**Syllabus**

**Corporate Finance 3310**

**Fall 2015**

**Baylor University**

**Professor Don Cunningham**

***(I will occasionally update reading and problem assignments after classes begin. Therefore refer to my Homepage for the most recent version of this syllabus.)***

Homepage: <http://business.baylor.edu/Don_Cunningham>

**Professor:** Don Cunningham, PhD

**Office Hrs:** 11:00 to noon MWF

11 - 11:30 and 1:00-3:00 T

11 -11:30 Th

 Other times by appointment

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**COURSE MATERIAL**

**Textbook:** Principles of Corporate Finance by Brealey, Myers, and Allen – Concise Edition 1st or 2nd edition or 9th edition of the extended/non-concise edition. (Syllabus refers to chapters and problems in 2nd edition)

**Overview:**

This course develops a fundamental financial framework for strategic financial decision making. Most important among these strategic financial decisions are the selection and rank-ordering of a firm’s investment decisions. Firm investments include property, plant, and equipment acquitisions, human resource changes, executive compensation strategies, market expansion, technological advances, and any other discovery decisions that impact firm value. We evaluate how firm “projects” should be selected and which projects should be undertaken first. We then evaluate how debt versus equity financing impacts financial variables used to select projects and to evaluate firm performance. Several theories are quite famous; their authors having won the coveted Nobel prize in economics. In each area, I will make every effort to apply theory to on-the-job or personal finance situations.

**Learning Goals :**

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. (Designated as the primary program learning goal of FIN5162)
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.

**Learning Objectives:**

1. *Develop the rationale behind “wealth-maximization” (a.k.a. stock price maximization) as the best decision criteria for managing the firm. Distinguish between wealth maximization, profit maximization, return maximization, and cash maximization. Demonstrate the equivalency of wealth maximization to stock price maximization and how it maximizes the well-being of all shareholders. Understand the Separation theorem. Demonstrate how its application fulfills a best management decision strategy.*
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 that shareholders should use to manage their portfolios of stocks and bonds versus the approach firms should use to manage their portfolios of property, plant, and equipment.*
4. *Recognize the essential elements of market efficiency and understand the implications of market efficiency for developing sound management practices within firms.*
5. *Derive an appropriate discount rate for use in a firm’s capital budgeting decisions (NPV analysis).*
6. *Understand the impact of debt versus euity financing of projects/fixed assets (i.e. capital structure policy) on cost of capital, stock value, and sound management decisions.*
7. *Understand the tax effects of dividend policy and debt vs. equity financing on the cost of capital and stock value.*

**Grading and weighting of exams:**

There are three required exams. If you are disappointed with your performance on either the first or second exam, you may take a “retake” exam. **You may only take one retake exam**. A “Retake” exam counts ½ the weight of the required exam. The required exam’s weight is reduced by ½. The first exam is given after the first 5 weeks of class, the second exam after 10 weeks of class, and the third/final exam at the end of the semester. To summarize, grading is based on the following:

Required Exam 1 & optional retake 25% with retake exam each counts 12.5%

Required Exam 2 & optional retake 25% with retake exam each counts 12.5%

Final Exam 30% No retake due to end-of-semester time constraints

Participation & Projects 20% (thoughtful & engaging questions = 90 - 100,

 responsive to professor’s questions = 85 - 90,

 general questions = 80 - 85,

 present and attentive = 70 -80)

**Text:**

*Principles of Corporate Finance,* Concise edition, 2nd edtion, by Richard Brealey, Stewart Myers, and Franklin Allen, McGraw Hill.

**Recommended Viewing:**

*You might enjoy the movies***Wall Street (I)***and* **Other People’s Money** *for their fictional depiction of “marginal investors” and the role they play in corporate finance. Make a list of scenes and quotes with which you strongly agree, disagree, or question and we can discuss your observations as we refer to these movies and their depictions throughout the duration of the course.*

**Class Schedule/Assignments**

**On my Homepage you will find this syllabus with links to the readings as well as solutions to chapter problems. Go to** [**http://business.baylor.edu/Don\_Cunningham**](http://business.baylor.edu/Don_Cunningham)**.**

**In addition to watching the movies *Wall Street I* and *II* and *Other People’s Money* mentioned above, you can prepare for the first class by reading the Handout entitled** [**Notes on Intertemporal Choice**](http://business.baylor.edu/Don_Cunningham/Notes%20on%20Intertemporal%20Choice.pdf)**. We will not cover this material at the paper’s depth, but it will give you a framework for class discussion.**

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|  **Learning Objectives** **Week 1 8/24 – 8/28 Develop a Framework of Corporate Finance** * 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)
* Develop Fisher’s Model of the Firm
* Differentiate between Preference and Rationality
* Formulate the Separation Principle
* Resolve firm governance to adjust for SH preferences
* Formulate the best cost/benefit analysis technique that adjusts for preferences and time
* Devise solutions to
* Practice applying the NPV rule

**Week 2 8/31-9/4** * Extend Fisher’s Model to multiple time periods
* Derive a set of Present Value (PV) Factors
* Apply PV Factors to value Annuities, Lump Sums, and extend to stocks and bonds

**9/7 Monday- Labor Day Holiday****Week 3 9/9 – 9/11** * Apply NPV analysis in a Personal Setting-Refinancing
* Compare and Contrast Individual’s Refinancing

 Decision with Firm’s Investment Decision* Formulate and synthesize the Separation Principle in the context of the Individual’s Refinancing Decision
* Apply PV Factors to value Stocks, Bonds

**Week 4 9/14 – 9/18** * Simulate a Firm’s Investment Decision
* Formulate various Cost/Benefit analysis tecniques (Cash Flow, Profitability, Rate of Return, IRR, and NPV) and evaluate best technique for managing the Firm
* 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* Develop a graphical representation of a portfolio’s

 E(R) to risk ratio [Harry Markowitz](http://en.wikipedia.org/wiki/Harry_Markowitz) 1990 Nobel Prize* Examine the impact of weighting proportions and

 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 **Week 5 9/21 – 9/25 Differentiating & pricing Systematic risk versus noisy risk (CAPM)*** Differentiate riskless E(R) from risky E(R) [Portfolio](http://business.baylor.edu/don_cunningham/PORTFOLIO.xls)
* Differentiate “unique” risk from “systematic” risk
* 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
* Devise solutions to simulated investment exercises

**Week 6 9/28 – 10/2**  * Review - **Exam 1 on Friday 10/2**

**Week 7 10/5 - 10/9 Captial Market Efficiency** * Return Exam 1
* Optional Retake Exam
* Review historical perspective of EMH
* Compare the characteristics of Perfect Markets to Efficient Markets
* Draw conclusions on causes for price patterns in Perfect versus efficient markets

* Devise three forms of the EMH
* Identify three security analyst types and relate their analysis to the three forms of EMH
* Conclude: What is the meaning of the phrase “Beat the Market”
* Apply EMH principle to forecasting the weather
* Discuss the paradox of efficiency, legality, and the purpose of Insider Trading Laws
* Practice applying the EMH

**Week 8 10/12 - 10/16 – How Managers use EMH and the CAPM*** Equate LHS and RHS of Firm’s Balance Sheet to Portfolios
* Critique GAAP-based financial statement issues
* Critique tax issues with debt versus equity
* Critique diversification issues
* Evaluate the pricing efficience of LHS and RHS of Balance sheet
* Assess quality of information from LHS versus RHS accounts
* Formulate a Cost for Debt Capital
* Formulate a cost for Equity Capital

**Week 9 - 10/19 – 10/23 – WACC Application*** Devise Cost of Capital for the Firm – WACC model
* Revise WACC model to adjust for accounting, taxes and diversification issues
* Apply WACC model to evaluate Abbott’s Cost of Capital
* Investigate extensions of CAPM to WACC
* Devise solutions to practice exercises

**Week 10 10/26 – 10/28 –Derivatives** * Review Derivative terminology
* Develop graphical presentations of long call, long put, short call, short put
* Explore investor motivations and expected returns for each derivative position
* Compare a Call option to a levered investment with a numerical example
* Formulate a terminal Payoff matrix for single securities and single derivatives
* Combine securities and derivatives and compare combination payoffs to single holding payoffs
* Utilize a long stock and short call (s) combination to derive an option pricing model

***Friday October 30 Fall Break No Classes*** **Week 11 11/2 – 11/6 – Derivative Applications*** Practice applying and pricing derivatives

* **EXAM 2** Friday 11/6

 **Week 12 11/9 – 11/13 Dividend Policy*** Define Dividend Policy
* Develop “Dividends are Good” argument
* Determine best cost/benefit analytics to evaluate dividend policy, considering Time Value of Money, CAPM, WACC, and Goal of the Firm
* Simulate a firm, raise dividends, and utilize best analytics to determine if “Dividends are Good”

**Week 13 11/16 -11/20*** Consider Dividends as Signals
* Investigate the impact of Stock Buybacks
* Investigate the impact of Stock splits
* Examine the impact of taxes on Dividend policy
* Consider the impact of corporate governance on Dividend policy
* Practice Implementing Dividend Policy

**Week 14 (4 class days) 11/23 -12/4 Debt Policy*** Identify reasons that incurring debt may be considered “bad” policy, (i.e. the costs)
* Identify reasons that incurring debt may be considered “good” policy, (i.e. the benefits)
* Identify financial variables that measure the “good (benefit)” and the “bad (cost)” reasons for incurring debt
* Create a firm, incur debt, and evaluate the impact on financial variables

***11/25 -11/29 Thanksgiving Holidays*****Week 15 (4 class days) 12/7 - 12/11** * Simulate impact of leverage on NI, NOI, ROA, ROD, Int Exp, ROE, βD, βE, Shs o/s, EPS, WACC, DIV, & g
* Determine best cost/benefit analysis to evaluate debt policy and utilize to resolve optimal capital structure strategy
* Consider arbitrage effect on debt policy
* Consider the “Do it yourself” effect
* Demonstrate the argument for the existence of a tax subsidy for debt
* Re-examine the interest tax subsidy argument in light of taxes paid by bondholders
* Hypothesize a shift in subsidy over time (aka the bondholder surplus)
* Simulate the tax subsidy over time and its impact on the value of the firm
* Infer impact of Merton’s tax argument for homeowners with mortgages
* Formulate summary arguments for financing with debt vs equity
* Consider additional factors that might affect with debt versus equity decision
* Evaluate Agency Costs
* Evaluate Signaling
* Evaluate employee behavioral issues
* Consider financial slack

* **EXAM 3 (Final) Tues. December 15, 9 – 11 AM**
 |  **Textbook and outside Readings,**  **Videos, Simulation Exercises,**  **Projects, and practice exercises**  Ch 1,2 [Old versus New Finance](http://business.baylor.edu/Don_Cunningham/Old%20versus%20New%20Finance.docx) [Quotes from Old vs New Finance](http://business.baylor.edu/Don_Cunningham/Quotes%20from%20Old%20verus%20New%20Finance.docx)[The Financial System](http://business.baylor.edu/Don_Cunningham/The%20Financial%20System.docx)[Notes on Intertemporal Choice](http://business.baylor.edu/don_cunningham/Notes%20on%20Intertemporal%20Choice.pdf)[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)[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)Handout problems attached 1 & 2Ch 2: 6, 14, 19, 30, 31 Problems attachedAnd prob’s 15,17,21,22,[Chapter 2 Solutions](http://business.baylor.edu/don_cunningham/CHAPTER_2.docx)[Chapter 3 Solutions](http://business.baylor.edu/don_cunningham/CHAPTER_3.docx)[Chapter 4 Solutions](http://business.baylor.edu/don_cunningham/CHAPTER_4.docx)[Chapter 5 Solutions](http://business.baylor.edu/don_cunningham/CHAPTER_5.docx)[Chapter 6 Solutions](http://business.baylor.edu/don_cunningham/CHAPTER_6.docx)Ch 3, Ch 4. And Ch 5[*PV Factors*](http://business.baylor.edu/don_cunningham/PVFactors.xls) - excel worksheet[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[AVG vs Geometric mean Returns - sprdsheet](http://business.baylor.edu/Don_Cunningham/AVG%20vs%20Geometric%20returns.xlsx)*[Projects](http://business.baylor.edu/don_cunningham/projects.xls)* [- excel worksheet](http://business.baylor.edu/don_cunningham/projects.xls)[*Projects Analysis*](http://business.baylor.edu/Don_Cunningham/projects%20analysis.xls) – excel worksheet[Ways to Measure Performance (2009)](http://business.baylor.edu/don_cunningham/Ways%20to%20Measure%20Performance_old.pdf)[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 [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 PrizeCompare gold movement to S&P500:<http://goldprice.org/gold-price-history.html> vs.[https://finance.yahoo.com/echarts?s=%5EGSPC+Interactive#](https://finance.yahoo.com/echarts?s=%5EGSPC+Interactive%23)[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)Ch 7 & Ch 8*[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: 4, 5, 7, 8, 11, 13, 21Ch 8: 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**Chapter 11***[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)**R*ead a few articles from an internet search of “Fama wins the Nobel Prize.” You might add “Bloomberg” to your search phrase. They have a good summary article on the recent Nobel prize recipients. Do an Internet search of Efficient Markets, or Eugene Fama. Also search for Behavorial Finance and read a few of the following articles Visit [www.ifa.com](http://www.ifa.com) This information-packed website is maintained by IFA investment advisory firm affiliated with DFA mutual funds. Investments and information are based on efficient market research. David Booth, DFA founder, endowed the University of Chicago business school with $300 million in 2008. He was a PhD student under Eugene Fama in the 1970’s.Power Lunch video on Insider Trading at:https://finance.yahoo.com/video/legalize-insider-trading-180500540.html[*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)[Legal Insider Trading (2015)](http://business.baylor.edu/Don_Cunningham/Inseder%20Tradeing_A%20legal%20loophole_8k%20Trading%20Gap%209.15.15.docx)[*Why Actively Managed Funds aren’t Dead (2014)*](http://business.baylor.edu/Don_Cunningham/Why%20actively%20managed%20funds%20aren%27t%20Dead%20%20%282014%29.docx)[*Are Stock Prices Determined by Facts or Human Nature (2011)*](http://business.baylor.edu/don_cunningham/Are%20stock%20prices%20determined%20by%20facts%20or%20human%20nature_%20-%20USATODAY.com.pdf)[Bull or Bear Marker? Technical Analysis – The Golden Cross (2012)](http://business.baylor.edu/don_cunningham/Technical%20Analysis%20-%20The%20Golden%20Cross.pdf)[*To Beat Index Funds, Luck is Your 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-%20NYTimes_com.mht)[*Can any Money Manager Beat the Market? (2008)*](http://business.baylor.edu/don_cunningham/Can%20any%20Money%20Manager%20beat%20the%20market%20%282008%29.pdf)[*Economists Debate Market Efficiency (2004)*](http://business.baylor.edu/don_cunningham/Economists%20Debate%20Market%20Efficiency.pdf)[*Prosecution of Mike Milken (1994)*](http://business.baylor.edu/don_cunningham/Ch%2013%20-%20Prosecution%20of%20Mike%20Milken.pdf)[*Efficient to Behavioral Finance (2002)*](http://business.baylor.edu/don_cunningham/Efficient%20to%20Behavorial%20Finance.pdf)[*The Man Your Fund Manager Hates (1999)*](http://business.baylor.edu/don_cunningham/The%20Man%20your%20fund%20manager%20hates.doc) [*How the Really Smart Money Invests (1998)*](http://www.yeske.com/clippings/fortune-dfa/dfa.htm)[Market Meets Technical Resistance – Moving Averages (12-2011)](http://business.baylor.edu/don_cunningham/Market%20Meets%20Technical%20Resistance%20-%20Moving%20Averages%20%2812-2011%29.pdf) [*The SEC's Fight with Itself (1987)*](http://business.baylor.edu/don_cunningham/SEC%27s%20Fight%20with%20Itself.pdf)Ch 11: Q: 4, 6, 7, 8 PQ: 9, 10, 11, 14, 16[Chapter 11](http://business.baylor.edu/don_cunningham/CHAPTER_11.docx), Solutions**Chapter 9**[How Firms Estimate Cost of Capital (2011)](http://business.baylor.edu/don_cunningham/How_Firms_Estimate_Cost_of_Capital_%282011%29.pdf)[AVG vs Geometric mean Returns - sprdsheet](http://business.baylor.edu/Don_Cunningham/AVG%20vs%20Geometric%20returns.xlsx)[Pure Play Method (2002)](http://business.baylor.edu/don_cunningham/Pure%20Play%20Method.pdf)Pick a publicly Traded company and use data from Yahoo finance, Morningstar, and Treasury.gov to calculate its WACC[ABT Bond Yields @ Morningstar](http://quicktake.morningstar.com/stocknet/bonds.aspx?symbol=abt)[Treasury Yields](http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield) @treasury.gov [ABT Balance Sheet @ Yahoo finance](http://finance.yahoo.com/q/bs?s=ABT+Balance+Sheet&annual) [Fama and French Three Factor Model](http://business.baylor.edu/don_cunningham/Fama_and_French_Three_Factor_Model.doc)<http://www.finra.org/Investors/index.htm>[*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)  Handout #1 Handout #2 Data link for finding industry Betas : [*http://pages.stern.nyu.edu/~adamodar/New\_Home\_Page/data.html*](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/data.html)**Chapter 16, 17**[An excellent tutorial on derivatives](http://www.cboe.com/LearnCenter/Tutorials.aspx) – From Chicago Board of Exchange[*Untangling the Derivatives Mess (1995)*](http://money.cnn.com/magazines/fortune/fortune_archive/1995/03/20/201945/index.htm)[*CDOs in Plain English (2004)*](http://business.baylor.edu/don_cunningham/CDOs%20in%20Plain%20English.pdf)*,* [*Option Returns (2000)*](http://business.baylor.edu/don_cunningham/Option%20Returns.pdf)*,* [*Extraco Advertisement*](http://business.baylor.edu/don_cunningham/Extraco%20Advertisement.pdf), [*The Reckoning-How the Thundering Herd Faltered (2008)*](http://business.baylor.edu/don_cunningham/The%20Reckoning_How%20the%20Thundering%20Herd%20Faltered.doc)[*Black Scholes Model*](http://business.baylor.edu/don_cunningham/Black%20Scholes.xls)**PQ** 13,16,21,22,23,27**Ch 17 Q 6, 7****PROBLEM SOLUTIONS** [Chapter 16](http://business.baylor.edu/don_cunningham/C016problems.docx) [Chapter 17](http://business.baylor.edu/don_cunningham/Chap017.docx)**Chapter 12**[Dividend Policy - LearnersTV lecture video](http://www.learnerstv.com/video/Free-video-Lecture-7164-Management.htm)[*Top Ten Dividend Quotes from Famous Investors/CEOs*](http://business.baylor.edu/don_cunningham/Top%2010%20Dividend%20Quotes.docx)[*Quotes from popular press on Dividends*](http://business.baylor.edu/Don_Cunningham/Quotes%20on%20Dividends.docx)*[Ichan Pushes Apple on Buyback (2013)](http://business.baylor.edu/don_cunningham/Icahn%20Pushes%20Apple%20on%20Buyback.pdf)**[Buyback Craze, Firms Rush to Buy (2013)](http://business.baylor.edu/don_cunningham/In%20Buyback%20Craze%2C%20Companies%20Rush%20to%20Buy%20High%20_%20Yahoo%21%20Finance%20%282013%29.pdf)**[J. P. 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Investopedia](file:///C%3A%5CUsers%5Cdon_cunningham%5CDownloads%5COptimal%20Financial%20Leverage%20-%20Investopedia.docx)[ROE as function of D/E](http://casey/web/Don_Cunningham/ROE_as_function_of_debt.xlsx)[*How Corporate Finance Got Smart (1998)*](http://business.baylor.edu/don_cunningham/How%20Corporate%20Finance%20Got%20Smart%20%281998%29.pdf)[*Hard Lessons from the Debt Decade (1990)*](http://business.baylor.edu/don_cunningham/Hard%20Lessons%20from%20the%20Debt%20Decade.pdf)[*How Firms Estimate Cost of Capital (2011)*](http://business.baylor.edu/don_cunningham/How_Firms_Estimate_Cost_of_Capital_%282011%29.pdf)[*Dividend Recapitalization - Debt Markets Offer Big Payday at HCA (2011)*](http://business.baylor.edu/don_cunningham/Dividend%20Recapitlalization%20-%20Debt%20Markets%20Offer%20Chance%20at%20Big%20Payday%20at%20HCA%20%282011%29.pdf)*[Finding Balance Sheet Beauties (2002)](http://business.baylor.edu/don_cunningham/Finding%20Balance%20Sheet%20Beauties%20%282002%29.pdf)*[*After the Revolution – CFO Magazine (1998)*](http://business.baylor.edu/don_cunningham/After%20the%20M%26M%20Revolution%20%28CFO%20Magazine%201998%29.pdf)[*Kiplinger’s Way to Buy Stocks – Debt Ratio*](http://business.baylor.edu/don_cunningham/Kiplinger_com%20Basics%20Kiplinger%27s%20Way%20to%20Buy%20Stocks%2C%20page%207%20Debt-equity%20ratio.htm)Chapter 13 problems Ch 13: 2, 5, 9, 10, 15, 16, 19[Lecture video - solving problem 2](http://www.showme.com/sh/?h=6qE0Que)[Chapter 13](http://business.baylor.edu/don_cunningham/Chap013.doc), Solutions**Chapter 14**[“Debt and Taxes,”](http://business.baylor.edu/Don_Cunningham/Debt%20and%20Taxes%20%281977%29.pdf) (1978) by Merton Miller, *Journal of Finance*, Presidential Address to American Finance AssociationCompare muni versus corporate bond rates at:<http://finance.yahoo.com/bonds/composite_bond_rates>Handout exercise on Debt and Taxes[*In Defense of the Mortgage Interest Deduction (1992)*](http://business.baylor.edu/Don_Cunningham/Defense%20of%20Mortgage%20Interest%20Deduction.PDF) [*When and when not a Tax Break for Borrowing (2014)*](http://business.baylor.edu/don_cunningham/When%20you%20get%20a%20tax%20break%20for%20borrowing%20and%20when%20you%20don%27t.docx)[*Taking Aim at the Mortgage Tax Break (2010)*](http://business.baylor.edu/Don_Cunningham/Taking_Aim_at_the_Mortgage_Tax_Break_%282010%29_-_NYTimes.com.pdf) [*Estimating the Tax Benefits of Debt (2001)*](http://business.baylor.edu/Don_Cunningham/Estimating%20Tax%20Benefits%20of%20Debt.pdf)[CEO Leverage and Corporate Leverage (2012)](http://business.baylor.edu/Don_Cunningham/CEO%20leverage%20and%20corporate%20leverage.pdf)Ch 14[Marriott's Move to Shed Debt (1992)](http://business.baylor.edu/Don_Cunningham/Mariott%27s%20Move%20to%20Shed%20Debt.PDF) Ch 14: 18, 19, 20, [Chapter 14](http://business.baylor.edu/don_cunningham/Chap014.doc), 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?

## **Real Asset Markets vs. Capital markets - what is the difference**

## **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. If the firm has a no dividend policy, demonstrate how the shareholder’s preferences for spending could still be satisfied?
12. Suppose the shareholder wanted to spend (consume) $3 million today. Demonstrate how they could achieve this spending without the firm paying dividends ? How much will they have to spend next year? Show this on the gaph.
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 (e.g. $8 million)? Would they spend more or less in total as a result? Would one spending pattern create more or less wealth than the other? What is their wealth?

## **CHAPTER 1**

**Goals and Governance of the Firm**

8. 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?

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

**Chpater 2**

**How to Caluculate Present Values**

## *Basic*

6. An investment costs $1,548 and pays $138 in perpetuity. If the interest rate is 9%, What is the NPV?

* What is the present value 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 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.) How would your answer change if the economic conditions of 2009 occurred again?
* 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.

*Intermediate*

14. A factory costs $800,000. You reckon that it will produce an inflow after operating costs of $170,000 a year for 10 years. If the opportunity cost of capital is 14%, what is the net present value of the factory? What will the factory be worth at the end of five years?

19. As the winner of the breakfast cereal competition, you can one of the following prizes:

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.

If the interest rate is 12%, which is the most valuable prize?

21. David and Helen Zhang are saving to buy a boat at the end of five years. If the boat costs $20,000 and they can earn 10% a year on their savings, how much do they need to put aside at the end of years 1 through 5?

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 has the misfortune to be both bankrupt and in prison for fraud. The prize was $9,420,713 to be paid in 19 equal annual installments.(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 have been prepared to bid for the prize?
2. Enhance Reinsurance Company was reported to have offered $4.2 million. Use excel to find the return that the company was looking for.

31. A mortgage requires you to pay $70,000 at the end of each of next eight years. The interest rate is 8%.

1. What is the present value of these payments?
2. Calculate for each year the loan balance that remains outstanding, the interest payment on the loan, and the reduction in the loan balance.

\*\*\*\*\*\*Addtitional Questions \*\*\*\*\*\*\*\*\*\*\*\*\*\*

1. Under what conditions would the value of the mortgage and the balance outstanding be exactly the same?
2. If interest rates in the economy increase to 10%, is the mortgage value different for the lender than for the borrower?
3. Who would be happier, the lender or the borrower? Explain why.

*Challenge*

36. Here are two useful rules of thumb. The “Rule of 72” says that with discrete compounding the time it takes

 for an investment to double in value is roughly 72/interest rate (in percent). The “Rule of 69.3” says that with

 continuous compounding the time it takes to double is exactly 69.3/interest rate (in percent).

 a. If the annually compounded interest rate is 12%, show that the Rule of 72 is roughly correct.

 b. Show that the Rule of 69.3 is exactly correct.

## **CHAPTER 5**

**Net Present Value and Other Investment Criteria**

*Intermediate*

8. Consider the following projects:

|  |
| --- |
| Cash Flows($) |
| Project | C0 | C1 | C2 | C3 | C4 | C5 |
| A | -1000 | 1000 | 0 | 0 | 0 | 0 |
| B | -2000 | 1000 | 1000 | 40000 | 1000 | 1000 |
| C | -3000 | 1000 | 1000 | 0 | 1000 | 1000 |

1. If the opportunity cost of capital is 10%, which projects have a positive NPV?
2. Calculate the payback period for each project.
3. Which project(s) would a firm using the payback rule accept if the cutoff period were three years?
4. Calculate the discounted payback period for each project.
5. Which project(s) would a firm using the discounted payback rule accept if the cutoff period were three years?

12. Mr. Cyrus Clops, the president of Gaint Enterprises, has to make a choice between two possible investments:

|  |
| --- |
| Cash Flows ($ thousands) |
| Project | C0 | C1 | C2 | IRR(%) |
| A | -400 | 250 | 300 | 23 |
| B | -200 | 140 | 179 | 36 |

The opportunity cost of capital is 9%. Mr. Clops is tempted to take B, which has higher IRR.

1. Explain to Mr. Clops why this not the correct procedure
2. Show him how to adapt to the IRR rule to choose the best project.
3. Show him that this project also has the higher NPV.

15. Borghia Pharmaceuticals has $1 million allocated to capital expenditures. Which of the following projects should the company accept to stay within the $1 million budget? How much does the budget limit cost the company in terms of its market value? The opportunity cost of capital for each project is 11%?

|  |  |  |  |
| --- | --- | --- | --- |
| Project | Investment ($ thousands) | NPV ($ thousands) | IRR(%) |
| 1 | 300 | 66 | 17.2 |
| 2 | 200 | -4 | 10.7 |
| 3 | 250 | 43 | 16.6 |
| 4 | 100 | 14 | 12.1 |
| 5 | 100 | 7 | 11.8 |
| 6 | 350 | 63 | 18.0 |
| 7 | 400 | 48 | 13.5 |

## **CHAPTER 7**

**Introduction to Risk and Return**

## *Basic*

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. A stock with a high standard deviation may have an expected return that is less than than a stock with a

 lower standard deviation.

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

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

 i. 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.

## *Intermediate*

11. Each of the following statements is dangerous or misleading, Explain why.

1. A long-term United Staes government bond is always absolutely safe.
2. All investors should prefer stocks to bonds because stocks offer higher long-run rates of return.
3. The best practical forecast of future rates of return on the stock market is a 5- or 10-year average of historical returns.

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

*Challenge*

21. Here are some historical data on the risk characteristics of Dell and McDonald’s:

|  |  |  |
| --- | --- | --- |
|  | **Dell** | **McDonald’s** |
| β (beta) | 1.41 | .77 |
| Yearly standard deviation of return (%) | 30.9 | 17.2 |

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

1. The correlation coefficient of Dell’s return versus McDonald’s is .31. What is the standard deviation of a portfolio invested half in Dell and half in McDonald’s?
2. What is the standard deviation of a portfolio invested one-third in Dell, one-third in McDonald’s, and one-third in risk-free Treasury bills?
3. What is the standard deviation if the portfolio is split evenly between Dell and McDonald’s 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 1.41 like Dell? How about 100 stocks like Home Depot? *Hint*: Part (d) should not require anything but the simplest arithmetic to answer.

## **CHAPTER 8**

**Portfolio Theory and Capital Asset Pricing Model**

## *Basic*

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.

## *Intermediate*

9. 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 the market portfolio will have a

 beat of 2.0.

1. Investors demand higher expected rates of return from stocks with returns that are highly exposed to macroeconomic risk.
2. Investors demand higher expected rates of return from stocks with returns that are very sensitive to fluctuations in the stock market.

15. The Treasury bill rate is 4%, and the expected return on the market portfolio is 12%. Using the capital asset pricing model:

1. Draw a graph similar to the figure 8.6 showing how the expected return varies with beta.
2. What is the risk premium on the market?
3. What is the required return on an investment with a beta 1.5?
4. If an investment with a beta of .8 offers an expected return of 9.8%, does it have a positive NPV?
5. If the market expects a return of 11.2% from stock X, what is its beta?

**Problems encountered when estimating a firm’s Cost of Capital**

 **Accounting data –** Intuition might suggest that a company’s audited financial statements provides the logical source for its cost of capital. This intuition is reinforced by the fact that popular sources of financial information such as Standard & Poor’s and Moody’s include calculations of ROE, ROA, EPS, debt ratio, dividend yield, as well as historical balance sheet and income statement information in their company stock reports. Three major problems are created with this information: 1) returns are based on historical cost rather than market value, 2) returns are short-term rather than long-term, and 3) the debt ratio and equity ratio, used as weighting proportions in WACC calculations, are understated or overstated because their values are historical-cost-based rather than current-market-value based.

**Leverage –**When a firm finances with debt (is levered), the firm’s stockholders require an ROE that is greater than the firm’s cost of capital and its bondholders require an ROD that is less than the firm’s cost of capital. Therefore, neither ROE nor ROD alone is representative of the firm’s cost of capital. However, the firm’s cost of capital can be calculated by taking a weighted average of ROD and ROE-- the so-called WACC. Its calculation effectively “undoes” the leverage of the firm. The WACC equals the firm’s cost of capital for its assets as if they were 100% equity financed.

**Diversification –** Diversification causes the firm’s overall ROA to reflect a mixture of risk-classes. Therefore a prospective project’s returns cannot be evaluated with the firm’s ROA because their returns are rewards for different risk classes. **Do not use a diversified firm’s WACC as the cost of capital for a specific risk-class project.** Instead, the WACC of a “pure-play” publicly traded firm in the same risk-class as the project must be used as the project’s cost of capital.

**Estimating Risk-free rate in the CAPM –** ROE in the WACC is calculated with empical estimates of CAPM
[Rf + *β*e(Rm-Rf)] variables extracted from efficient capital market data. In addition to *β*e, we need estimates of the risk-free rate (Rf ) and the market portfolio rate of return (Rm). These rates of return are estimated from past returns. For example, over the 104 year period from 1900-2004, the average return on treasury bills was 4%, treasury bonds yielded 5.5%, and common stocks earned 11.1%. From these past returns, we could estimate the market risk premium (Rm-Rf ) to be either 7.1% (11.1 – 4.0) if we use treasure bill returns (4%), or we could estimate the market risk premium to be 5.6% (11.1 – 5.5) if we used treasury bond rates (5.5%).

For evaluating long-term projects (capital budgeting), a long-term estimate of CAPM is better than a short-term estimate. Disagreements about how to make CAPM a long-term estimate focus on adjustments to Rf. Some argue that the current short-term treasury bill rate is best, others argue that the current long-term treasury bond rate is best. Neither is exactly theoretically correct, because the equity risk premium should capture the extra return of the market for investing long-term (extra time length) and for systematic volatility.

In practice, Rf is adjusted by using the current treasury bond rate. If this practice is followed then the market risk premium (Rm-Rf ) should be lower, 5.6% not 7.1%, based on 104 years of returns from 1900 – 2004. This adjustment lowers the slope of the SML and makes the CAPM a better match with historical evidence. Many studies have shown that CAPM estimates based on treasury bill rates overstates stock returns relative to the market.

An alternative adjustment is to subtract the long-run liquidity premium of 1.5% (historical treasury bond yield of 5.5% minus the historical treasury bill yield of 4 %) from the current treasury bond yield. This adjustment makes Rf an estimated annualized short-term Rf return that is expected to be earned on average over a long-term period. With this adjustment, the market risk premium should be 7.1%, not 5.6%. The slope of the SML steeper, which is more theoretically correct; however, it is less consistent with historical evidence that shows the CAPM overstates stock returns relative to the market.

**Taxes -** Stock Betas are estimated from empirical stock return data (i.e. dividends and capital gains). These returns accrue to shareholders from the firm’s after-tax earnings. As a result, empirically estimated stock betas in the CAPM formula generate after-corporate-tax ROEs. This after-tax ROE cannot be averaged with a before-tax ROD in the WACC calculation. Such averaging would cause the WACC to be some nonsensical mixture of before-tax and after-tax returns. ROD is easily adjusted for corporate taxes. Because the firm’s interest expense is tax deductible, income that would otherwise be taxed is “sheltered” from taxation by interest expense generated by the firm’s ROD. The firm must still pay the interest expense, but the expense if effectively lower by the taxes that are saved. The net “after-tax” cost of ROD is reduced to ROD(1-Tc). The WACC is then an after-tax return and is calculated as:

 WACC = D/V (1-Tc) ROD + E/V (ROE)where V = (D+E)

**Implied tax benefits of debt -** Because ROD is adjusted for taxes, i.e. ROD (1-Tc) is used in the WACC calculation, many people interpret this adjustment to mean that debt is beneficial because interest is tax deductible. By extension, this implication suggests that debt financing creates value as compared to equity financing. Remember that this adjustment in the WACC calculations simply equates ROD to ROE which is also an after-tax return. Therefore this tax adjustment does not imply that debt financing has tax advantages over equity. This implication will be investigated in greater detail in our study of Capital Structure Policy.

**Exclude interest expense in NPV analysis when project is debt financed –** From the separation theorem, we know that how a project is financed is an independent and separate decision from the investment decision (i.e. whether the project is acceptable). Using the WACC as the discount rate effectively “undoes” the impact of any debt financing and generates a cost of capital for an all-equity financed project. This is consistent with the separation theorem and correctly values the project independent of the financing decision. Interest expense should be excluded from the estimated project cash flows.

**Instability of Company Betas in the CAPM –** Company betas can vary considerably over time. However, portfolio betas are more stable than individual company betas. Therefore, when estimating the cost of capital for a project it is preferable (i.e. the confidence interval of the estimate is tighter) if industry betas of “pure play” companies are used in the CAPM rather than individual company betas.

**CAPM is a single factor model –** The CAPM implies that stock returns are only a function of the market risk premium (Rm – Rf). Research has demonstrated that at times this relationship is weak. As research continues, we may discover other variables are useful in explaining stock returns. For example, the Fama-French three-factor model, theorizes that stock returns are also driven by firm size (Rs – RL) and undervalued status measured by book-to-market value (RH – RL). Unfortunately, in practice, it is difficult to estimate these factors because reporting agencies such Standard & Poor’s and Moody’s do not report values for these factors in their stock reports.

 **Chapter 9**

**Handout Problem #1**

Amalgamated has three operating divisions: chemical (40 % of assets), food (10% of assets), and electronics (50% of assets). Below are industry averages of companies operating in these areas:

  Debt/(Debt + Equity) ratio ROD

 Chemicals 1.2 .6 .08

 Food 1.5 .4 .07

 Electronics 1.1 .3 .06

Amalgamated's Debt/Asset ratio is .6. Treasury Bills currently yield 1% and treasury bonds are currently yield 3.5%. Research from 1900 to 2004 indicates the market liquidity premium is 1.5%, the market risk premium over treasury bills is 7% and over treasury bonds is 5.5%. The corporate tax rate is currently 35%.

1. What Rf and market risk premium could be used in the CAPM and what justification is used for each?

1. Calculate the appropriate discount rate to use in capital budgeting decisions for each of Amalgamated's divisions?

Which division has the riskiest assets?

Why is the cost of capital for Chemicals lower than its ROD?

Does the cost of capital calculation use a before-tax or after-tax *β*e? Why?

Does the cost of capital calculation use a before-tax or after-tax ROE? Why?

Does the cost of capital calculation use a before-tax or after-tax ROD? Why?

3. Suppose a 10-year proposed Food project is expected to generate net after-tax income of $ 5 million per year. Its proposed cost is $30 million and annual expenses include $ 1 million of depreciation. The project can be financed with all equity or with 40% debt at an interest rate of 7%.

Assuming the project’s NPV is zero, what is the project’s E(ROE) if Amalgamated finances it with all equity?

Assuming the project’s NPV is zero, what is the project’s E(ROE) if Amalgamated finances it with 40% debt?

Explain any differences in these two E(ROE’s).

What is the NPV of the project if financed with all equity?

What is the NPV of the project if financed with debt and equity?

4. What is Amalgamated's cost of capital ? How would you use it?

**Chapter 9**

**Handout problem #2**

 A pure-play company with PP&E in the same risk-class as the market is considering a 50% expansion in its existing asset base. The executive committee wants to know if a stock issuance is an acceptable source of financing for the expansion. The firm is currently financed with 60% debt, yielding 5%, and 40% stock with a required return of 22.5%. The capital budgeting department projects the expansion will earn 20%. The risk-free rate is 4%, and the expected return on the market is 12%. Should the company issue stock to finance the expansion? Assume the corporate tax rate is zero.

Prove that the required return on the stock is 22.5% and then determine the impact of expansion on the stock’s required return.

## **CHAPTER 11**

**Efficient Markets and Behavioral Finance**

## Quiz Questions

4. True or False?

 a. Financing decisions are less easily reversed than investment decisions.

.

 c. The semi-strong form of the efficient-market hypothesis states that prices reflect all

 publicly available information.

 d. In efficient markets the expected return on each stock is the same.

6. True or False?

 a. Analysis by security analysts and investors helps keep markets efficient.

 b. Psychologists have found that, once people have suffered a loss, they are

 more relaxed about the possibility of incurring further losses.

 c. Psychologists have observed that people tend to regard recent events as

 representative of what might happen in the future.

 d. If the efficient –market hypothesis is correct, managers will not be able to

 increase stock prices by creative accounting that boosts reported earnings.

7. Geothermal Corporation has just received good news: its earnings increased by 20% from last year’s value. Most investors are anticipating an increase of 25%. Will Geothermal’s stock price increase or decrease when the announcement is made?

8. Here again are the six lessons of market efficiency. For each lesson give an example showing the lesson’s relevance to financial managers.

 a. Markets have no memory.

 b. Trust market prices.

 c. Read the entrails

 d. There are no financial illusions.

 e. The do-it-yourself alternative.

 f. Seen one stock, seen them all.

## *Intermediate*

10. How would you respond to the following comments?

 a. “Efficient market, my eye! I know lots of investors who do crazy things.”

 b. “Efficient market? Balderdash! I know at least a dozen people who have made

 a bundle in the stock market.”

 c. “The trouble with the efficient-market theory is that it ignores investors’

 psychology.”

 d. “Despite all the limitations, the best guide to a company’s value is its written-

 down book value. It is much more stable than market value, which depends

 on temporary fashions.”

11. Respond to the following comments:

 a. “The random-walk theory, with its implication that investing in stocks is like

 playing roulette, is a powerful indictment of our capital markets.”

 b. “If everyone believes you can make money by charting stock prices, then

 price changes won’t be random.”

 c. “The random-walk theory implies that events are random, but many events

 are not random. If it rains today, there’s a fair bet that it will rain again

 tomorrow.”

12. Which of the following observations *appear* to indicate market inefficiency? Explain whether the observation appears to contradict the weak, semi-strong, or strong from of the efficient-market hypothesis.

 a. Tax-exempt municipal bonds offer lower pretax returns than taxable

 government bonds.

 b. Managers make superior returns on their purchases of their company’s stock.

 c. There is a positive relationship between the return on the market in one

 quarter and the change in aggregate profits in the next quarter.

 d. There is disputed evidence that stocks that have appreciated unusually in the

 recent past continue to do so in the future.

 e. The stock of an acquired firm tends to appreciate in the period before the

 merger announcement.

 f. Stocks of companies with unexpectedly high earnings *appear* to offer high

 returns for several months after the earnings announcement.

 g. Very risky stocks on average give higher returns than safe stocks.

14. “If the efficient-market hypothesis is true, the pension fund manager might as well

 select a portfolio with a pin.” Explain why this is not so.

16. What does the efficient-market hypothesis have to say about these two statements?

 a. “I notice that short-term interest rates are about 1% below long-term rates. We

 should borrow short-term.”

 b. “I notice that interest rates in Japan are lower than rates in the United States.

 We would do better to borrow Japanese yen rather than U.S. dollars.”

21. Many commentators have blamed the subprime crisis on “irrational exuberance”. What is your view? Expalin briefly.

## **CHAPTER 12**

**Payout Policy**

## *Basic*

2. Here are several “facts” about typical corporate dividend policies. Which are true and which false?

1. Companies decide each year’s dividend by looking at their capital expenditure requirements and then distributing whatever cash is left over.
2. Managers and investors seem more concerned with dividend changes than with dividend levels.
3. Managers often increase dividends temporarily when earnings are unexpectedly high for a year or two.
4. Companies undertaking substantial share repurchases usually finance them with an offsetting reduction in cash dividends.

## *Intermediate*

9. Which types of companies would you expect to distribute a relatively high or low proportion of current earnings? Which would you expect to have a relatively high or low price-earnings ratio?

1. High-risk companies
2. Companies that have experienced an unexpected decline in profits.
3. Companies that *expect* to experience a decline in profits.
4. Growth companies with valuable future investment opportunities.

14. “Many companies use stock repurchases to increase earnings per share. For example, suppose that a company is in the following position:

|  |  |
| --- | --- |
| Net profit | $10 million |
| Number of shares before repurchase | 1 million |
| Earnings per share | $10 |
| Price-earnings ratio | 20 |
| Share price | $200 |

 The company now repurchases 200,000 shares at $200 a share. The number of shares declines to 800,000 shares and earnings per share increase to $12.50. Assuming the price-earnings ratio stays at 20, the share price must rise to $250.” Discuss.

16. An article on stock repurchase in the *Los Angeles Times* noted: “An increasing number of companies are finding that the best investment they can make these days is in themselves.” Discuss this view. How is the desirability of repurchase affected by company prospects and the price of its stock?

23. Consider the following two statements: “Dividend policy is irrelevant,” and “Stock price is the present value of expected future dividends.” (See Chapter 5.) They *sound* contradictory. This question is designed to show that they are fully consistent.

 The current price of the shares of Charles River Mining Corporation is $50. Next year’s earnings and dividends per share are $4 and $2, respectively. Investors expect perpetual growth at 8% per year. The expected rate of return demanded by investors is *r* = 12%.

 We can use the perpetual-growth model to calculate stock price:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| P0 = | DIV | = | 2 | = 50 |
| *r - g* | .12 - .08 |

 Suppose that Charles River Mining announces that it will switch to a 100% payout policy, issuing shares as necessary to finance growth. Use the perpetual-growth model to show that current stock price is unchanged.

## **CHAPTER 13**

**Does Debt Policy Matter without Taxes?**

## *Problems*

2. Spam Corp. is financed entirely by 100,000 shares of common stock that has a beta of 1.0. The firm is expected to generate a level, perpetual stream of earnings and dividends. The stock has a price-earnings ratio of 8 and a cost of equity of 12.5%. The company’s stock is selling for $50. Now the firm decides to repurchase half of its shares and substitute an equal value of debt. The debt is risk-free, with a 5% interest rate. The company is exempt from corporate income taxes. Assuming MM are correct, calculate the following items before and after the debt issuance and explain why the following financial variables increased or decreased.

1. E(ROA)
2. NOI
3. The risk of equity
4. The cost of equity
5. NI
6. Shares outstanding
7. EPS
8. Dividends Policy
9. Dividends
10. The firm’s overall cost of capital
11. The stock’s price
12. The P/E ratio

Does it seem appropriate to assume the company’s debt is risk-free when it repurchased half of its stock with a debt issuance? How would the above items change if the debt increased (decreased) in risk?

5. True or false?

1. MM’s financing proposition says that corporate borrowing increases earnings per share but reduces the price-earnings ratio.
2. MM’s financing proposition says that the cost of equity increases with borrowing and that the increase is a function of the D/E ratio of the firm.
3. MM’s financing proposition assumes that increased borrowing does not affect the interest rate on the firm’s debt.
4. Borrowing does not increase financial risk and the cost of equity if there is no risk of bankruptcy.
5. Borrowing increases firm value if there is a clientele of investors with a reason to prefer debt.

9. **Optional :**

Companies A and B differ only in their capital structure. A is financed 30% debt and 70% equity; B is financed 10% debt and 90% equity. The debt of both companies is risk-free.

Assume E(ROA) is 10% and E(ROD) is 5%. Hint, let assets equal $1000.

1. Rosencrantz owns 10% of the common stock of A. What other investment package would produce identical cash flows for Rosencrantz?
2. Guildenstern owns 20% of the common stock of B. What other investment package would produce identical cash flows for Guildenstern?
3. Show that neither Rosencrantz nor Guildenstern would invest in the common stock of B if the *total* value of company A were 10% less than that of B.

10. Here is a limerick: aka  You Can’t Take Your Cows to Wall Street 

 *There once was a man named Carruthers,*

*Who kept cows with miraculous udders.*

*He said, “Isn’t this neat?*

*They give cream from one teat,*

*And skim milk from each of the others!”*

What is the analogy between Mr. Carruthers’s cows and firms’ financing decisions? What would MM’s proposition 1, suitable adapted, say about the value of Mr. Carruthers’s cows? Explain.

See [*How Corporate Finance Got Smart (1998)*](file:///C%3A%5CUsers%5Cdon_cunningham%5CDownloads%5CHow%20Corporate%20Finance%20Got%20Smart%20%281998%29.pdf)

15. Indicate what’s wrong with the following arguments:

1. “As the firm borrows more and debt becomes more risky, both stockholders and bondholders demand higher rates of return. Thus by *reducing* the debt ratio we can reduce *both* the cost of debt and the cost of equity, making everybody better off.”
2. “Moderate borrowing doesn’t significantly affect the probability of financial distress or bankruptcy. Consequently moderate borrowing won’t increase the expected rate of return demanded by stockholders.”

16. Each of the following statements is false or at least misleading. Exaplin why in each case.

1. “A Capital investment opportunity offering a 10% DCF rate of return is an attractive project if it can be 100% debt-financed at an 8% interest rate.”
2. “The more debt the firm issues, the higher the interest rate it must pay. That is one important reason why firms should operate at conservative debt level.”

19. Archimedes Levers is financed by a mixture of debt and equity. You have the following information about its cost of capital. Can you fill in the blanks?

|  |  |  |
| --- | --- | --- |
| rE = \_\_\_ | rD = 12% | rA = \_\_\_ |
| βE = 1.5 | βD = \_\_\_ | βA = \_\_\_ |
| rf = 10% | rm = 18% | D/V = .5 |

24. People often convey the idea behind MM’s proposition 1 by various supermarket analogies, for example, “The value of a pie should not depend on how it is sliced,” or, “The cost of whole chicken should be equal the cost of assembling one by buying two drumsticks, two wings, two breats, and so on.”

 Actually proposition 1 doesn’t work in the supermarket. You’ll pay less for an uncut whole pie than for a pie assembled from pieces purchased separately. Supermarkets charge more for chickens after they cut up. Why? What costs or imperfections cause proposition 1 to fail in the supermarket? Are these costs or imperfections likely to be important for the corporations issuing securities on the U.S or world capital markets? Expalin.

**Chapter 14**

 **Debt with Taxes**

**Handout Problem**

** Where Have All the Gains to Leverage Gone? **

Suppose the investing public consists of three investor groups with the following tax brackets:

 Group Tax Bracket

 A 60%

 B 40%

 C 0 %

These investors can invest in perpetual municipal bonds, perpetual corporate bonds, and common stock.

The corporate tax rate is 50%. Aggregate interest payments on municipal bonds totals $30 million. Aggregate NOI of all corporations totals $300 million.

Each investor group has the same amount of money to invest and their total net worth equals the value of all securities. In other words, all the interest income from muni’s as well as all corporate NOI mentioned above must flow through securities purchased by the three investor groups listed above.

The minimum required rate of return demanded by investors after taxes in this economy is 10%.

1. Suppose all companies are initially financed by common stock. Company X decides to mimic the local municipality and issue bonds to raise capital. The firm will allocate $1 million of its NOI to interest payments on the bonds. Which group of investors will buy the bonds? What will be the rate of interest? What will be the effect of the bond issuance on the value of Company X?
2. What will other companies do after observing the financing actions taken by Company X? Suppose interest payments in the economy now total $150 million. At this point Company Y decides to follow the actions of Company X and issue bonds, also allocating $1 million of its NOI to interest payments on the bonds. Which group of investors will buy the bonds? What will be the rate of interest? What will be the effect of the bond issuance on the value of Company X?
3. Suppose total interest payments in the economy somehow rise to $230 million. Company Z was one of the last firms to issue debt, also allocating $1 million of its NOI to interest payments on the bonds. Which group of investors bought the bonds? What rate of interest did Company Z have to pay on the bonds? What was the effect of the bond issuance on the value of Company Z? What will be the impact of this bond issuance on interest rates and the value of firms that issue bonds in the future?
4. Over time, suppose a few corporations have accumulated excess cash from operations and want to purchase marketable securities to “park” their money. How will all the financing activity settle up? That is, how much debt must be outstanding? What is the value of all companies? What is the interest rate in the economy? What is the impact of leveraging for a company? Show that when all the dust settles, an unlevered firm has no incentive to issue debt and a levered company has no incentive to retire debt with common stock.

*Chapter 14 Problems*

1. The present value of interest tax shields is often written as TcD, where D is the amount of debt and Tc is the marginal corporate tax rate. Under what assumptions is this present value correct?

3. What is the relative tax advantage of corporate debt if the corporate tax rate is Tc= .35, the personal tax rate is Tp= .35, but all equity income is received as capital gains and escapes tax entirely (TpE= 0)? How does the relative tax rate advantage change if the company decides to pay out all equity income as cash dividends that are taxed at 15%?

4. “The firm can’t use interest tax shields unless it has (taxable) income to shield.” What does this statement imply for debt policy? Explain briefly.

5. Miller’s tax adjustment model indicates that managers of non-profit hospitals should issue bonds at what rate?

6. In 2010, House Speaker Nancy Pelosi blasted the president’s budget deficit commission on its suggestion to eliminate the [mortgage interest tax break](file:///C%3A%5CUsers%5Cdon_cunningham%5CDownloads%5CTaking_Aim_at_the_Mortgage_Tax_Break_%282010%29_-_NYTimes.com.pdf), saying it would force middle-class homeowners to subsidize tax breaks for the wealthy. Apply Miller’s tax model and discuss.
See also: [A Defense of the Mortgage Interest Deduction (1992)](http://business.baylor.edu/don_cunningham/Defense%20of%20Mortgage%20Interest%20Deduction.PDF)

7. This question tests your understanding of financial distress

1. What are the costs of going bankrupt? Define these costs carefully.
2. “ A company can incur costs of financial distress without going bankrupt.” Expain how this can happen
3. Expalin how conflicts of interests between bondholders and stockholders can lead to financial distress.

*Intermediate*

18.. Let us go back to circular File’s market-value blance sheet

|  |  |  |  |
| --- | --- | --- | --- |
| Net working capital | $20 | $25 | Bonds outstanding |
| Fixed asstes | 10 | 5 | Common stock |
| Total assets | $30 | $30 | Total Value |

Who gains and who loses from the following maneuvers?.

1. Circular scrapes up $5 in cash and pays a cash dividend.
2. Circular halts operations, sells its fixed assets, and converts net working capital into $20 cash. Unfortunately the fixed assets fetch only $6 on the secondhand market. The $26 cash is invested in treasury bills.
3. Circular encounters an acceptable investment opportunity, NPV= 0, requiring an investment of $10. The firm borrows to finance the project. The new debt has the same security, seniority, etc as the old.
4. Suppose that the new project has NPV= $2 and is financed by an issue of preffered stock.
5. The lenders agree to extend the maturity of their loan from one year to two in order to give Circular a chance to recover.

19. The Salad Oil Storage(SOS) company has financed a large part of its facilties with long-term debt. There is a significant risk of default, but the company is not on the ropes yet. Explain:

1. Why SOS stockholders could lose by investing in a positive-NPV project financed by an equity issue.
2. Why SOS stockholders could gain by investing in a negative-NPV project financed by cash.
3. Why SOS stockholders could gain from paying out a large cash dividend.

20 . a. Who benefits from the fine print in the bond contracts when the firm gets into financial trouble? Give a one-sentence answer

1. Who benefits from the fine print when the bonds are issued?

21. Summarizing – What have we learned in finance? If stock price is driven by EPS then discuss whether management can increase EPS (and thus dividends and stock price) by:

1. Increasing risk class of assets?
2. Increasing speed of cash flow from investments?
3. Increasing return for a given risk class?
4. Increasing NI by changing accounting methods?
5. Increasing DIV by increasing payout ratio?
6. Increasing DIV if payout policy is set and held at a fixed level?
7. Increasing Div if firm is poorly managed?
8. Increasing EPS with leverage?
9. Increasing the tax subsidy from the interest deduction with more leverage?
10. Minimizing bond covenants to extract gains from the bondholders?
11. Increasing leverage to make management/employees work harder?

**Capstone Handout Problem**

**EPS, CAPM, Dividend Policy, Capital Structure Policy, BTWACC, ATWACC, and NPV Analysis**

**Chapter 14**

A 100% equity financed firm is considering a strategic 50% expansion of its core business... The firm is a “pure play” and the expansion will be in the same core business (i.e. same risk class). If the project is financed with bonds, the firm’s investment bankers project that the bonds will float at a yield of 6%. Currently, before expansion, the firm’s stock has a beta (***βe***) of 2. The risk-free rate is currently 5%. The expected return on the market is 12%. The firm’s tax bracket is 50%. Management's fundamental strategic question is whether **financing with cheap debt (6% bonds) versus expensive equity (stock) will create value for the shareholders**.

The CFO assigns you the task of assembling a team and preparing an analysis of the proposed expansion with debt financing. You are specifically instructed to address the impact on the firm’s EPS, dividends, and stock price. You are instructed to reconcile your answer with results from NPV analysis based on the firm’s ATWACC.