investment horizon.

   c. The stock market is more liquid, has a higher tolerance for risk, and generally has a shorter investment horizon.

   d. The stock market is less liquid, has a higher tolerance for risk, and generally has a shorter investment horizon.

6. A stock selling at $10.00 per share had net cash flow last year of $1.00 per share and net income of $1.50 per share. The estimated cost of equity capital is 15%. Given this information, which of the following represents a conclusion that can be reached about this stock?

   a. The stock is selling at minority value because it is capitalized at an unreasonably low value relative to its earnings.

   b. The stock is selling at control value because it is fully valued relative to its last year's net cash flow.

   c. We cannot tell whether it is at minority or control value because we don't know whether last year's net cash flow represents normalized net cash flow, nor do we know the expected growth rate.

   d. The stock is selling at minority value because the discount rate probably is less than the capitalization rate.

TRUE OR FALSE QUESTIONS

7. If company cash flows are maximized and the returns distributed pro rata to all shareholders, then there may be no difference between a control value and a minority value. True False

8. The cost of capital is based on public stock market transactions, which are, by definition, minority interests. Therefore, the income approach to valuation, by definition, produces a minority interest value. True False

9. Minority stockholders can register their shares for a secondary offering but not for an initial public offering. True False

FILL-IN-THE-BLANK QUESTIONS

10. On the latest version of the traditional "levels of value" chart, the line that has been added above "control value" is called

_____

11. What is the name of the primary source of takeover premiums for public companies?

_____

EXERCISE

12. Given the following:

Control value	$20 per share
Minority discount	20%
Discount for lack of marketability	40%

What is the value of nonmarketable minority shares?

Chapter 16

Handling the Discount for Lack of Marketability

Most valuations using the income approach rely on data from the public securities markets, which are highly liquid. Consequently, especially when valuing minority interests in a closely held company, a discount for lack of marketability is applicable to the value derived from the income approach. Alternatively, a percentage may be added to the discount or capitalization rate to reflect the relative lack of marketability.

MULTIPLE CHOICE QUESTIONS

1. Which of the following is a correct statement about discount for lack of marketability studies?

   a. Restricted stock studies apply to minority interests, while pre-initial public offering (IPO) studies apply to controlling interests.

   b. Restricted stock studies apply to controlling interests, while pre-initial public offering (IPO) studies apply to minority interests.

   c. Both restricted stock studies and pre-IPO studies apply to minority interests.

   d. Both restricted stock studies and pre-IPO studies apply to controlling interests.

2. What is the most comprehensive restricted stock study to date?

   a. Standard Research Consultants study.

   b. William Silber study.

   c. *The FMV Restricted Stock Study*™.

   d. Management Planning study.

3. Which of the following pre-IPO studies contains the most transactions for a given year?

   a. John Emory studies (formerly Baird & Co.).

   b. Willamette Management Associates studies.

c. *Valuation Advisors' Lack of Marketability Discount Study*™.

d. The Willamette Management and Valuation Advisors studies have about the same number of transactions per year, each more than the Emory studies.

4. Which of the following is the correct statement about studies on discounts for lack of marketability?

   a. Both restricted stock studies and pre-IPO studies have shown relatively constant discounts from the 1970s to the present.

   b. Restricted stock studies have shown decreasing discounts since 1990, when the SEC started loosening reporting and trading restrictions, while the pre-IPO studies have shown relatively constant discounts over time.

   c. Both restricted stock and pre-IPO studies have shown decreasing discounts since 1990, when the SEC started loosening reporting and trading restrictions.

   d. Average discounts from both restricted stock and pre-IPO studies have been highly volatile from the 1970s to the present.

5. Which of the following is a correct statement about discounts for lack of marketability in the U.S. Tax Court?

   a. Discounts for lack of marketability usually are not allowed for either controlling interests or minority interests.

   b. Discounts for lack of marketability are not allowed for controlling interests, but they usually are allowed for minority interests.

   c. Discounts for lack of marketability sometimes are allowed for controlling interests, but they tend to be smaller than for minority interests.

   d. Discounts for lack of marketability usually are allowed for both controlling interests and minority interests, and tend to be about the same for both.

TRUE OR FALSE QUESTIONS

6. The cost of capital for an investment increases with increasing liquidity and decreases with decreasing liquidity. True False

7. The discount for lack of marketability may be reflected in a discrete discount at the end of a valuation performed by the discounted cash flow or capitalization methods, or it may be reflected as an added factor in the discount or capitalization rate. True False

8. A "restricted stock" is one that is in all respects equivalent to a publicly traded stock except for restrictions on trading. True False

9. The "pre-IPO studies" refer to studies of transactions in securities of privately held companies prior to an initial public offering. True False

10. The fact that discounts for lack of marketability in the restricted stock studies have decreased in recent years is an indication that discounts for lack of marketability for closely held minority stocks should be less than in the past. True False

Chapter 17

How Cost of Capital Relates to the Excess Earnings Method of Valuation

Unlike the methods previously presented for deriving capitalization rates for a class of investment (liability or equity), the excess earnings method derives capitalization rates applicable to the asset side of the balance sheet.

MULTIPLE CHOICE QUESTIONS

1. What was the origin of the excess earnings method (i.e., to what use was it put initially)?

   a. Payments by the U.S. government to compensate brewers and distillers for their economic loss of goodwill as a result of Prohibition.

   b. Payments by the U.S. government to subsidize small businesses during the Depression.

   c. Calculations of taxes on capital gains when the capital gains tax first went into effect.

   d. Calculation of taxes on capital gains starting in 1968.

2. What is the number of the Revenue Ruling that addresses the excess earnings method?

   a. 59-60.

   b. 68-609.

   c. 77-287.

   d. 83-120.

TRUE OR FALSE QUESTION

3. The weighted average of the two capitalization rates used in the excess earnings method should be approximately equal to the capitalization rate for the entire company derived through other methods such as the build-up method or CAPM. True False

FILL-IN-THE-BLANK QUESTION

4. The excess earnings method requires two capitalization rates. What are these two rates applied to?

_____

_____

EXERCISES

Given the following pro forma information about Dad's Repair Co.:

Net tangible assets	$300,000
Expected net cash flow for coming year	60,000
Required rate of return on tangible assets	8%
Required rate of return on intangible assets (excess earnings)	20%

5. Value Dad's Repair Company by the excess earnings method.

6. Compute the implied blended capitalization rate on the tangible and intangible assets by the excess earnings method.

7. Given an estimated capitalization rate of 18% by the build-up method, is the company overvalued or undervalued by the excess earnings method? By how much?

8. What are the probable reasons for this undervaluation or overvaluation?

Chapter 18

Common Errors in Estimation and Use of Cost of Capital

This chapter reviews some of the concepts discussed throughout the book that are most commonly misunderstood or misapplied.

MULTIPLE CHOICE QUESTIONS

1. Which of the following is a correct statement?

   a. The discount rate is equal to the capitalization rate.

   b. The discount rate is the reciprocal of the capitalization rate.

   c. The discount rate is equal to the capitalization rate minus the rate of growth in perpetuity.

   d. The discount rate is equal to the capitalization rate plus the rate of growth in perpetuity.

2. The proper discount rate to use when evaluating a potential acquisition by the discounted cash flow (DCF) method is:

   a. The acquiring company's overall cost of capital.

   b. The acquiring company's cost of equity.

   c. The acquiring company's "hurdle rate."

   d. A rate that reflects the risk of the potential acquisition.

3. Which of the following is the most correct statement?

   a. Historical returns should be capitalized because they are factual and not speculative.

   b. Historical returns should be extrapolated into the future to be discounted or capitalized.

   c. Historical returns should be used only for guidance about what is reasonable to expect in the future.

   d. Historical returns should be ignored when forecasting the future.

4. Which of the following is/are the most correct statement(s) about Risk Management Association's (formerly Robert Morris Associates) *Annual Statement Studies*?

   a. The industry returns that they compile are a good indication of the cost of capital for that industry.

   b. The industry returns that they compile should not be used as a source for cost of capital because they are historical and may not represent expectations about the future.

   c. The industry returns that they compile should not be used as a source for cost of capital because they are based on book values rather than on market values.

   d. Both (b) and (c) are correct.

5. Which of the following is a correct statement?

   a. In the United States, it is most common to state the discount rate in nominal terms, that is, not including inflation.

   b. In the United States, it is most common to state the discount rate in nominal terms, that is, including inflation.

   c. In the United States, it is most common to state the discount rate in real terms, that is, not including inflation.

   d. In the United States, it is most common to state the discount rate in real terms, that is, including inflation.

6. If an acquiring company were to use its own cost of capital for valuation by the DCF method rather than the target cost of capital for the potential acquiree, the result would most likely be what standard of value?

   a. Fair market value.

   b. Fair value.

   c. Investment value.

   d. Intrinsic value.

7. If an acquiring company were to include the benefit of its synergies with the target company in the cash flow projections for valuation of the target, the result would most likely be what standard of value?

   a. Fair market value.

   b. Fair value.

   c. Investment value.

   d. Intrinsic value.

8. Using Ibbotson's data, the equity risk premium should be selected to match which of the following maturities of U.S. government obligations?

   a. 30 days, 5 years, or 30 years.

   b. 1 year, 5 years, or 30 years.

   c. 30 days, 10 years, or 20 years.

   d. 30 days, 5 years, or 20 years.

9. Which of the following is a correct statement about the size premium?

   a. The Ibbotson data specify the boundaries of the company size, as measured by the market value of common equity, and the boundaries vary from year to year.

   b. The Ibbotson data specify the boundaries of company size, as measured by company revenues, and the boundaries vary from year to year.

   c. The Ibbotson data specify the boundaries of the company size, as measured by the market value of common equity, and the boundaries are constant from year to year.

   d. The Ibbotson data specify the boundaries of company size, as measured by company revenues, and the boundaries are constant from year to year.

TRUE OR FALSE QUESTIONS

10. Decrease in the market value of an acquiring company's stock following an acquisition is a common phenomenon. True False

11. If a company foresees supergrowth in the short term, then a discounting model would be more appropriate than a capitalization model. True False

12. The excess earnings method has capitalization rates for two categories of capital, while the weighted average cost of capital (WACC) is not limited in its categories of capital. True False

13. In estimating the terminal value for a company that is expected to grow beyond the terminal year, capital expenditures should be estimated to be equal to depreciation in the terminal year. True False

14. For the purpose of valuation, a company's capital structure should be the weighted average of the book values of the respective capital structure components. True False

15. Within CAPM, a portion of the company-specific risk premium is captured in the size premium. True False

Chapter 19

Cost of Capital in the Courts

Cost of capital plays a critical role in a variety of court cases in most venues, including both federal and state courts. This chapter explores the treatment of cost of capital in various court settings.

MULTIPLE CHOICE QUESTIONS

1. Which of the following state's courts have been the national trendsetter in shareholder disputes?

   a. New York

   b. New Jersey

   c. Delaware

   d. Pennsylvania

2. Which of the following is a correct statement about the valuation methods/approaches most favored by the Delaware Court of Chancery?

   a. The discounted cash flow (DCF) method is most favored, but the market approach and asset approach also are sometimes accepted.

   b. The market approach is most favored, but the DCF method and the asset approach also are sometimes accepted.

   c. The DCF method and the market approach have roughly equal acceptance, but the asset approach is sometimes accepted.

   d. The DCF method, the market approach, and the asset approach all are equally accepted.

3. Which of the following is the best statement about the approaches favored by the U.S. Tax Court?

   a. The market approach tends to be most favored, but the income approach has been gaining favor in recent years.

   b. The market approach tends to be most favored, and its margin of favor over the income approach has tended to increase in recent years.

c. The income approach tends to be most favored, but the market approach has been gaining favor in recent years.

d. The income approach tends to be most favored, and its margin of favor over the market approach has tended to increase in recent years.

TRUE OR FALSE QUESTIONS

4. The U.S. Tax Court has consistently rejected the addition of a small stock premium in the estimation of a discount rate. True False

5. The U.S. Tax Court has yet to address the choice of beta in developing the cost of equity capital estimate. True False

6. Interest rates awarded on receivables in the bankruptcy courts have tended to be at the creditor's cost of capital. True False

7. Bankruptcy courts have not accepted the DCF method for valuation of a company on the basis that projected cash flows for a company in bankruptcy are too speculative to be reliable. True False

8. In utility rate-settings, it is recognized virtually universally that one of the costs the service provider is entitled to recover is the cost of its capital. True False

9. In rate-setting where it has jurisdiction, the Federal Communications Commission typically relies on classic DCF methodology. True False

10. Taxicab lease rates have been set based on the cost of company's weighted average cost of capital. True False

11. Cost of capital is getting increasing attention in family law courts. True False

12. Cost of capital is not a relevant concept in damages cases. True False

Chapter 20

Cost of Capital in Ad Valorem Taxation

Ad valorem taxes are taxes on the possession of property (as opposed to taxes on income or taxes on transfers of property). The term "ad valorem" means "according to value." For ad valorem tax purposes, most income-producing properties are assessed value by some variation of the income approach, and thus cost of capital plays an important role.

MULTIPLE CHOICE QUESTIONS

1. Although state statutes use a variety of terms relating to ad valorem taxes, they all boil down to what standard of value?

   a. Market value.

   b. Investment value.

   c. Fair value.

   d. Intrinsic value.

2. In general, the preferred measure of return for ad valorem taxation is:

   a. EBIT.

   b. EBITDA.

   c. Net income.

   d. Net cash flow.

TRUE OR FALSE QUESTIONS

3. Many ad valorem jurisdictions impose variations on the definition of income to which the cost of capital is to be applied to estimate value, in which case the analyst needs to make adjustments to the cost of capital to be consistent with the statutory or regulatory definition of income. True False

4. Some assessors like to account for the effect of ad valorem taxes by adding back the percentage relationship of tax to market value to the discount rate. True False

5. The size premium is often a factor in cost of equity for ad valorem taxes. True False

6. Traditionally, property tax assessors have used the capital structure at book value rather than market value as the appropriate measure of the employment of capital. True False

EXERCISE

7. If the after-tax cost of capital is 10% and the tax rate is 40%, compute the cost of capital on pretax returns.

Chapter 21

Capital Budgeting and Feasibility Studies

Cost of capital is critical to capital budgeting, project selection, and feasibility studies. The application of cost of capital to capital budgeting is similar to the application of cost of capital to valuing a company.

MULTIPLE CHOICE QUESTIONS

1. For capital budgeting, project selection, and feasibility studies, the preferred measure of economic income is:

   a. Net cash flow.

   b. EBITDA.

   c. EBIT.

   d. Net income.

2. For capital budgeting and project selection, the preferred measure of cost of capital is:

   a. The company's overall cost of capital.

   b. The company's marginal cost of capital.

   c. The project's cost of capital.

   d. The company's cost of equity capital.

3. According to Tom Copeland, the evidence that the market focuses on cash flows includes which of the following?

   a. Accounting earnings are not very well correlated with share prices.

   b. Earnings "window dressing" does not improve share prices.

   c. The market evaluates management decisions based on their expected long-term cash flow impact, not their short-term earnings impact.

   d. All of the above.

TRUE OR FALSE QUESTIONS

4. When a company invests in a project that is expected to return less than the company's cost of capital, the expected result would be a decrease in shareholder value. True False

5. The characteristics of a project, either risk or special financing opportunities unique to the project, may cause the weighted average cost of capital (WACC) for the project to differ from the company's overall WACC. True False

Chapter 22

Central Role of Cost of Capital in Economic Value Added

Many companies have implemented Economic Value Added (EVA) as a management tool. This chapter gives particulars on how some companies implement EVA and how cost of capital plays a central role.

MULTIPLE CHOICE QUESTIONS

1. In EVA, the assessment of business risk is based on:

   a. The build-up model.

   b. The Capital Asset Pricing Model.

   c. The DCF model.

   d. The Fama-French three-factor model.

2. The recommended criteria for leveraged stock options under EVA are:

   a. They are initially "at the money" and are bought, not granted.

   b. They are initially "in the money" and are bought, not granted.

   c. They are initially "at the money" and are granted, not bought.

   d. They are initially "in the money" and are granted, not bought.

TRUE OR FALSE QUESTIONS

3. To compute EVA, the operating profit for the company and each of its units is charged for capital at a rate that blends the after-tax cost of debt and equity in the *target* proportions that each would plan to employ rather than the actual mix that each uses year by year. True False

4. The EVA bonus plan ties bonuses to absolute levels of EVA. True False

FILL-IN-THE-BLANK QUESTIONS

5. What are the three principal ways of increasing value with EVA?

_____

_____

_____

6. The EVA ownership plan employs what two distinct elements?

_____

_____

EXERCISE

7. A company with a 12% cost of capital that earns a 20% return on $100 million of net operating assets has an EVA of how much?

Appendix

Data Resources

This appendix describes the most important data sources used in estimating cost of capital. It is organized by type of information.

MULTIPLE CHOICE QUESTIONS

1. Which of the following is NOT an Ibbotson Associates publication?

   a. *Mergerstat Review.*

   b. *Cost of Capital Yearbook.*

   c. *Stocks, Bonds, Bills, and Inflation.*

   d. *Beta Book.*

2. Which of the following is a source of public company acquisition valuation multiples?

   a. COMPUSTAT.

   b. *Mergerstat/Shannon Pratt's Control Premium Study*™.

   c. *BIZCOMPS*®.

   d. Zack's Investment Research, Inc.

3. Which of the following is a source of private company acquisition valuation multiples?

   a. COMPUSTAT.

   b. *Pratt's Stats*™.

   c. *BIZCOMPS*®.

   d. Both (b) and (c).

FILL-IN-THE-BLANK QUESTIONS

4. Where is the *Standard & Poor's Corporate Value Consulting (S&P CVC) Risk Premium Report* available?

_____

5. What does the acronym EDGAR stand for?

_____

6. What is the primary source of equity risk premium data?

_____

7. What is the primary source of industry-average capital structures at market value?

_____

8. List three or more sources of individual company betas:

_____

_____

_____

9. List three or more sources of company earnings estimates:

_____

_____

_____

10. What is the primary source of publicly registered partnership transaction information?

_____