ECON 25000: Introduction to Finance

Winter 2015

Instructor:	Paymon Khorrami (paymon@uchicago.edu)
Class hours:	MW 9:00 – 10:20am (Stuart 102)
Office hours:	Wednesday 10:30 – 11:30am (Booth Winter Garden)
Teaching Assistant:	Klakow Akepanidtaworn (klakowa@uchicago.edu)
TA Session:	Thursday 4:00 – 4:50pm (Stuart 102)
TA Office hours:	Monday 4:00 – 5:00pm (Booth Winter Garden)

Overview

Description: Welcome to the class! This course provides an introduction to the basic topics in investments. The main goal is to provide frameworks used to price various securities: so-called "asset pricing." The primary frameworks used are "no arbitrage," which says that there is no free lunch, or you can't get something for nothing; and "equilibrium," which dictates a relationship between risk and return based on investment supply and demand. We will look at risk-free bonds, forwards, stocks, options, and corporate bonds. In addition to the theory, we will perform some empirical tests of the models to see how well they work in practice. Ultimately, finance is not about creating abstract theory, it's about creating models that work well in practice! After taking this class, you should have a solid foundation in financial economics, and you should be well-prepared to take more advanced classes. For example, a natural extension of this class, if you are interested in derivatives pricing, is Fernando Alvarez's ECON 251 class. I hope the class is also useful to those considering jobs in the investment/portfolio management area.

Prerequisites: You should have taken ECON 200-203 and STAT 234/244 before enrolling. It would be great if you have also taken a class on linear regression, e.g., ECON 209/210 or STAT 245. If not, I prefer that you are concurrently enrolled for such a class. This is mainly because we will be doing some data analysis in the empirical homework. There will be some programming, so you should get familiar with a basic data processing program. I recommend Matlab, and will provide some support, but the choice is up to you. You should also be familiar with probability (expected values, variance, covariance, probability distributions), calculus (partial differentiation), optimization (Lagrange method, infinite-horizon problems), and linear algebra (matrixes).

Note: I haven't taught this class before, so bear with me! The list of topics (below) is subject to change. How fast we proceed depends upon how people are understanding the material. Also, we may emphasize more the topics that students are most interested in, so please give me your feedback.

Policies

Grading: There will be a midterm, and a final exam. The midterm will be Monday, February 9, during class. The final exam will be administered on Wednesday, March 18, from 8:00 – 10:00am. *You cannot reschedule or miss the final exam. If there are issues with this, contact me now!* Grades will be determined by:

$$\begin{aligned}\max \big\{ & 30\% \times \text{problem sets} + 20\% \times \text{midterm exam} + 50\% \times \text{final exam}, \\ & 30\% \times \text{problem sets} + 70\% \times \text{final exam} \big\}\end{aligned}$$

So basically, the midterm can only help you. If you don't do well on it, don't worry about it.

Homework Assignments: There will be about 6 homework assignments. *No late assignments will be accepted.* If you can't hand in the assignment on the due date, you must email an electronic copy or scanned copy to me or the TA. Group discussion and collaboration on homework is encouraged, but assignments ultimately need to be handed in individually. Write who you discussed with at the top of your assignment solution. If you have questions about the homework, feel free to email the TA, Kow, at `klakowa@uchicago.edu`. At the review sessions, Kow will spend some time discussing solutions to the previous assignment, or answering questions about upcoming assignments.

References: I will occasionally post lecture notes or readings on Chalk for some topics, though not all. There will be no required textbook for the class. However, I realize that it may be useful to know about commonly used textbooks. I will name the following, just so you are aware of them:

- Bodie, Kane, and Marcus, *Investments*: standard MBA-level textbook
- Cochrane, *Asset Pricing*: more advanced, but a very nice unifying framework "price = discounted payoff"
- Hull, *Introduction to Futures and Options*: derivatives pricing

Topics (tentative)

Week 0: Math review.

Week 1: Basic compounding and discounting. Understanding "Price = Discounted payoffs." Pricing risk-free bonds (e.g., U.S. Treasuries).

Week 2: "Fixed-income" securities (e.g., Bonds, Forward rate agreements). The yield curve and forward curve. Pricing by the method of no arbitrage.

Week 3: Finish bonds. Begin introduction to risky assets. Equities and the stock market. "Price = Discounted payoffs" again. What about risk? We need models.

Week 4: Portfolio theory. The Mean-Variance Frontier (MVF). Discuss math and pictures.

Week 5: Long-run investing with a mean-variance criterion. Other portfolio models besides mean-variance.

Week 6: Equilibrium. The Capital Asset Pricing Model (CAPM). This is the most important model is asset pricing. At least three derivations. Lots of discussion.

Week 7: Empirical evaluation of the CAPM. Why does it fail?

Week 8: Other equilibrium models, e.g. the consumption capital asset pricing model (CCAPM), multi-factor efficiency, and the Fama-French 3-factor (FF3F) model.

Week 9: Efficient markets. A detour into trading and information in financial markets.

Week 10: Options as an example of pricing by replication. Payoff diagrams and the binomial tree.

Week 11: Final exam!