

Introduction to Financial Management

Consortium Institute of Management and Business Analysis

Fall 2014



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Course Description

The course integrates practical and theoretical aspects of finance and includes concepts and techniques essential for success in all business disciplines. Emphasis is placed upon the underlying principles and practices and how they relate to the decision making process faced by a financial manager charged with the objective of shareholder wealth maximization. Although this course emphasizes corporate decision making, the skills obtained will also aid the student in personal finance and small business decision making.

Course Prerequisites and Expectations

Introduction to Financial Accounting, Managerial Accounting, Principles of Microeconomics and Principles of Macroeconomics (course designation will differ from institution to institution).

This course is highly quantitative and analytical in nature and extensive use of mathematical (algebra) and statistical concepts will be required. Given the nature of this course, it is required that you keep up to date on your assignments for it will be hard to study for this course the night or even the week before the exam and still pass the class.

Course Goals and Objectives

Course Objective: To give the student an operational knowledge of corporate finance by combining theory and applications. Introduce the concepts of risk and return and time-value-of-money as applied to valuation of securities, capital budgeting, cost of capital, capital structure, dividend policy and working capital management. Survey the principles and practices underlying corporate financial management and develop an understanding of the corporate financial decision making process.

Course Goal: After completing this course, the student should be able to explain and evaluate the concept of shareholder wealth maximization and how it relates to other possible objectives of the firm's management as well as the nature of the agency relationship inherent in the corporate structure.

1. Identify bond risk characteristics and calculate bond values.
2. Calculate stock values.
3. Solve time value of money problems.
4. Distinguish between various types of risk and calculate required returns given appropriate risk measures.
5. Calculate costs of capital or solve capital budgeting problems using the cost of capital.

Learning Objective: As the course develops, students will begin to gain a conceptual understanding of the financial decision making process through current financial theory and data. The major topics we will cover include financial markets, financial performance, cash flow measurement, time value of money, risk and return, valuation of stocks and bonds, capital budgeting, capital structure, and dividend policy.

Textbook

Fundamentals of Financial Management, Concise Edition, 8th Edition by Brigham and Houston. Cengage Learning, 2015.

Recommended Supplements

Wall Street Journal, Financial Times, BusinessWeek, The Economist, International Newspapers

Financial Calculator

You may choose to obtain a financial calculator. Some of the calculators that are available are made by Texas Instruments and Hewlett-Packard. You must learn to use the calculator prior to the exams and must bring it to class every day. You may find tutorials and manuals for different calculators in the internet. Please note that in class I will use the HP 10bII when explaining how to solve the problems using a financial calculator. Students will not be allowed to use calculators embedded in other electronic devices such as mobile phones or I-Touch or calculators that can store text.

Course Procedure

The structure of this class makes your individual study and preparation extremely important. The lectures will focus on the major points introduced in the text. If you read and have at least some familiarity with the assigned chapter before the lecture, this will greatly enhance the learning experience. The lecture will focus on the more difficult aspects of each chapter and on problems which deal with the material. If you have not read the chapter and don't understand the definitions and simple concepts, you will not be able to grasp the more complex topics covered in the lecture. After the lecture, you should review your notes and in the process work relevant problems and questions at the end of the chapter. The more problems you work out the better you will do in this class.

The instructor will lecture and lead class discussions. Students are expected to prepare for each class and participate. Students have the primary responsibility for their learning. The instructor's role is to help students learn by leading the learning process.

In each class we will first cover any end of chapter problems/questions you had difficulty solving/answering. This will be followed by a discussion of current events and will culminate with a regular lecture. I am a strong believer of the Socratic Method and this will be used extensively in class.

Class Attendance and Grading

Class Attendance: Attendance at all classes and CIMBA sanctioned activities is mandatory. All unexcused absences will have the following consequences:

1. First absence will result in a loss of ½ of a letter grade for the course (e.g. B+ to B-, B to C+)
2. Second absence (cumulative) will result in a loss of a full letter grade for the course (e.g. B+ to C+)
3. Third absence (cumulative) will result in a dismissal from the program.

Absences due to illness require a note from the CIMBA Undergraduate Office Staff and/or the Istituto Filippin medical staff. If a student is sick and cannot attend class, he/she must inform the CIMBA Staff immediately. Failure to do so will result in an unexcused absence.

Grading: Course grades will be approximately distributed according to the recommended guidelines of the Economics Department at the University of Iowa; that is, 30% A's, 40% B's, 25% C's and 5% D's. These are only guidelines. Actual Distribution will depend on specific class performance. You may refer to <http://tippie.uiowa.edu/undergraduate/advising/grading-policies.cfm> for more on this.

Your performance in this class will be determined by your total performance on all the assignments. Please see the Assignment section below. The following scale will be used to determine the final grades:

A+ = 98-100	B+ = 86-89	C+ = 76-79	D+ = 66-69	F = 0-59
A = 94-97	B = 83-85	C = 73-75	D = 63-65	
A- = 90-93	B- = 80-82	C- = 70-72	D- = 60-62	

Curve: I curve each exam grade up to and including a 70 (or C). My policy on curving is the following: If the class average for a particular exam is below a 70, I give everyone in class, no matter what grade he/she gets, equal number of points in order to make the average a 70. For example, if the class average (including the points for participation) is a 65 I add 5 points to everyone's score in order to make the average a 70. The curve will not be added directly to your grade. I will create a new column where the numbers of points to be added to your score will reside. I will add the points to the exam grade at the end of the semester.

If I feel the class is not doing its best as a whole, I reserve myself the right to not grant a curve for a specific test.

Assignments

In class Exams (75 percent of grade): There will be two mid-term examinations (non-cumulative), each worth 20 percent of your grade, and a final exam (cumulative) worth 35 percent. Exams will be closed-book and closed-notes. Students must bring a calculator, as long as it is not programmable and does not store text. You may not use your cell phone, tablet, computer or palm pilot as a calculator. Each exam will consist of essay/problem solving questions; there are no multiple-choice questions on the exams. You are required to bring a calculator to the exams. Please note that calculator apps in your cell phones or other mobile devices are not allowed. You may bring a one-page cheat sheet to each exam. Limit one letter- or A4-size page, one side. These may only include definitions and/or formulas. Please put your

name on the cheat sheet and hand it in with the exam. If you include more information than allowed in this cheat sheet you will receive a zero (0) in the exam.

The dates for the in class exams are as follows:

- Midterm Exam 1: Class after Chapter 6 is covered
- Midterm Exam 2: Class after Chapter 8 is covered
- Cumulative Final Exam: CIMBA designated (TBD)

In order to be successful in this class and do well in the exams you will need to be able to analyze problems, rather than memorizing facts. Approximately 70-75% of material covered on course exams relates directly to material covered in class sessions. The remaining 25-30% of exam material is drawn from specific readings and problems assigned (but don't cover extensively in class).

If you miss an exam due to illness you must make it up the day are able to return to classes. If this is not possible then you have until the day after you are able to return to classes as specified by the doctor or CIMBA representatives. If it is determined that you have copied in an exam you will receive a zero (0) in the exam. Receiving an F in the course is also a possibility based on the severity of the offense. Any misconduct will be reported to the CIMBA Undergraduate Office and the Associate Dean of the Tippie College of Business.

Integrated Cases (25 percent of grade): Throughout the semester you will have to work on three "Integrated Cases" found at the end of chapter 3(parts a, b, g and j), chapter 5 (a through l), and chapter 11 (a through h). You may work with up to three fellow students, but you must turn in your own assignment. Please include the names of all students who participated at the top or cover page of the assignment. Typed submissions are preferred, written is acceptable if extremely legible. The cases will be due the class after we are done covering the specific chapter – I will remind the students about the assignments the class before they are due. For example, if we finish covering chapter 3 on October 6, 2014 the Integrated Case for this chapter will be due before class begins on October 8, 2014. No late assignments will be accepted. If you miss an assignment you will receive a zero. If you cannot submit an assignment due to illness you will have until the day after you are able to return to classes to submit the assignment. You must have a doctor's excuse or some sort of notice of illness.

Plagiarism is not allowed. Make sure that all the answers are written/answered using your own words. I will check for plagiarism and copying/collaboration from/with others. If caught plagiarizing or copying you will receive a 0 in the assignment. Plagiarism is defined as using another person's work without acknowledgment, making it appear to be one's own. Intentional and unintentional instances of plagiarism are considered instances of academic misconduct and are subject to disciplinary action such as failure on the assignment or failure of the course. If it is determined that you used any web resources, other than those required for the web exercises, or that you plagiarized you will receive a zero in the assignment and your conduct will be reported to the CIMBA Undergraduate Office and the Associate Dean of the Tippie College of Business.

End of Chapter Assignments (0 percent of grade): Assigned chapters must be prepared prior to the lecture date. Each student is responsible for assigned material and end-of-chapter problems

found on Canvas under Course Content - Homework Assignments & Topics Covered in Class. Copies of the solution will be available on Canvas. Students are encouraged to discuss the chapters and assignments with each other. In case of any difficulty, please come see me during office hours or contact me via e-mail. Homework assignments will not be collected. It is up to you whether you want to do it or not. However, you should be aware that the more problems you do the better you will do in this class. It is up to the student whether homework problems are explained in class. I will only go over problems in class if the student asks me to solve a specific problem. I will not be going over problems when students have not attempted the problems themselves.

We will go over the homework problems at the beginning of each class if you have done your work and/or if you have questions. *Even though the end of chapter questions and problems, nor the additional homework problems will not be collected or graded it is highly recommended that you complete them. These will help you better prepare for the exams given that similar questions/problems to those found at the end of the chapter may be found in the exams.*

Course Outline

Chapter	Topics	Homework Problems
1	Goals and Functions of Finance, Creation of Value & Social Responsibility, Investment Decision, Financing Decision, Dividend Decision, Alternative Forms of Business Organization	Suggested: None
2	Financial Securities, Financial Markets, Stock Market, Stock Market Index, Interest Rates	Suggested: None
3	Balance Sheet, Income Statement, Statement of Cash Flows, Free Cash Flow, MVA and EVA	Suggested: 1, 2, 6, 9, 12
6	Interest Rates	Suggested: 2-7
5	Time Lines, Future Value (Compounding), Present Value (Discounting), Discount Rate and Number of Periods, Effective Annual Rates, Annuities, Perpetuities, Uneven Cash Flows, Loan Amortization	Suggested: All of them
7	Bond Valuation, Determining the Coupon Rate, Yield to Maturity, Yield to Call, Risk Faced by Bond Investors, Types of Bonds	Suggested: 1-4, 8-11,19
9	Stock Valuation, Preferred Stock Valuation, Common Stock Valuation, Zero Growth, Constant Growth, Supernormal Growth, Required Rate of Return, Dividend Growth Rate	Suggested: 2-4, 8-11, 13, 14 16-18
8	Risk/Return for a Security, Risk/return for a Portfolio, Effects of Diversification, Capital Asset Pricing Model, Security Market Line, Beta	Suggested: 1-8, 13-17, 19

11	Capital Budgeting, Payback Period, Discounted Payback Period, Net Present Value, Internal Rate of Return, Modified Internal Rate of Return	Suggested: 7, 10-13, 18
10	Cost of Debt, Cost of Preferred Stocks, Cost of Retained Earnings, Cost of Newly Issued Stocks, Weighted Average Cost of Capital, Marginal Cost of Capital	Suggested: 1-4, 10, 12, 18
12	Cash Flow Estimation, Replacement Decision Mutually Exclusive Projects with Unequal Lives, Stand Alone Risk, Sensitivity Analysis, Scenario Analysis, and Monte Carlo Simulation, Decision Tree Analysis Corporate Risk, Market Risk	Suggested: 1-5, 7
14	Dividend Policy Theory, Dividend Policy Issues, Stock dividends and Stock Splits, Stock Repurchases	Suggested: As Many As Possible
13	Target Capital Structure, Business and Financial Risk, Determining the Optimal Capital Structure, Degree of Leverage, Capital Structure Theory	Suggested: As Many As Possible

Structural Policies

Virtually everything that concerns the structural mechanics of this class, including among other things course credit, dropping and adding, and academic misconduct is governed by the Tippie College of Business, University of Iowa. Specific structural policies in that regard include:

Accommodating Disabilities: If you have a disability that may require some modification of seating, testing, or any class requirement, please let me know as soon as possible so that appropriate arrangements can be made. Similarly, if you have any emergency medical information that I should be aware of, or if you need special arrangements in the event of the building being evacuated, please let me know. Please see me after or outside of class to discuss these issues.

Academic Misconduct: Students may work with other students, share information, etc. on all assignments except for exams. Plagiarism, cheating, unauthorized collaboration and other areas are covered by the Honor Code. If expectations about attendance and performance are violated, or if students commit academic misconduct, the CIMBA office policies prevail. CIMBA has an Honor Code in the College and they are bound by this Code even if they are not Tippie College of Business students. Tippie College Undergraduate Honor Code can be found at: <http://tippie.uiowa.edu/undergraduate/honorcode/>. It covers information about cheating,

plagiarism, unauthorized collaboration, obtaining an unfair advantage, forgery, facilitation of academic dishonesty and misrepresentation, as well as its consequences.

It is my sincere hope that no student in this class submits work which is not his or her own. However, it seems prudent to clarify in advance the policy on cheating. If I determine that any assignment was not written solely by the student whose name appears on the assignment, the student will receive a zero (0) for the assignment and may receive an “F” for the class. All incidents of cheating will be reported to the CIMBA Undergraduate Office and the Associate Dean of the Tippie College of Business and the student may be placed on disciplinary probation for the remainder of the semester. In general, the decision of the professor may be appealed to the CIMBA Undergraduate Staff and/or the College of Business Judicial Board, then to the Associate Dean for the Undergraduate Program. The Honor Code for the Tippie College of Business will determine the appropriate process. The Honor Code is located on the University of Iowa website.

Sexual Harassment: CIMBA, The Tippie College of Business and the University of Iowa are committed to providing students with an environment free from sexual harassment. If you feel that you are being or have been harassed or you are not sure what constitutes sexual harassment, we encourage you to visit the University of Iowa website: <http://www.sexualharassment.uiowa.edu/index.php> to seek assistance from the department chairs, Dean’s Office, the University Ombudsmen Office, or the Equal Opportunity and Diversity Office (ombudsperson@uiowa.edu).

FERPA Requirement: To participate in this class, it may be necessary to reveal to other students the names of students who are enrolled in this course. If you do not want your name revealed to other students enrolled in this course, please contact me in writing by the end of the first week of class.

Complaints/Grievance Policy: Student concerns regarding this course should first be discussed with me, the faculty member teaching this course. If we can’t resolve the complaint, you may contact the Economics Department Chair, John Solow (319-335-0845, john-solow@uiowa.edu). If you cannot resolve the complaint by speaking with the chair, you may contact the Associate Dean of the Tippie College Undergraduate Program, Lon Moeller, at 319-335-0924, or by email at lon-moeller@uiowa.edu.

Other Policies

Open Door Policy: Please feel free to set up an appointment if you have questions, or just would like to talk.

E-mail Communication and Etiquette: The best way to contact me outside of class and office hours is via email. You should view your e-mail as a professional business communication in which you are trying to impress the reader and not as a text message to one of your friends or classmates. In the interest of achieving this goal, emails sent to me must meet the following requirements: Emails must have “MBFM” in the subject line. Any form of communication is expected to include proper grammar, capitalization and punctuation. Lastly, emails must be

signed with both your first and last names. Please be very specific as to your question, concern and/or comment.

Tips on how to Succeed in this Class

1. Be attentive in class, take good detailed notes, participate in discussion, and read the chapters ahead of time. Don't work on other class material while you give partial attention to the class.
 - a. Make sure to turn off all electronic communication and game devices before class begins. If you want to send or receive messages, place or receive phone calls, play games or search the Internet, etc., do this outside of the classroom. Students who violate this policy distract me, degrade the classroom experience for other students, and will be asked to leave the classroom.
 - b. Read each chapter before you come to class. To make sure you understand the details, know the meaning and proper use of the key terms in the back of each chapter.
 - c. Pay special attention to all material emphasized in class, and especially the reasoning on the topics. Class material should not be considered difficult, but rather something new that needs to be understood before it can be learned.
2. Form an informal study group. Teach other in your study groups. Keep these groups small. Large groups tend to be more distracting.
3. Let me know of any questions you may have.
4. You are personally responsible for learning the material and doing well.
5. Make sure you complete all the assignments that are due before class as these are designed to speed your comprehension of the course material.

Additional Homework Problems (will help you prepare for the exams but will not count towards your grade)

Chapter 5

1. You just graduated and you plan to work for 15 years to then leave for the Orient. You figure you can save \$500 a year for the first 5 years and \$700 a year for the next 10 years. These saving cash flows will start one year from now. In addition, your family has given you a \$2,000 gift. If you put this gift now, and your future savings when they start, into an account which pays 8 percent compounded annually, what will your financial stake be when you leave for the Orient 15 years from now?
2. An investor is considering the purchase of 40 acres of land which if cultivated will produce a cash flow of \$3,000 per year indefinitely. If the investor requires a return of 8% on investments of this type, what is the most he/she should be willing to pay for the land?
3. If you buy a building for \$450,000 and the terms are 30% down, the balance to be paid off over 40 year at a 15% rate of interest on the unpaid balance, what are the 40 equal annual payments?
4. Assume you are to receive a 10 year annuity with annual payments of \$30. The first payment will be received at the end of year 1, and the last payment will be received at the end of year 10.

You will invest each payment in an account that pays 8%. What will be the value in your account at the end of the Year 20?

5. At the end of three years you will receive the first of eight annual \$200 payments. The current interest rate is 12%, but after the second year the rate will drop to 8%. What is the present value of this cash streams?

6. You want to buy a car on your 25th birthday. You have priced these cars and found that they currently sell for \$18,000. You believe that the price will increase by 5 percent per year until you are ready to buy. You can presently invest to earn 10 percent. If you just turned 20 years old, how much must you invest at the end of each of the next 5 years to be able to purchase the car in 5 years?

Chapter 7

7. CBL Co. has bonds outstanding with a maturity value of \$1,000. The required rate of return on this bond is 12 percent, and interest is paid semiannually. The bonds mature in 8 years, and their current market value is \$892 per bond. What is the annual coupon interest rate?

Chapter 8

8. You hold a portfolio which has an expected return of 8%, a beta of 1.6, and a total value of \$9,000. You plan to increase your portfolio by buying 100 shares of another stock at \$10 per share. The new stock has an expected return of 10% with a beta of 1.8. What will be the expected return and the beta of your portfolio after the purchase of the new stock?

Chapter 10

12. A company is constructing an MCC schedule. The target capital structure is 30 percent debt, 30 percent preferred stock, and 40 percent common equity. Its bonds have a 10 percent coupon, paid semiannually, a current maturity of 12 years, and sells for \$1,000. The firm can sell, at par, \$100 preferred stock which pays an 8 percent annual dividend, but flotation cost of 3 percent would be incurred. The company's beta is 1.5, the risk-free rate is 7 percent, and the market risk premium is 5 percent. The company just paid a dividend of \$1.35, sells for \$22.00 per share, and has a growth rate of 6 percent. The firm uses a risk premium of 2 percentage points. The firm's net income is expected to be \$1 million, and its dividend payout ratio is 50 percent. Flotation costs on new common stock total 9 percent, and the firm's marginal tax rate is 40 percent. Calculate the cost of debt, cost of preferred stock, cost of retained earnings, and the weighted average cost of capital.

Chapter 11

9. A project has a cash outflow of \$500,000 today, and another cash outflow of \$300,000 at the end of year 1. It will then have cash inflows of \$250,000 at the end of years 2-4. Upon its completion, the project will be sold for \$1 million at the end of year 5. If the company's cost of capital is 10%, what is the project's MIRR?

10. A company agrees to pay you \$58,670 at the end of 5 years if you pay \$10,000 per year. Find the IRR.

Chapter 12

11. Calculate the NPV of the proposed project: Cost = \$2,000; estimated life = 3 years; initial decrease in accounts receivable = \$500, which must be restored at the end of the project's life; estimated salvage value = \$1,000, net income before taxes and depreciation = \$1,000 per year, method of depreciation = MACRS; tax rate = 30%; cost of capital = 12%.

Chapter 13

13. QLR Co. expects its sales to increase by 40% in the coming year. The firm's current EPS is \$2.35. Its degree of operating leverage is 1.2, while its degree of financial leverage is 1.8. What is the firm's projected EPS for the coming year using the DTL approach?

14. Assume that a firm currently has EBIT of \$1,000,000, DTL of 3.75, and DFL of .675. If sales decline by 20 percent next year, then what will be the firm's expected EBIT in one year?

Handout
Chapter 3

INCOME STATEMENTS FOR YEAR ENDING DECEMBER 31
(MILLIONS OF DOLLARS)

	<u>1</u>	<u>0</u>
Sales	\$3,600.0	\$3,000.0
Operating costs excluding depreciation	3,060.0	2,550.0
Depreciation	<u>90.0</u>	<u>75.0</u>
Earnings before interest and taxes	\$ 450.0	375.0
Less interest	<u>65.0</u>	<u>60.0</u>
Earnings before taxes	\$ 385.0	315.0
Taxes (40%)	<u>154.0</u>	<u>126.0</u>
Net income available to common stockholders	<u>\$ 231.0</u>	<u>189.0</u>
Common dividends	181.5	13.2

BALANCE SHEETS FOR YEAR ENDING DECEMBER 31
(MILLIONS OF DOLLARS)

Assets:		
Cash and marketable securities	\$ 36.0	\$ 30.0
Accounts receivable	540.0	450.0
Inventories	<u>540.0</u>	<u>600.0</u>
Total current assets	\$1,116.0	\$1,080.0
Net plant and equipment	<u>900.0</u>	<u>750.0</u>
Total assets	<u>\$2,016.0</u>	<u>\$1,830.0</u>
Liabilities and equity:		
Accounts payable	\$ 324.0	\$ 270.0
Notes payable	201.0	154.5
Accruals	<u>216.0</u>	<u>180.0</u>
Total current liabilities	\$ 741.0	\$ 604.0
Long-term bonds	<u>450.0</u>	<u>450.0</u>
Total debt	\$1,191.0	\$1,054.5
Common stock (50 million shares)	150.0	150.0
Retained earnings	<u>675.0</u>	<u>625.0</u>
Common equity	<u>\$ 825.0</u>	<u>\$ 775.0</u>
Total liabilities and equity	<u>\$2,016.0</u>	<u>\$1,830.0</u>

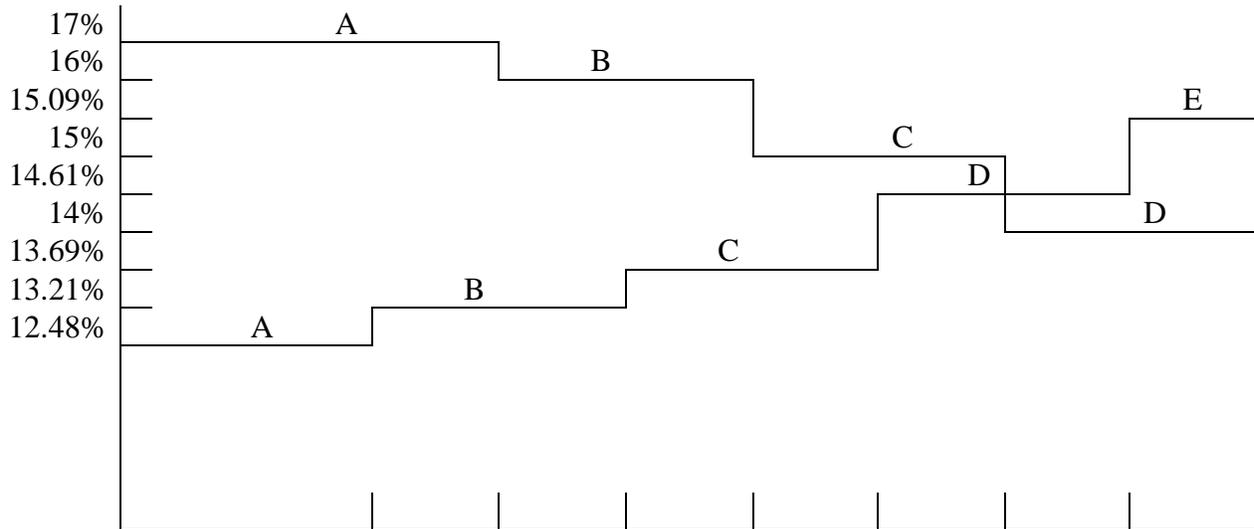
Handout
Chapter 10

Cost of Capital Example #1

The management of FPI is planning next year's capital budget. FPI projects net income of \$10,500, and its payout ratio is 40 percent. The company's earnings and dividends are growing at a constant rate of 5 percent. The last dividend, D_0 , was \$0.90, and the current equilibrium stock price is \$8.59. FPI can raise up to \$10,000 of debt at a 12% before tax cost, the next \$10,000 will cost 14%, and all debt after \$20,000 will cost 16%. If FPI issues new common stock, a 10% flotation cost will be incurred on the first \$16,000 issued, while flotation cost will be 20% on all stocks issued after the first \$16,000. FPI is at its optimal capital structure, which is 40% debt and 60% equity, and the firm's marginal tax rate is 40%. FPI has the following independent, indivisible, and equally investment opportunities:

Project	Cost	IRR
A	\$15,000	17%
B	\$15,000	16%
C	\$12,000	15%
D	\$20,000	14%

What is FPI's Optimal Capital Budget?



Cost of Capital Example #2

J. Ross and Sons Inc. needs to raise \$1,700,000 in order to finance a project. It hopes to use as much of its retained earnings as possible but it expects to have to issue new stocks as well. Its current level of retained earnings is \$600,000. It also has a target capital structure that calls for 40 percent debt, 10 percent preferred stock, and 50 percent common equity. Its bonds have a 10 percent coupon, paid semiannually, a current maturity of 20 years, and sell for \$1,000. The firm's current after-tax cost of debt is 6 percent, and it can sell as much debt as it wishes at this rate. The firm's preferred stock currently sells for \$90 a share and pays a dividend of \$10 per

share; however, the firm will net only \$80 per share from the sale of new preferred stock. Ross' common stock currently sells for \$40 per share, but the firm will net only \$34 per share from the sale of new common stock. The firm recently paid a dividend of \$2 per share on its common stock, and investors expect the dividend to grow indefinitely at a constant rate of 10 percent per year. Assume the firm has sufficient retained earnings to fund the equity portion of its capital budget. The firm's marginal tax rate is 40 percent. What is the firm's

- a. component cost of debt?
- b. cost of retained earnings?
- c. cost of newly issued common stock?
- d. cost of newly issued preferred stock?
- e. weighted average cost of capital?

Handout
Chapter 12

Cash Flow Estimation - Table

Year	MACRS Depreciation Rates		
	3 Year	5 Year	7 Year
1	0.33	0.20	0.14
2	0.45	0.32	0.25
3	0.15	0.19	0.17
4	0.07	0.12	0.13
5		0.11	0.09
6		0.06	0.09
7			0.09
8			0.04

Project analysis worksheet:					
		0	1	2	3
I	Initial outlay				
	1) Cost				
	2) Change in NOWC				
	3) Total net investment				
II	Operating flows:				
	4) EBT and depreciation				
	5) Operating income after taxes (line 4 * (1-tax))				
	6) Depreciation (from table)				
	7) Tax savings from depreciation (line 6 * tax)				
	8) Net operating cash flows (lines 5 + 7)				
III	Terminal year cash flows:				
	9) Estimated salvage value				
	10) Tax on salvage value ((line 9 – book value) * tax)				
	11) Return of NOWC				
	12) Total termination CFs (lines 9 + 10 + 11)				
IV	Net cash flows:				
	13) Net CFs (lines 3 + 8 + 12)				

Book value = initial cost – sum of accumulated depreciation = line 1 – sum of line 6

Handout
Chapter 12

Decision Tree Analysis

Consider the following project data: a \$250 feasibility study will be conducted at $t=0$. If the study indicates potential, the firm will spend \$500 at $t=1$ to build a prototype. The best estimate now is that there is an 80% chance that the study will indicate potential, and 20% chance that it will not. If reaction to the prototype is good, the firm will spend \$5,000 to build a production plant at $t=2$. The best estimate now is that there is a 60% chance that the reaction to the project will be good, and 40% chance that it will be poor. If the plant is built, there is 50% chance of a $t=3$ cash inflow of \$8,000 and 50% chance of a \$6,500 cash inflow. What is the project's NPV? Assume a discount rate of 10%.

