**Corporate Finance 5161**

**Spring 2018**

**Professor:** Don Cunningham, PhD

**Office Hours:** Mon: noon – 3pm

Tues: 11:00 **– 1:45** (on some Tuesdays, core faculty meets from 11-12:30) so 12:30-1:45

 Thurs: 11:00 **-** 1:45

 Other times by appointment

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**TEXT**

Recommended edition is the 2nd edition of the Concise Edition of *Principles of Corporate Finance* by Brealey, Myers, and Allen*.* ISBN: 978-0-07-353074-1 <http://highered.mcgraw-hill.com/sites/0073405116/information_center_view0/table_of_contents.html>). The syllabus problems are referenced to the concise edition, but I have attached copies of the problems to this syllabus.

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If you or someone you know would like help related to an experience of sexual violence including sexual assault, harassment, domestic violence, dating violence, stalking or other type of non-consensual sexual conduct, please contact Kristan Tucker, the Title IX Coordinator at Baylor University, by email (Kristan\_Tucker@baylor.edu) or phone (254-710-8454).

## BAYLOR UNIVERSITY HONOR SYSTEM

Ethics are an integral feature of all personal, social, and professional considerations. Competency in thinking ethically and accepting responsibility for one's actions is essential to personal and professional development. Baylor graduates are committed to their intellectual, ethical, professional, and social development throughout life.

Baylor MBA students have affirmed their commitment to ethical and professional conduct specifically agreeing in writing to the following:

* Affirmation of Expectations of Professional and Academic Conduct
* Guidelines for Citations and References
* Constitution of the Baylor University Honor System

**CLASS ATTENDANCE**

University policy concerning absenteeism is detailed in the Class Attendance section of the Student Handbook. The policy states: "A student who misses more than 25 percent of the class meetings of a course automatically fails." As per university policy: "The student bears the responsibility for the effect absences may have upon class participation, announced and unannounced examinations, written assignments, reports, papers and other means of evaluating performance in a course."

On-time attendance is required for all classes. Students must be in their seats and ready for class at the scheduled start time of the class in which they are officially enrolled. A late arrival to a class will be counted as an absence from the class and, therefore will be subject to the university absenteeism policy.

**PLAGIARISM**

Students agree that by taking this course, all required papers, exams, class projects or other assignments submitted for credit may be submitted to turnitin.com or similar third parties to review and evaluate for originality and intellectual integrity. A description of the services, terms and conditions of use, and privacy policy of turnitin.com is available on its web site: [http://www.turnitin.com](http://www.turnitin.com/). Students understand all work submitted to turnitin.com will be added to its database of papers. Students further understand that if the results of such a review support an allegation of academic dishonesty, the course work in question as well as any supporting materials may be submitted to the Honor Council for investigation and further action.

**COURSE DESCRIPTION**

This one hour module provides an introductory financial perspective on (1) why publicly-held firms exist and

(2) how they should be managed. Comparisons are made between the management style of publicly held firms and privately held firms. The answer(s) to questions (1) and (2) leads directly to the determination of how individual projects (assets/investments) should be selected within the firm. Considerable time is spent on the calculations that are necessary to adjust for differences in timing and risk of project cash flows. The cost of capital is a major topic of discussion. In the process of determining the best investment policy of firms, we also explore the best investment strategy for individual investors to pursue.

**MBA LEARNING GOALS**

The learning goals for the MBA program are:

1. To understand and apply theoretical knowledge in integrated fundamental areas of accounting, economics, finance, information systems, marketing, operations management, organization behavior, quantitative business analysis, and strategic management;

2. To think critically, to solve problems effectively, and make decisions strategically across functional areas;

3. To work collaboratively with others in cross-functional teams, and to motivate, lead, and mentor others;

4. To articulate ideas and information effectively and persuasively in every business context.

5. To apply core ethical values of integrity, accountability, and service in all circumstances.

**COURSE OBJECTIVES**

**FIN5161 Learning Objectives:**

To contribute to the achievement of the MBA Program Learning Goals cited above, the following learning objectives are established for FIN5161:

1. *Develop the rationale behind “wealth-maximization” (a.k.a. stock price maximization) as the executives’ best strategic goal for managing the firm. Demonstrate how stock price maximization also maximizes the well-being of all shareholders. Understand the Separation theorem. Demonstrate how its application fulfills the best management strategy of wealth/stock price maximization.*
2. *Determine why Net Present Value (NPV) analysis is the best method for rank ordering firm projects. Be able to demonstrate the potential problems that can occur when other methodologies such as IRR, Payback, and ARR are substituted for NPV analysis.*
3. *Determine the best approach for shareholders to use when managing their portfolios of stocks and bonds versus the approach firms should use when managing their portfolios of property, plant, and equipment.*

**MBA Healthcare Administration Specialization Competencies**

**This addendum to the syllabus maps course objectives and course assignments to**

**competencies in the MBA Healthcare Administration Specialization.**

Objective (below) refers to specific Leaning Objective cited above

|  |
| --- |
| **DOMAIN 2 – Critical Thinking and Analysis** |
| **1. Critical Thinking and Analysis: The ability to understand a situation, issue, or problem by breaking it into smaller pieces or tracing its implications in a step-by-step way.**  **Objective: 2** |
| **2. Innovative Thinking: The ability to apply complex concepts, develop creative solutions, or adapt previous solutions in new ways. Objective: 3** |
|  |
| **DOMAIN 3 – Business and Management Knowledge** |
| 1. **Financial Skills: The ability to understand and explain financial and accounting information, prepare and manage budgets, and make sound long-term investment decisions. Objective: 1**
 |

**COURSE REQUIREMENTS**

**Exams:**

**Two exams** are offered for this module; however, only the first is required. The first exam is comprehensive and is given at the end of the 5 week module. If you are satisfied with the grade on the exam, then it will determine 80% of your grade. If you are not satisfied with your performance on this exam, then you have the option of taking a second comprehensive exam one week later. If you take both exams, then the first counts 40% and the second counts 40%, for a total grade contribution of 80%.

**Class Participation:**

Class participation counts the remaining 20%. At the end of the module I will assign a numerical grade for participation based on my assessment of whether you were:

* Thoughtful and engaging with content questions = 90 - 100,
* Responding to my questions = 85 - 90,
* Asking other questions = 80 - 85, (better than no questions)
* Present and taking notes = 75 -80
* Not present = < 75

 **GRADING SCALE**

A 92 -100 points C 72-77 points

A- 90-91 “ C- 70-71 “

 B+ 88-89 “ D 50-69 “

 B 82-87 “ F 49 and below

 B- 80-81 “

C+ 78-79 “

**DAILY CLASS SCHEDULE AND ASSIGNMENTS**

**At your earliest convenience, watch the movies *The Founder, Other People's Money, and Wall Street* (#1, much better and more applicable than #2). Look for discoveries, inefficient markets, efficient markets, and marginal investors.**

http://business.baylor.edu/don\_cunningham/

|  |  |
| --- | --- |
|  **Learning Objectives** **2/13 Tuesday – The Financial System*** Construct a Framework of Corporate Finance Study
* Integrate Finance, Accounting, and Economics
* Identify the Purpose for which a Firm Exists
* Describe a Firm’s Goal(s)
* Begin Fisher’s Model of the Firm

**2/15 Thursday - Fisher Model** * Solve exercises based on Fisher’s Model
* Differentiate between Preference and Rationality
* Resolve firm governance to adjust for SH preferences
* Formulate the Separation Principle
* Formulate the best cost/benefit analysis technique that adjusts for preferences and time

**2/20 Tuesday – Fisher Model Problems** * Devise solutions to exercises attached
* Practice applying the NPV rule
* Extend Fisher’s Model to multiple time periods
* Derive a set of Present Value (PV) Factors
* Apply PV Factors
* Value Bonds, Mortgages, Stocks

**2/22 Thursday** * Simulate a Firm’s Investment Decision
* Examine alternative metrics to evaluate investments (Cash Flow, Profitability, Rate of Return, IRR) and compare to NPV technique

**2/27 Tuesday- Refinancing Case** * Apply NPV analysis in a Personal Setting-Refinancing
* Formulate and synthesize the Separation Principle in the context of the Individual’s Refinancing Decision

**3/1 Thursday - Risk and Return** * Compare and Contrast Firms’ Investment Decision with Individual Investors’ Investment Decision
* Articulate an Individual Investor’s Investment Goal
* Define expected return E(R)
* Define Risk
* Simulate an Investor’s investment opportunities
* Calculate E(R) and Risk for simulated stocks
* Calculate E(R) and Risk for a simulated portfolio of stocks
* Compare and contrast E(R) and Risk of individual stocks with E(R) and Risk of portfolios

**March 5 – 9 Spring Break****3/13 Tuesday - Decompose Risk** * Develop a graphical representation of a portfolio’s E(R) to risk ratio
* Examine the impact of weighting proportions and security correlations on the portfolio’s E(R) to risk ratio
* Examine the impact of including the Rf security in portfolio
* Examine the Impact of leverage on E(R) and risk of portfolios
* Hypothesize an Optimal Investment Strategy for individual investors
* Differentiate riskless E(R) from risky E(R)
* Differentiate “unique” risk from “systematic” risk

**3/15 – Thursday** * Formulate a measure of Systematic Risk
* Hypothesize a price for systematic risk
* Compose a total E(R) model for any individual security
* Compare and Contrast E(R) of individual securities with E(R) of well diversified portfolios

**3/20 – Tuesday** * Devise solutions to simulated investment exercises

**3/22 – Thursday** * **Final Exam (Open computer. Any notes must be on computer.)**

**13/27 – Monday** * Graded Exams available for review during office hours

**3/28 or 3/29 - Tuesday or Thursday** * Between 11 and 3 Optional Retake Final Exam
* (Other times can be arranged if you have conflicting exams.)
 |   **Textbook and outside Readings,**  **Videos, Simulation Exercises,**  **Projects, and practice exercises**  Ch 1,2 [The Financial System](http://business.baylor.edu/Don_Cunningham/The%20Financial%20System.docx)Ch 11 Efficient Markets Watch *The Founder* – identify 6 discoveries[Foundations of NPV](http://business.baylor.edu/Don_Cunningham/Foundations%20of%20NPV%20-%20Fisher%27s%20Model.pdf)[Notes on Intertemporal Choice](http://business.baylor.edu/don_cunningham/Notes%20on%20Intertemporal%20Choice.pdf)[Richard Thaler, behavorial finance, 2017](http://business.baylor.edu/don_cunningham/Opinion-What%20you%20can%20learn%20from%20Richard%20Thaler-%20Nobel%20Prize%20Winner%202017.docx)[Financial System OneNote](http://business.baylor.edu/web/don_cunningham/Financial_System.onepkg)[MIT OCW Intro & PV lecutre video](http://ocw.mit.edu/courses/sloan-school-of-management/15-401-finance-theory-i-fall-2008) [LearnersTV finance lecuture videos 1-5](http://www.learnerstv.com/Free-Management-Video-lectures-ltv217-Page1.htm)[Sign up and install Microsoft OneNote](http://www.onenote.com/)[What is Corporate Finance](http://business.baylor.edu/Don_Cunningham/What%20is%20Corporate%20Finance.docx)[Financial Terms](http://business.baylor.edu/don_cunningham/Finance%20Terminology.doc)[Pyramid of Corporate Finance Principles](http://business.baylor.edu/don_cunningham/Pyramid%20of%20Finance%20Principles.xls)[James Simons’ Life of Curiosity (2014)](http://business.baylor.edu/don_cunningham/James%20Simons%20-%20A%20Life%20of%20Ferocious%20Curiosity%20-%20NYTimes%20%282014%29.pdf)[Marginal Investors – (2014)](http://business.baylor.edu/don_cunningham/Marginal%20Investors%20%282014%29%20-%20Activists%20with%20war%20chests%20near%20%24100%20billion%20-%20MarketWatch.pdf)[Ichan’s Billionaire Trait (2015)](http://business.baylor.edu/Don_Cunningham/Icahn%27s%20Billionaire%20Trait%20%282015%29.docx)[Capitalisms Marginal Heroes –(2015)](http://business.baylor.edu/don_cunningham/Capitalisms%20Unlikely%20Heroes%20-%20Marginal%20Investors.docx)Google & watch Warren Buffet Interviewse.g. [Charlie Rose Interviews W. Buffet](http://business.baylor.edu/don_cunningham/Videos/Embed_CRose.html)[Irving Fisher (1867 - 1947)](http://en.wikipedia.org/wiki/Irving_Fisher)[Are You a Born Saver or Spender? (2013)](http://business.baylor.edu/don_cunningham/Are%20you%20born%20a%20saver%20or%20spender%20%282013%29.doc)[Money Buys Happiness (2013)](http://business.baylor.edu/don_cunningham/Money%20Buys%20Happiness%20and%20You%20Can%20Never%20Have%20Too%20Much%20%282013%29.doc) [The Problem with Financial Incentives (2011)](http://business.baylor.edu/don_cunningham/The%20Problem%20with%20Financial%20Incentives%20--%20Wharton%20%282011%29.pdf)[The Meaning of Wealth around the World (2010)](http://business.baylor.edu/don_cunningham/The%20Meaning%20of%20Wealth%20Around%20the%20World%20%282010%29.pdf)[Welch Interview (1995)](http://business.baylor.edu/don_cunningham/Welch%20Interview.pdf)[Fountain of Youth (1998)](http://business.baylor.edu/don_cunningham/Fountain%20of%20Youth.pdf) [Ch 3 , Ch 4 & Ch 5 – Soutions](http://business.baylor.edu/don_cunningham/Fountain%20of%20Youth.pdf) [[Chapter 2](http://business.baylor.edu/don_cunningham/Fountain%20of%20Youth.pdf)](http://business.baylor.edu/don_cunningham/Chap002.doc)[[Chapter 3](http://business.baylor.edu/don_cunningham/Fountain%20of%20Youth.pdf)](http://business.baylor.edu/don_cunningham/Chap003.doc)[[Chapter 4](http://business.baylor.edu/don_cunningham/Fountain%20of%20Youth.pdf)](http://business.baylor.edu/don_cunningham/Chap004.doc)[[Chapter 5](http://business.baylor.edu/don_cunningham/Fountain%20of%20Youth.pdf)](http://business.baylor.edu/don_cunningham/CHAPTER_5.docx) Handout problems attached 1 & 2Problems attached Ch 3 and Ch 4[*PV Factors*](http://business.baylor.edu/don_cunningham/PVFactors.xls) - excel worksheet[Pricing Bonds, Mortg, Stocks – pro forma](http://business.baylor.edu/don_cunningham/Pricing%20Bonds%2C%20Mortgage%2C%20Stock%20-%20Pro%20Forma.xlsx)[Class Case: Should You Refinance](http://business.baylor.edu/don_cunningham/Should%20You%20Refinance.doc) [Refinance (1.0)](http://business.baylor.edu/don_cunningham/Refinance%201.0.xls) - excel worksheet*[Projects](http://business.baylor.edu/don_cunningham/projects.xls)* [- excel worksheet](http://business.baylor.edu/don_cunningham/projects.xls)Ch. 5[Ways to Measure Performance (2009)](http://business.baylor.edu/don_cunningham/Ways%20to%20Measure%20Performance_old.pdf)Ch 7 & Ch 8[LVN – Risk and Return](http://www.showme.com/sh/?h=VkX6WVU)[LearnersTV lecture video – Risk and Return](http://www.learnerstv.com/video/Free-video-Lecture-7156-Management.htm)[MIT OCW leture video on Risk and Return](http://ocw.mit.edu/courses/sloan-school-of-management/15-401-finance-theory-i-fall-2008/video-lectures-and-slides/risk-and-return/)[MIT OCW lecture video on Portfolio Theory](http://ocw.mit.edu/courses/sloan-school-of-management/15-401-finance-theory-i-fall-2008/video-lectures-and-slides/portfolio-theory/)[Portfolio](http://business.baylor.edu/don_cunningham/PORTFOLIO.xls) - excel worksheet [*Stock Picking Still a Loser’s Game (2018)*](http://business.baylor.edu/Don_Cunningham/Stock%20Picking%20is%20still%20a%20Loser%27s%20Game%20%282018%29.docx)[To Beat Index Fund, Luck is best hope (2009)](http://business.baylor.edu/don_cunningham/To%20beat%20index%20funds%2C%20luck%20is%20your%20only%20hope%20Mutual%20Understanding%20-%20MarketWat.pdf)[Index Funds Win Again (2009)](http://business.baylor.edu/don_cunningham/Index%20Funds%20Win%20Again%20%282009%29.pdf)[The Man Your Fund Manager Loves to Hate (2000)](http://business.baylor.edu/don_cunningham/The%20Man%20your%20fund%20manager%20hates.doc)[Portfolio – Efficient Frontier tab](http://business.baylor.edu/don_cunningham/PORTFOLIO.xls)[Harry Markowitz](http://en.wikipedia.org/wiki/Harry_Markowitz) 1990 Nobel Prize*[An Interview with Eugene Fama (2010)](http://business.baylor.edu/don_cunningham/Interview%20with%20Eugene%20Fama%20%282010%29.pdf)**[An Interview with Robert Shiller (2014)](http://business.baylor.edu/don_cunningham/Interview%20%20-%20Robert%20Shiller%20%282014%29.pdf)*[*Richard Thaler Wins Nobel (2017)*](http://business.baylor.edu/Don_Cunningham/Richard%20Thaler%20Wins%20the%20Nobel%20in%20Economics%20for%20Killing%20Homo%20Economicus.docx)*Technical Analysis is Behavioral (2013)*[*Leverage for the Long Run*](http://business.baylor.edu/Don_Cunningham/Leverage%20for%20the%20Long%20Run%20-%202016%20Charles%20Dow%20Award%20Winner%20-%20February%202016.docx)*–Dow Award (2016)*[*Leveraged ETF Myths (2017)*](http://business.baylor.edu/Don_Cunningham/Leveraged%20ETF%20Myths%205.2017.docx)[*Personal Leverage – Diversification Across Time*](http://business.baylor.edu/don_cunningham/Diversification%20Across%20Time.pdf)*Technical Analysis is Behavioral (2013)*[Personal Leverage – Diversification Across Time](http://business.baylor.edu/don_cunningham/Diversification%20Across%20Time.pdf)[Lifecycle Investing](http://business.baylor.edu/don_cunningham/Lifecycle%20Investing.JPG)[Warren Buffet on Personal Leveraging (2015)](http://business.baylor.edu/don_cunningham/Warren%20Buffet%20on%20Personal%20Leverage%20%282015%29.docx)[Warren Buffet Advice to LeBron James (2015)](http://business.baylor.edu/don_cunningham/Warren%20Buffett%20Investment%20Advice%20to%20LeBron%20James%20%282015%29.docx)[Alcoa Splits Apart (2015)](http://business.baylor.edu/don_cunningham/Alcoa%20Splits%20Apart%209.28.15.docx)*[Average long-run returns (nominal)](http://business.baylor.edu/don_cunningham/Average%20returns%20%28nominal%29%20over%20long%20time%20periods.pdf)**[Average long-run returns (real)](http://business.baylor.edu/don_cunningham/Average%20returns%20%28real%29%20over%20long%20periods.pdf)*Ch 7: Problems 4, 5, 7, 8, 11, 13, 21Ch 8: Problems 5, 8[Chapter 7](http://business.baylor.edu/don_cunningham/Chap007.doc) Problem Solutions[Chapter 8](http://business.baylor.edu/don_cunningham/CHAPTER_8.docx) Problem Solutions |

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Finance Terminology

# The purpose of Corporate finance is to ask Why do Firms exist? And to determine What is the Goal of the firm?

# “The Players” in Corporate Finance (aka the theory of the firm)

Firms/corporations/companies – publicly traded vs. privately held – their balance sheet

Shareholders – average vs marginal shareholder - their balance sheet

Banks/banking – what is their pupose?

## THE ACTIVITIES of “the players”

Investing (by shareholder vs. by the firm)-left hand side of the balance sheet

Saving/lending

Borrowing/leveraging-right hand side of the balance sheet

# MEASURES OF PERFORMANCE (i.e. in achieving the goal of the firm)

From Economics, Accounting, Finance

Liquidity

Profitability

Return (rate of return)

Wealth creation—maximum wealth creation

Future Value vs. Present value—Discounting

 Which is more valuable: 1100 in one year or 1200 in two years?

 Which has highest rate of return, which is more valuable: 1100 in one yr or 1200 in one yr?

Net present value

Stock price

# WHICH MEASURE MUST DOMINATE- What does “better-off” mean?

Preferences(irrationality) vs Rationality

Preferences for liquidity, safety, returns, risk, profitability, others

Rationality

Irrationality

**How marginal shareholders versus the averae (majority) shareholders impact the Goal of the firm?**

|

**How do Capital markets (i.e. stock and debt markets) differ from retail markets and what if impact on the Firm achieving its Goal?**

Chapter 2

Handout Problem #1

Introduction

Mr. Advisor has advised Ms. Investor to invest 2.6 million into Company ABC. If the company pays no dividends now, Mr. Advisor projects that the company will be worth 5 million in one year, given its many investment opportunities. The firm will make a major announcement about its investment plans very soon.

However, Ms Investor likes immediate returns. So, if she agrees to invest, then the company agrees to commence a dividend policy immediately, paying-out 1 million in dividends immediately. When the company is liquidated in one year, all remaining assets will be paid out as dividends.

All saving, borrowing, and investing are in the same risk class.

You are the CEO.

1. What should be the strategic investment plan of the company?
2. What is the value of the company after it makes its investment plan announcement?
3. What is the expected future value of the company without dividends?
4. What is the expected future value of the company with dividends?
5. What is the value of the stock now without dividends?
6. What is the value of the stock now with dividends?
7. What would happen to the value of the stock now and the investment plan if the firm agreed to commence with dividends of $3 million now?

Continued on next page

Chapter 2 Handout Problem #1

(continued)

All numbers are in $ millions

4

5

3.75

3

1

1.6

2.6

4

The straight line represents shareholder’s and firm’s opportunities for lending and borrowing , and the curved line represents a firm’s opportunities for investment. All investments, savings, and borrowing are in the same riskclass. Suppose a firm is created and raises 2.6 million in cash. Answer the following questions.

1. What is the interest rate in the economy? By what other names might we refer to this interest rate?
2. How much should the company invest in order to make its shareholders happiest?
3. How much will this investment be worth next year?
4. What is the average rate of return on this investment?
5. What is the marginal rate of return on this invesmtne?
6. What is the PV of the firm’s investment? What is another name for this PV?
7. What is the NPV of this investment? What is another name for this NPV?
8. What is the PV of the shareholder’s investment? What is another name of this PV.
9. How much does the shareholder want to consume today and how much tomorrow?
10. How could the firm satisfy the shareholder’s spending preferences in time periods today and next year?
11. Could the shareholder spend (consume) $3 million toady? If yes, then how much will they have to spend next year? Show this on the gaph.
12. If the firm has a no dividend policy, could the shareholder’s preferences for spending still be satisfied? How?
13. Use Shareholder and firm balance sheets to represent the answers to questions 2, thru 11.

Chapter 2 Handout Problem #2

Draw a figure like the one in problem #1 representing the following situation:

1. A firm starts out with $10 million in cash.
2. The rate of interest is 10 percent
3. To maximize NPV the firm invests today $6 million in real assets. This leaves $4 million which can be paid out to the shareholders.
4. The NPV of the investment is $2 million.

Answer the following questions:

1. How much cash is the firm going to receive in year 1 from its investment?
2. What is the marginal return from the firm’s investment?
3. Who inside the firm will calculate the marginal return on this investment? How?
4. What is the value of the shareholder’s investment before the investment plan is announced? What is the value after the announcement? How long does it take for this value change to occur?
5. Suppose shareholders want to spend $6 million today. How can they do this?
6. If they spend $6 million today, how much will they have to spend next year?
7. Could they plan to spend more today? Would it change their wealth. What is their wealth?

## CHAPTER 2

**Present Values, the Objectives of the Firm, and Corporate Governance**

## *Quiz Questions*

7. We can imagine the financial manager doing several things on behalf of the firm’s stockholders. For example, the manager might:

* 1. Make shareholders as wealthy as possible by investing in real assets with positive NPVs.
	2. Modify the firm’s investment plan to help shareholders achieve a particular time pattern of consumption.
	3. Choose high- or low-risk assets to match shareholders’ risk preferences.
	4. Help balance shareholders’ checkbooks.

 But in well-functioning capital markets, shareholders will vote for *only one* of these goals. Which one? Why?

8. Why would one expect managers to act in shareholders’ interests? Give some reasons.

## *Practice Questions*

13. Norman Gerrymander has just received $1 million bequest. How should he invest it? There are four

alternatives.

a. Investment in one-year US government securities yielding 5%.

b. A loan to Norman’s nephew Gerald, who has for years aspired to open a big Cajun restaurant n

 Duluth. Gerald had arranged a one-year bank loan for $900,000 at 10%, but wants a $1 million

 loan from Norman at 9%.

c. Investment in the stock market. The expect return in 12%.

d. Investment in real estate, which Norman judges is about as risky as the stock market. The

 opportunity a had would cost $1 million and is forecasted to be worth 1.1 million after one year.

1. Which answers in #13, with rate adjustments, are potential positive NPV investments and which answers, with rate adjustments are zero potential positive NPV investments. Why?

 **Chapters 1-5**

**Practice Set**

 **Decision Making with Present Values**

***(Print this problem set. Provide well-labled answers including r, n, factor name and factor value with detailed calculations in the space between problems. Use the excel PV factors worksheet to calculate your answers. If you need more space for your answers then you may add more space between problems)***

## *Basic*

1. An investment costs $1,548 and pays $138 in perpetuity. If the interest rate is 9%, what is the invesment’s PV? What is the investment’s NPV?
* A parcel of land costs $500,000. For another $800,000 you can build a motel on the property. The land and motel should be worth $1,500,000 next year. Common stocks in the same risk class offer a 10% expected rate of return. Should you buy the land and construct the motel? Why or Why not?

*Intermediate*

* What is the present value (PV) of a *firm’s* investment in $ 1 million U.S. Treasury Bonds yielding 5%, with a coupon rate also of 5%, and maturing in 30 years. What is the present value (PV) and net present value (NPV) of these bonds? The firms assets earn 15% (ROA), the S&P 500 is expected to earn 12%, and treasury bills yield 3%. (*Hint:* What is the opportunity cost of capital? Ignore taxes.) Show calculations for your answer.
* 14. A factory costs $800,000. You anticipate that it will produce a net cash inflow from operations of $170,000 a year for 10 years, and have zero value at the end of the 10th year. If equivalent riskclass factories earn 14% (i.e. opportunity cost of capital), what is the NPV of this factory.
* 17. A factory costs $400,000. It will produce an inflow after operating expenses of $100,000 in year 1, $200,00 in year 2, and $300,000 in year 3. The opportunity cost of capital is 12%. Calculate its NPV. How is the NPV calculation for this factory different from the calculation for the the factory in the previous problem?
* 19. As the winner of the breakfast cereal competition, you can choose one of the following prizes. If the interest rate is 12%, which is the best prize?
1. $100,000 now.
2. $180,000 at the end of five years.
3. $11,400 a year forever.
4. $19,000 for each of 10 years.
5. $6,500 next year and increasing thereafter by 5% a year forever.
* Norman Gerrymander has just received a $1 million bequest and he has four alternative investments. How should he invest?

a. Investment in one-year US government securities yielding 5%.

b. A loan to his nephew Gerald, who has for years aspired to open a big Cajun restaurant. Gerald has arranged a one-year bank loan for $900,000 at 10%, but wants a $1 million loan from Norman at 9%.

c. Investment in the stock market. The expect return in 12%.

d. Investment in real estate, which Norman judges is about as risky as the stock market. The opportunity would cost $1 million and is forecast to be worth 1.1 million in one year.

* 21. David and Helen Zhang are saving to buy a boat in five years. They estimate the boat will cost $20,000 and they can earn 10% a year on their savings, how much do they need to put aside at the end of each year, 1 thru 5, to have enough money to buy the boat in 5 years?

* 27. You have just read an advertisement stating “ Pay us $100 a year for 10 years and we will pay you $100 a year thereafter in perpetuity.” If this is a fair deal, what is the rate of interest?

* 30. Several years ago *The Wall Street Journal* reported that the winner of the Massachusetts State Lottery prize had the misfortune of being both bankrupt and in prison (for fraud). The prize winner was to be paid $9,420,713 in 19 equal annual installments. (Initially, there were 20 installments, but the winner had already received the first payment). The bankrupty court judge ruled that the prize should be sold off to the highest bidder and the proceeds used to pay off the creditors.
1. If the interest rate was 8%, how much would you bid for the prize?
2. Enhance Reinsurance Company was reported to have offered $4.2 million. What rate of return was that company expecting to earn if it won the bid?

* 31. Suppose you take out a mortgage to purchase a $500,000 house that requires you to pay $70,000 at the end of each year for the next eight years. The interest rate is 8%.
1. What is the initial mortgage loan amount?
2. Calculate for each year the loan balance that remains outstanding, the interest payment on the loan, and the reduction in the loan balance, i.e. prepare a mortgage amortization schedule.
3. Would you be “better-off” or “worse-off” with a mortgage for 16 years, rather than 8 years? Why?
4. After one year, if interest rates in the economy increase to 10%, what is the mortgage value? Is the value different for the borrower than for the lender?
5. Who is happier, the lender or the borrower if rates rise to 10%? Why.
6. After one year, under what condition is the value of the mortgage and the balance outstanding exactly the same?

* Kangaroo auto is offering free credit on a $10,000 car. You can pay $1000 down and then $300 per month ($9,000 ÷ 30 months) for 30 months. Turtle Motors, next door, does not offer free credit but will sell you the same car for $9,000 with 100% financing at 8% for 30 months. What are your monthly payments at Turtle Motors? Which offer is the best offer?

## CHAPTER 7

**Introduction to Risk, Return, and the Opportunity Cost of Capital**

## *Quiz Questions*

4. True or False?

 a. Investors prefer diversified companies because they are less risky.

 b. If stocks were perfectly positively correlated, diversification would not reduce

 risk.

 c. Diversification over a large number of assets completely eliminates risk.

 d. Diversification works only when assets are uncorrelated.

 e. A stock with a high standard deviation may contribute less to portfolio risk than a stock with a

 lower standard deviation.

 f. The contribution of a stock to the risk of a well-diversified portfolio depends on its market risk.

 g. A well-diversified portfolio with a beta of 2.0 is twice as risky as the market portfolio.

 h. An undiversified portfolio with a beta of 2.0 is less than twice as risky as the market portfolio.

5. In which of the following situations would you get the largest reduction in risk by spreading your investment across two stocks?

 a. The two shares are perfectly correlated.

 b. There is no correlation.

 c. There is modest negative correlation.

 d. There is perfect negative correlation.

7. Suppose the standard deviation of the market return is 20%.

 a. What is the standard deviation of returns on a well-diversified portfolio with a beta of 1.3?

 b. What is the standard deviation of returns on a well-diversified portfolio with a beta of 0?

 c. A well-diversified portfolio has a standard deviation of 15%. What is its beta?

 d. A poorly diversified portfolio has a standard deviation of 20%. What can you say about its beta?

8. A portfolio contains equal investments in 10 stocks. Five have a beta of 1.2; the remainder have a beta of 1.4. What is the portfolio beta?

 a. 1.3.

 b. Greater than 1.3 because the portfolio is not completely diversified.

 c. Less than 1.3 because diversification reduces beta.

## *Practice Questions*

14. Lonesome Gulch Mines has a standard deviation of 42% per year and a beta of +.10. Amalgamated Copper has a standard deviation of 31% per year and a beta of +.66. Explain why Lonesome Gulch is the safer investment for a diversified investor.

25. Here are some historical data on the risk characteristics of Dell and Home Depot:

|  |  |  |
| --- | --- | --- |
|  | **Dell** | **Home Depot** |
| β (beta) | 1.25 | 1.53 |
| Yearly standard deviation of return (%) | 29.32 | 29.27 |

 Assume the standard deviation of the return on the market was 15%.

1. The correlation coefficient of Dell’s return versus Home Depot’s is .59. What is the standard deviation of a portfolio invested half in Dell and half in Home Depot?
2. What is the standard deviation of a portfolio invested one-third in Dell, one-third in Home Depot, and one-third in risk-free Treasury bills?
3. What is the standard deviation if the portfolio is split evenly between Dell and Home Depot and is financed at 50% margin, i.e., the investor puts up only 50% of the total amount and borrows the balance from the broker?
4. What is the *approximate* standard deviation of a portfolio composed of 100 stocks with betas of 1.25 like Dell? How about 100 stocks like Home Depot? *Hint*: Part (d) should not require anything but the simplest arithmetic to answer.

## CHAPTER 8

**Risk and Return**

## *Quiz Questions*

1. True or False?
2. The CAPM implies that if you could find an investment with a negative beta, its expected return would be less than the interest rate.
3. The expected return on an investment with a beta of 2.0 is twice as high as the expected return on the market.

 c. If a stock lies below the security market line, it is undervalued.

## *Practice Questions*

8. True or False? Explain or qualify as necessary.

 a. Investors demand higher expected rates of return on stocks with more variable rates of return.

 b. The CAPM predicts that a security with a beta of 0 will offer a zero expected return.

 c. An investor who puts $10,000 in Treasury bills and $20,000 in a market index fund has a net worth

 portfolio with a beta of .5.

 d. An investor who puts $20,000 in the market portfolio and borrows $10,000 of the invested funds

 has a net worth portfolio with a beta of 2.

e. Investors demand higher expected rates of return from stocks with returns that are highly exposed

to macroeconomic risk.

f. Investors demand higher expected rates of return from stocks with returns that are very sensitive to

fluctuations in the stock market.