FE 312: Investments

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Syllabus

1 Course Overview

1.1 Goal:

This course aims to develop a framework for understanding how to construct a portfolio and price financial assets. The discussion takes the perspective of an investment manager or institutional investor. As a concrete example, this class aims prepare you to work at a fund like AQR (aqr.com) in that you will learn to understand the strategies that they use and how they fit into a diversified portfolio.

The underlying theme of the course is to teach students to *ask the right questions* about investment strategies and plans to understand both their advantages and their potential pitfalls. To do that, we will develop an understanding of two main areas of investing: portfolio choice and asset pricing. The key questions for portfolio choice are what constitutes a good mix of investments in theory, and how we can actually achieve such a mix in practice. For asset pricing, the key questions is what determines excess returns on assets. That is, how can can you beat the market?

1.2 What this class is not about:

This class is not about the fine art of stock picking or provide you with foolproof ways to make money in the stock market. The detailed analysis of individual companies and their balance sheets lies outside the scope of this course. Even though I have attempted to fit as much material as is possible in a ten week course, a number of important topics such as financial derivatives, taxes and financial statement analysis will be covered only in passing.

1.3 What I expect:

- I expect you to be comfortable with key statistical concepts: mean, standard deviation, variance and covariance, and linear regression.
- I expect you to read the textbook chapters so that you are prepared to participate in the discussion (the book really is very well written and isn't a chore to read).

- I will not distribute copies of lecture notes or assignments in class. You are responsible for printing them and bringing them to class.
- If you miss class, I expect you to find out what was covered from the other students in class.
- Finance is not a spectator sport. During the class, and as part of your homework, you will become familiar with several statistical methods for analyzing financial data. I expect you to be familiar with Stata. You should probably be able to complete all the homework assignments in Excel, though it will be a lot more painful. Hence, you should view this as an opportunity to familiarize yourselves with a matrix computing language such as MATLAB (or Octave, a free alterative) will be quite helpful. Open-source alternatives such as R or Python are also an option (though I am less familiar with them).

1.4 What you need:

- Andrew Ang: "Asset Management" (recommended)
- Bodie, Kane and Marcus: "Investments", McGraw-Hill (optional)
- Canvas access

Strictly speaking, neither of the two books are required. However, they are highly recommended, especially Andrew Ang. If you can, buy both. Also, keep in mind that McGraw-Hill tends to 'update' their textbooks every year. In my view, this is largely unnecessary. Any one of the last five editions will be sufficient.

2 Administrative

The course website is in Canvas. All the course materials will be posted there.

2.1 Contact Information

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2.2 Grading

The course grade is based on the formula:

$$X_H + X_C + \max[\ 0.5 \cdot X_M + 0.5 \cdot X_F, X_F]$$

where

$$\begin{aligned} X_H &= \text{Homework (25 pts)} \\ X_C &= \text{Class Participation (25 pts)} \\ X_M &= \text{Midterm (50 pts)} \\ X_F &= \text{Final (50 pts)} \end{aligned}$$

The midterm represents a free option and can only improve your grade. Class participation is graded on the basis of three components: Did you show up? Did you ask questions? Did you answer questions (ideally correctly)? If there is something in the lectures that you dont understand, somebody else probably doesnt understand it, so I appreciate when people ask for clarification of things that I have failed to explain sufficiently clearly. This is an easy way to make sure you do well on the participation component of the class.

2.2.1 Class Participation

A non-trivial portion of your grade will depend on your class participation. I intend for the class to have the format of a discussion rather than a lecture. I will cold-call students, so please make sure you are prepared.

2.2.2 Homework Assignments

There will be a homework due almost every week. Homework should be completed in groups of 1-3 students with the names of the students clearly visible at the front page. I will only accept homework as PDF files. Please submit homework via emailing a pdf to the TA. Homework is due every Thursday before class starts. **Under no circumstances will I accept late homework**.

2.2.3 Exams

There are two exams, each worth 25% of your grade. The final exam will cover material from the entire course. The midterm is a free option – if it doesn't help your grade, 50% of the grade will be based on the final alone. Requests for reconsideration of grading must be submitted in writing within a week of when the material is returned. If a regrade is requested, the entire material will be re-evaluated.

The Kellogg Honor Code strictly applies. Exams must be completed independently and within the allotted time. Only the specifically allowed materials may be used and nothing else. On the homework you can consult with any other class members and refer to class materials, except that answers to previous years problems are off limits.

All exams will be closed book. You can use a laptop, but you can only use it to perform computations (e.g., run Matlab or a blank Excel spreadsheet). You will be allowed to bring one $8.5'' \times 11''$ two-sided sheet of notes into each examination. In this sheet, you are allowed to write any formulas from the class notes or the book that you feel that you may need, along with short notes explaining the use of these formulas. You are not allowed to copy material directly from the lecture notes.

The midterm exam is scheduled for **February 2** during class. The final exam is scheduled during finals week. There will be an early final exam option towards the end of Week 10.

3 Course Outline

The following list of topics is indicative and is subject to change. Each topic will approximately take 1 or 2 weeks. Please see Canvas for the most recent version.

1. Asset allocation

2. Equilibrium models of risk and return

3. Factor investing

4. Liquidity and limits to arbitrage

5. Market efficiency and return predictability

4 Recommended Reading

The following recommended books are mostly pretty easy reads that are entertaining, interesting and provide some good insights. In all cases, the recommendation of these books is not an endorsement of the material in them: much of what is said in these is plain wrong (as is probably true for most books on investment). Nevertheless, they offer food for thought.

4.1 Light Reading

1. Peter Bernstein: "Against the Gods: The Remarkable Story of Risk" - Reviews the development of probability theory and its application to risk management. Interesting and easy to read.

2. Peter Bernstein: "Capital Ideas" - Bernstein's earlier book dealing with the development of modern finance theory and how this has affected Wall Street practice.

3. Burton, Malkiel: "A Random Walk down Wall Street" - A very thoughtful exploration of modern finance theory.

4. Jorion 1995, "Big Bets Gone Bad: Derivatives and Bankruptcy in Orange County." - An exploration of the Orange County derivatives debacle.

5. Graham and Dodd: "Security Analysis" - If any book can be called the investment classic of all times, this is it. Warren Buffett said something like this is the only book you ever need to read. It has been continuously in print since it was originally issued in 1934, and has been through five editions. It was recently re-issued in the original 1934 edition (written at the bottom of the great depression).

6. Burrough and Helyar: "Barbarians at the Gate" - The story of the RJR - Nabisco leveraged buyout and Kohlberg Kravis Roberts & Co. Some good insights into the M&A industry. Reads like a novel.

7. Michael Lewis: "The Big Short: Inside the Doomsday Machine" - a close look at the recent financial crisis.

8. Michael Lewis: "Liar's Poker" - A bond salesman's irreverent look Salomon Bros. Great anecdotes and a good history of some of the developments of modern finance (*e.g.*, mortgage backed securities). Also reads like a novel.

9. Victor Niederhoffer: "The Education of a Speculator" - The very entertaining and insightful autobiography of a modern, eccentric, and successful trader. Niederhoffer grew up poor, went to Harvard and then to Chicago for his Ph.D. in finance, and was a professor at Berkeley for a short stint.

10. Edwin Lefvre: "Reminiscences of a Stock Operator" - Originally written in 1923, and recently re-issued. This is the story of Jesse Livermore, supposedly one of the greatest stock speculators of all time. Many modern traders cite this as the book that they found most helpful in learning how to trade. Be aware that Livermore killed himself after losing everything in the great depression.

11. Schwager "Market Wizards" - a set of interviews with some of the most successful traders of the modern era.

12. Burrough and Helyar: "Barbarians at the Gate" - The story of the RJR -Nabisco leveraged buyout and Kohlberg Kravis Roberts & Co. Some good insights into the M&A industry. Reads like a novel.

13. Engel and Hecht: "How to Buy Stocks." - This book provides a great discussion of the institutional features of the stock market. Also, there are few sections on investing are less interesting and less valuable.

14. Lowenstein: "When Genius Failed: The Rise and Fall of Long-Term Capital Management" the story of superstar hedge-fund LTCM. Reads like a novel.

15. Dunmar: "Inventing Money" - another perspective on LTCM.