

THE UNIVERSITY OF TEXAS AT AUSTIN



Finance 397: Investment Theory and Practice

MCCOMBS SCHOOL OF BUSINESS, UT AUSTIN

Fall 2012

Unique 03705

TTh, 9:30am – 11:00 am

UTC 1.104

Professor: Bing Han

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Important: There will be optional review class at GSB 3.138 on the following dates: **09/21/2012**

10:00 AM -11:30 AM; **10/24/2012** 3:30 PM - 5:00 PM; **12/05/2012** 3:30 PM - 5:00 PM.

Course Description and Goals

Finance 397.1 is designed to enhance students' knowledge and understanding of financial markets and investment instruments. The course is intended for students who want to become investment professionals, corporate managers, knowledgeable individual investors. It covers institutional details of the financial markets, risk and return trade-off, portfolio theory, CAPM and APT, asset allocation, market efficiency, valuation of stocks, bonds, options and futures, portfolio investment strategies and evaluation methods.

Investment and trading decision-making skills will be developed through lectures, student presentations, guest speeches by practitioners, discussions of current events, problem assignments, and simulated portfolio management. The course balances in-depth coverage of

theories and comprehensive discussions of practical applications and empirical tests of the theories. Wherever appropriate, this course will incorporate latest research in the Behavioral Finance to help students understand psychological biases and social influences in investment decision making and market anomalies. Finally, this course will strive to afford you a global perspective on financial markets and investing.

Instructor

Professor Bing Han holds a Ph.D. in Mathematics from the University of Chicago and a Ph.D. in Finance from UCLA. His research focuses on asset pricing and behavioral finance. He has previously taught both undergraduate and graduate students at the University of Chicago, UCLA and Ohio State University. He has also worked for J.P. Morgan.

Course Resources

Required textbook: Bodie, Kane, and Marcus, **Investments**, 8th edition. McGraw Hill. ISBN: 007338237x

Optional: Student Solutions Manual for Use with Investments, ISBN: 978-0-07-336357-8
Additional support materials such as excel spreadsheets and quizzes can be found at Online Learning Center www.mhhe.com/bkm

Lecture notes, readings as well as solutions to selected problems will be available on the UT Blackboard system <https://courses.utexas.edu/webapps/login> You are required to check the blackboard site daily for course-updates.

Recommended: Wall Street Journal (<http://interactive.wsj.com>), Financial Times, <http://finance.yahoo.com/>, <http://cnbc.com/> etc. A list of recommended books and financial blogs is posted on the Blackboard course page.

Exams and Grading

Grades will be based on the student's performance on exams and quizzes, presentation, portfolio investment report. Your overall score in the course will be determined mechanically as the weighted average of the six component scores.

Exam I:	Tuesday, September 25, 2012	20%
Exam II :	Thursday, October 25, 2012	25%
Exam III:	Thursday, December 6, 2012	25%
In-class Quiz		12%
Investment Report:		12%
Presentation:		6%

Your overall grade will be determined by where your overall score lies in the distribution of all students' overall scores. The cut-offs in the distribution will be such that roughly A (4.0) 25%, A- (3.67) 20%, B+ (3.33) 15%, B (3.0) 35%, B- or below (2.67) 5%.

There is no opportunity in this course to do "extra-credit" work. Your grade will be determined solely by the components listed above. If you are taking the course **pass/fail** you must complete all projects and take all tests in order to pass the course.

All exams are in-class, closed-book. They cover material from lectures, assigned readings and exercises. Exams will strive to test comprehension and not merely memorization skills.

You are responsible for showing up at the proper time and location for all the exams! If you develop a schedule conflict with any of tests, contact the instructor as soon as possible, and no later than 24 hours before the exam, to get pre-approval. If you fail to show up for an exam without instructor's pre-approval, then you must present a doctor's note stating that you were too sick to take the test. If you miss an exam without a valid reason, then you will receive a zero on the missed test.

Team Presentation

Each team consists of 2 persons. **The presentation should be limited to 3 minutes per person, and 6 minutes per group.** Members of each group receive the same score on the presentation, except in rare circumstance (at instructor's discretion). **The groups are formed mechanically by students' last names.** A list of the presentation assignment will be posted on the Blackboard by Sept 9. The presentation topics and time are listed at the end of this syllabus.

Stock-game and Individual Report

Each student will manage a simulated portfolio with initial cash balance \$1,000,000 over the semester. The simulation is professionally-managed by Stock-Trak© Portfolio Simulations based in Atlanta, GA (www.stocktrak.com). The investment period extends from August 29 to December 6, 2012. You can make up to 200 trades and invest in any NYSE, NASDAQ-AMEX stock, a series of government and corporate bonds, a selection of over 2000 mutual funds and certain stocks trading on stock exchanges around the world, including Bombay, Brazil, Hong Kong, London, Frankfurt, Mexico, and Tokyo. You can buy on margin, short sell, and even day trade. To manage your risk exposures, you can also invest in various options and futures contracts. Trades are submitted in real time via their web page. Trading period is from 8/29/2012 to 12/6/2012.

Use the following link to register (registration fee is covered by the EDS Financial Trading Center & Department of Finance):

<http://www.stocktrak.com/public/members/registrationstudents.aspx?p=UT-Fin397-fall02>

At the end of the semester, each student needs to write a report based on stocktrak portfolio and trading (see guideline and requirement at the end of the syllabus). **The report is due by 12 noon, Dec 10, 2012. Late reports will receive no credit.**

Class Participation

I expect all students to attend and actively participate in. If you miss more than four classes without some form of prior approval from me, I reserve the right to drop your grade by one letter grade (e.g., an A drops to a B, an A- to a B-, etc.). If you miss more than six classes, I reserve the right to fail you so that you may take the class again when it is more convenient for you.

Continuous Feedback

I encourage you to give me feedback about the course material, my teaching style and anything else that would help you learn the course material better. You should come and talk to me in

person if you have any concerns and/or suggestions. However, if that makes you uncomfortable, you can send me an anonymous email from a class email account that I have created at www.mail.google.com. **Login: han397ut, Password: "feedback2012"**.

Calculators

Recommended for this course is a financial calculator capable of calculating present values, solving for yields, and performing other basic time value calculations. Students bear the responsibility for learning to operate their calculators proficiently. Programmable calculators must be cleared before each test; and there is no sharing of calculators during the test. It should be emphasized that the calculator cannot replace an understanding of the problem solving process.

McCombs Classroom Professionalism Policy

The highest professional standards are expected of all members of the McCombs community. The collective class reputation and the value of the Texas MBA experience hinges on this.

The Texas MBA classroom experience is enhanced when:

- **Students arrive on time.** On time arrival ensures that classes are able to start and finish at the scheduled time. On time arrival shows respect for both fellow students and faculty and it enhances learning by reducing avoidable distractions. The instructor reserves the right to remove students who arrive late. Should you have to leave class early, please have the courtesy of letting the instructor know before the beginning of the period and leave quietly so as not to disturb the other members of the class.
- **Students display their name cards.** This permits fellow students and faculty to learn names, enhancing opportunities for community building and evaluation of in-class contributions.
- **Students are fully prepared for each class.** Much of the learning in the Texas MBA program takes place during classroom discussions. When students are not prepared they cannot contribute to the overall learning process. This affects not only the individual, but their peers who count on them, as well.
- **Students respect the views and opinions of their colleagues.** Disagreement and debate are encouraged. Intolerance for the views of others is unacceptable.
- **Laptops are closed and put away.** When students are surfing the web, responding to e-mail, instant messaging each other, and otherwise not devoting their full attention to the topic at hand they are doing themselves and their peers a major disservice. Those around them face additional distraction. Fellow students cannot benefit from the insights of the students who are not engaged. Faculty office hours are spent going over class material with students who chose not to pay attention, rather than truly adding value by helping students who want a better understanding of the material or want to explore the issues in more depth. Students with real needs may not be able to obtain adequate help if faculty time is spent repeating what was said in class. There are often cases where learning is enhanced by the use of laptops in class. Faculty will let you know when it is appropriate to use them. In such cases, professional behavior is exhibited when misuse does not take place.
- **Phones and wireless devices are turned off.** We've all heard the annoying ringing in the middle of a meeting. Not only is it not professional, it cuts off the flow of discussion when the search for the offender begins. When a true need to communicate with someone outside of class exists (e.g., for some medical need) please inform the professor prior to class.

Other Important Course Policies

1. The lectures will cover extra material (e.g., exercises, discussions) not contained in lecture notes. You are responsible for everything covered or assigned in class. If you miss a class, it is entirely your responsibility to determine what you have missed including any administrative announcements I may have made.
2. Examinations will not be returned. The students can review their exams only during the week directly following the examination. If you feel your posted examination grade is incorrect, you must notify me in writing during this same one-week period. After one week, the examination papers will be stored and the problem will not be researched.

Students with Disabilities

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Division of Diversity and Community Engagement, Services for Students with Disabilities at 471-6259, <http://www.utexas.edu/diversity/ddce/ssd>.

Academic Dishonesty

Academic dishonesty will not be tolerated. Any individual suspected of cheating, including stealing or using stolen examinations, will be disciplined to the maximum extent possible. Review UT Honor Code at <http://registrar.utexas.edu/catalogs/gi09-10/ch01/index.html>

The McCombs School of Business has no tolerance for acts of scholastic dishonesty. The responsibilities of both students and faculty with regard to scholastic dishonesty are described in detail in the Policy Statement on Scholastic Dishonesty for the McCombs School of Business:

By teaching this course, I have agreed to observe all of the faculty responsibilities described in that document. By enrolling in this class, you have agreed to observe all of the student responsibilities described in that document. If the application of that Policy Statement to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification. Policy on Scholastic Dishonesty: Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. You should refer to the Student Judicial Services website at <http://deanofstudents.utexas.edu/sjs/> or the General Information Catalog to access the official University policies and procedures on scholastic dishonesty as well as further elaboration on what constitutes scholastic dishonesty.

Religious Holidays

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

NOTE

I reserve the right to make modification to this syllabus. The modifications (if any) will be announced in class. You are responsible for all announcements made in class.

Course Calendar

Module 1 (resp. 2 and 3) correspond to Exam 1 (resp. 2 and 3).

Module 1

- ✓ Chapter 1: Investment Environment
- ✓ Chapter 2: Asset Classes and Financial Instruments
- ✓ Chapter 3: Securities Trading
- ✓ Chapter 4: Mutual Funds and Hedge Funds
- ✓ Chapter 5: Distribution of Return: Risk, Expected Return; Historical Return Record

Module 2

- ✓ Chapter 6: Risk Aversion and Capital Allocation of Risky Assets
- ✓ Chapter 7: Diversification, Optimal Portfolio and Efficient Frontier
- ✓ Chapter 8: Index Models
- ✓ Chapter 9: CAPM
- ✓ Chapter 10: Arbitrage Pricing Theory and Factor Models
- ✓ Chapter 11: Market Efficiency Hypothesis
- ✓ Chapter 12: Behavioral Finance
- ✓ Chapter 27: Active Portfolio Management

Module 3

- ✓ Chapter 18: Equity Valuation
- ✓ Chapter 14: Bond Prices and Yields
- ✓ Chapter 15: Term Structure of Interest Rates
- ✓ Chapter 16: Managing Portfolios of Bonds
- ✓ Chapter 20: Options Markets
- ✓ Chapter 21: Option Valuations
- ✓ Chapter 22: Forwards, Futures and Their Valuations

Course Readings (corresponds to Bodie, Kane, and Marcus 8e)

Chapter 1: Sections 1.1, 1.2, 1.4, 1.5, 1.6, 1.7

Chapter 2:

- Section 2.1: focus on Treasury Bills, CD, Commercial Paper, Federal Funds, LIBOR
- Section 2.2: Treasury Notes and Bonds, Inflation-Protected bonds, Municipal Bonds, Corporate Bonds, Mortgage-Backed Securities
- Sections 2.3 and 2.4

Chapter 3:

- Section 3.2: focus on different types of orders and trading mechanisms
- Section 3.3: focus on NYSE and NASDAQ
- Section 3.5
- Sections 3.6 and 3.7: pay close attention to the examples in section 3.6 and 3.7, as well as the concept check questions

Chapter 4:

- Section 4.1: net asset value formula

- Section 4.2: focus on “Managed Investment Companies (p90), Real estate investment trusts and hedged funds (p91-92)
- Section 4.3
- Section 4.4: especially on “fees and mutual fund returns” (p92)
- Section 4.6
- Section 4.7: read everything carefully
- Section 11.5: read p370 to 375 for evidence on risk-adjusted return of mutual fund managers

Chapter 5

- Section 5.1: equation (5.3) , annualized return, (p110-111)
- Section 5.4: Holding period return, expected return, risk aversion and risk premium
- Section 5.5: Arithmetic average and Geometric average, standard deviation, sharp ratio
- Section 5.8
- Section 5.9: focus on “Risk in the long run” and “Sharpe Ratio revisited” (p142-144)

Chapter 6:

- Section 6.1: page 157 to the middle of page 159
- Section 6.2: the concept of a complete portfolio (p166)
- Section 6.4: especially Figure 6.4
- Section 6.5: just need to understand what equation (6.12) says (Example 6.4)
- Section 6.6: just need to know what is the capital market line (middle of p177)

Chapter 7:

- Section 7.1: especially Fig 7.1 and 7.2
- Section 7.2: especially eq(7.5) and Fig 7.5
- Section 7.3
- Section 7.4: especially Fig7.10, 7.11, 7.12 and separation property (page 214)
- Skip page 216 to 221
- You may find Appendix A and B (p231-242) very useful

Chapter 8:

- Section 8.1, 8.2 and 8.3; skip the rest

Chapter 9:

- Section 9.1: especially page 280-281 and the security market line
- Section 9.3
- Section 9.4
- Section 9.5: only the ICAPM equation (9.14)

Chapter 10:

- Section 10.1 to 10.5, especially the Fama-French three factor model (p336)

Chapter 11:

- Section 11.1: especially the three forms of efficient market hypothesis (p348-349)
- Section 11.2
- Section 11.4: read everything in this section carefully. examples of stock market “anomalies” (return reversal, momentum, small firm effect, book-to-market ratio effect, post earnings announcement price drift, etc) and how to interpret the findings

Chapter 12:

- Section 12.1: focus on overconfidence, regret avoidance, prospect theory, limits to arbitrage and “Evaluating the Behavioral Critique” (p394)
- Section 12.2: read for fun and try some technical analysis tools in your Stocktrak trading

Chapter 13:

- Section 13.1 : page 411 to 414 only (stop at Roll’s critique)
- Section 13.3
- Section 13.6: just need to know what is the equity risk premium puzzle (p437 to 441)

Chapter 14:

- Section 14.2: especially formulas (14.1), (14.2)
- Section 14.3: just read about Yield to Maturity (p298-300). Skip the other parts
- Section 14.4: focus on zero coupon bonds, skip page 466 “after tax return”
- Section 14.5: there is a student presentation on default risk

Chapter 15:

- Section 15.1 to 15.5, especially forward rates (eq 15.5) and expectation hypothesis

Chapter 16:

- Section 16.1
- Section 16.2: only till Fig 16.4 on Page 525
- Section 16.3: only immunization

Chapter 18:

- Section 18.3
- Section 18.4: stop at the bottom of page 610

Chapter 20:

- Section 20.1 to 20.4

Chapter 21:

- Section 21.1
- Section 21.3
- Section 21.4

Chapter 22:

- Section 22.1

- Section 22.5

Additional Readings will be posted on UT Blackboard system.

Study Guide

1. You need to understand what you are studying, whether it be conceptual or analytical. Relying on your calculator as a means to simply plug in numbers for an answer will get you into trouble. When you study, ask yourself such question as:
 - i) What is the purpose of this concept or formula?
 - ii) Why is it important?
 - iii) How does the author demonstrate its importance?
 - iv) How does it “fit” with what you have studied so far? –either in this class or in an earlier class.
2. I suggest that you read each chapter once **before** it is discussed in class and then read it again **after** the topic is covered in class. Reading the material beforehand will greatly assist in having meaningful class discussions. If you are having trouble with a concept or problem, contact me or the TA as soon as possible.
3. **The problem sets associated with each chapter are not to be handed in**; however, it is important that you work and understand them. Working these problems is a necessary step in preparing for the exam. Reviewing the examples in the book, the concept check questions (whose answers are provided at the end of the chapter) as well as the key terms at the end of the chapter will also be useful in mastering the material and preparing for the exams.
4. In order to successfully complete this course, the concepts must be studied **continuously** throughout the semester. For most students, the information cannot be mastered by waiting until exam time. Do not cram right before an exam which usually results in confusion, anxiety, and a lack of the big picture.

More on Stocktrak Trading and Written Investment Report

There are **two parts** to your written report, one is quantitative and the other is qualitative. They correspond to two parts to your Stocktrak portfolio, one is passive and the other is “actively managed”. **Your portfolio and trading performance does not affect the grade of your investment report.**

Part I: Use half of your account balance (\$500,000) to construct an initial portfolio of stocks.

1. Your initial portfolio must contain 10 stocks. You can take short positions if you want.
2. You decide which stocks to pick, but choose stocks from different industry (to be diversified). Choose some large companies (e.g., with over 10 billion dollars market cap) and some medium to small companies. You can choose stocks based on word-of-mouth (heard from family/friends), media mentioning, or by throwing a dart on wall street journal. Make sure the stocks you pick have at least two years of trading data through

- finance.yahoo.com or google.com/finance (so you can not choose young stocks like Facebook).
3. You can equal-weight the stocks in the portfolio, or use whatever weights you see fit (e.g, give more weights to stocks with larger market cap, or give more weights you feel more confident about, or you view as more undervalued)
 4. Leave this part of your stocktrak account untouched (i.e., buy and hold) till the end.

You should turn in a short paper (3-5 pages, double-spaced, single-sided, 12-point font) which report the weekly performance of your passive portfolio (constructed above) and evaluates statistically the relative and absolute performance using various tools and techniques learnt in the semester. See below for the suggested timeline and numbers to report.

Data Analysis Time-line (for Part I)

September 10, 2012: finish construction of your buy-and-hold stock portfolio.

Oct 2: Variance-Covariance Matrix

Go to finance.yahoo.com and download a time-series of daily prices for each of your stocks that covers a period 08/29/2010 to 08/29/2012. From the prices calculate daily stock returns. For each stock compute mean, variance, standard deviation of the daily stock return over this two-year period. Then compute the covariance for each pair of stocks. You should get a 10 by 10 variance covariance matrix (report this).

Oct 9: Efficient Portfolio Weights

Using the quantities that you have already computed and assuming that you can invest or borrow at a risk free rate of 0.5 per cent per year, compute the weights of the optimal risky portfolio (report this).

Nov 12: Individual and Portfolio Betas

Using the returns that you have already collected, calculate alphas and betas for each stock in your portfolio by running a linear regression on the market portfolio (e.g, proxied by the SPY). Plot the average returns of the stocks from 08/29/2010 to 08/29/2012 against the betas. Do they line up?

Next collect the price data for your stocks from 08/29/2012 to 11/12/2012. Now plot the average returns of stocks over this recent period against the betas. Do those line up? Do they line up better? Did the betas you computed using the data from 08/29/2010 to 08/29/2012 predict the average returns over the period from 08/29/2012 to 11/12/2012?

What is the beta of your portfolio? Is that equal to the average stock's beta? What is the alpha and the Sharpe ratio of your passive portfolio?

Nov 23: Options

We are going to play with options. Go to yahoo.finance and get call and put options for one of your stocks that have options traded. You should get the December 2012 maturity and the March 2013 maturity. For each maturity, pick 5 calls and 5 puts of different strike price. Assuming a risk free rate of 0.05 percent per year, invert the price and get the implied volatility (with the help of some online calculator such as <http://www.option-price.com/implied-volatility.php>). Plot the

implied volatilities against the strike price of the option, for each option maturity, separately for the call and for the put.

Part II of your stocktrak account and investment report:

Do whatever you want with the remaining \$500,000 cash in your stocktrak account. This part is aimed to get you some experience with active trading strategies (as opposed to buy-and-hold in the first part). You can trade not just stocks but also bonds, option, futures, currencies and commodities (e.g., through some ETFs). Remember you will be graded by the quality of the report, NOT your investment performance. So you can experiment different strategies and see which “works”.

The second part of the report should be about 2 to 3 pages long, discussing topics such as: are you subject to any behavioral biases we discussed in class? What is your view on the market efficiency debate, and how has your view affected your trading experience? If you used some technical analysis tools, do you work for you? Have you tried to time the market (why) and does it work? Which is more important for your investment performance, investing in the right asset class or picking the right individual security? How has political risk (e.g., presidential election) and central bank policy risk (e.g., more QE?) affected your investment decision?

Presentation Topics

- Topic 1 (Sept. 6): Tell us about the Libor rate scandal and its impact (e.g., <http://www.spiegel.de/international/business/the-libor-scandal-could-cost-leading-global-banks-billions-a-847453.html>; http://en.wikipedia.org/wiki/Libor_scandal)
- Topic 2 (Sept. 11): Tell us about the IPO process. Discuss what you find interesting about the Google and Facebook IPO.
- Topic 3 (Sept. 13): Discuss ban on short sales by SEC during the 2008 financial crisis, and recent short sales ban in Europe. Is it good or bad?
- Topic 4 (Sept. 18): Compare ETS to open-end mutual funds? What are the pros and cons of inverse and leveraged ETFs? <http://www.learningmarkets.com/the-risks-of-inverse-etfs/>
- Topic 5 (Sept. 27): Tell us about the equity risk premium puzzle and how to interpret/explain it (see page 437 to 441) ?
- Topic 6 (Oct. 2): Are buy-and-hold dead?
- Topic 7 (Oct. 4): Are stock returns less risky in the long run? Does time diversification work? See page 175-177.
- Topic 8 (Oct. 9): Discuss how higher moments of stock returns may (e.g., skewness, kurtosis) may matter for investors and affect the required risk premium.
- Topic 9 (Oct. 18): Charting and technical analysis (see chapter 12.2)
- Topic 10 (Oct. 30): Why do investors trade? Are the trading volume (in stocks and derivatives) too high? What are the consequences of too much trading?
- Topic 11 (Nov. 6): Bond credit ratings and yields: see chap 10.5 especially Page 317-318. Discuss the impact of rating downgrade on stock and bond (you can use the downgrade US sovereign rating by S&P in Aug 2011 as an example)

- Topic 12 (Nov. 13): Tell us about CDO and the controversy around their credit rating (page 474-476)
- Topic 13 (Nov. 27): Discuss some interesting examples of options, portfolio insurance and hedge ratio (see section 21.5)