**FINANCE 924**

**Macro-Finance**

**Dynamic Quantitative Models in Modern Financial Economics**

João F. Gomes

Spring 2009

**Course Description**

This is a doctoral level course on financial economics, with special emphasis on the determinants and effects of the intertemporal choices of consumers and firms under uncertainty. The main topics include: optimal consumption and portfolio allocation, optimal corporate investment and financing, and the asset pricing implications of these decisions. The course will describe and utilize a number of techniques to solve dynamic optimization problems under uncertainty including several numerical solution methods.

**Prerequisites**

The pre-requisites for this course are graduate level microeconomics, algebra and calculus. A familiarity with mathematical software (Matlab or Gauss are preferred) or computational languages is also recommended.

**Textbooks**

There is no single textbook for this class. My notes are generally based on combinations of several book chapters, classic papers, and previous discussions with colleagues and former students. Complementary readings are provided below and you should follow up on them as necessary and/or required. Most books below contain lengthy references identifying the classic papers for the various topics

Broad discussions of most topics in macroeconomics are offered in

* David Romer, *Advanced Macroeconomics*, McGraw Hill, 1996
* Blanchard and Fisher, Lectures on Macroeconomics, MIT Press 1989

For an alternative, and more advanced, discussion we will use

* Lars Ljungqvist and Thomas Sargent, *Recursive Macroeconomic Theory*, MIT Press 2004
* Thomas Cooley (ed.) *Frontiers of Business Cycle Research*, Princeton University Press, 1995.

Technical Foundations and Numerical Methods for dynamic quantitative models in macroeconomics and finance are discussed in detail in

* Nancy Stokey, and Robert Lucas, with Edward Prescott, *Recursive Methods in Economic Dynamics*, Harvard University Press, 1989.
* Kenneth Judd, *Numerical Methods in Economics*, MIT Press 1998.

An introductory discussion of continuous time methods in economics and finance is discussed in

* Avinash Dixit and Robert Pindyck, *Investment Under Uncertainty*, Princeton University Press, 1994.

Classic finance textbooks that will occasionally be used during term are

* John Cochrane, *Asset Pricing*, Princeton University Press, 2005
* John Campbell, Andrew Lo and Craig MacKinlay, *The Econometrics of Financial Markets*, Princeton University Press, 1996.
* Darrell Duffie, **Dynamic Asset Pricing Theory,** Princeton University Press, 2001

**Schedule**

Class will meet Thursday, 12-23PM pm, in the Finance Department Conference Room.

[Should it be necessary to make any changes in time or location, or to reschedule a particular class, then this will be announced in a prior class or via email.]

**Topics Covered**

1 - Macroeconomics and Finance: Introduction and Basic Facts

2 – Consumption, Savings and Portfolio Theory

3 - Numerical Methods

4 - General Equilibrium in an Endowment Economy

5 – Production, Investment, and Capital Structure

6 - General Equilibrium in a Production Economy

**B - Grading**

Grades will be based on one final exam (50%) and short weekly assignments (50%).

#### C - Reading List

## 1. Macroeconomics and Finance: Stylized Facts

* Cooley, Chapters 1 and 10.
* Campbell, Lo and MacKinlay, Chapters 5-8.

# 2. Intertemporal Choice and Consumption

* David Romer, Chapter 7.
* Blanchard and Fisher, Chapter 6.2.
* Robert Hall, “The Stochastic Implications of the Life Cycle-Permanent Income Hypothesis”, *Journal of Political Economy*, 971-87, 1978.

# 3. Dynamic Programming and Numerical Methods

* Stokey, Lucas, Robert and Prescott, Chapters 2-4.
* Ljungqvist and Sargent, 2-5.

# 4. General Equilibrium in an Endowment Economy

* Lucas, Robert, “Asset Prices in an Exchange Economy”, *Econometrica*, pp. 1429-1445, 1978.
* Mehra, Rajnish and Edward Prescott, “The Equity Premium: A Puzzle”, *Journal of Monetary Economics*, pp. 145-161, 1985.
* King, Robert, Charles Plosser and Sergio Rebelo, “Production, Growth and Business Cycles I: The Basic Neoclassical Model”, *Journal of Monetary Economics*, pp. 195-232, 1988.

# 5. Production, Investment, and Capital Structure

* Abel, Andrew and Janice Eberly, “A Unified Model of Investment Under Uncertainty”, American Economic Review, 1369-84, 1994.
* Fazzari, Steven, Hubbard, R. Glenn, and Petersen, Bruce, Financing Constraints and Corporate Investment, *Brookings Papers on Economic Activity*, 1, 141-206, 1988.
* Gomes, Joao, “Financing Investment”, *American Economic Review*, 91, 1263-85, 2001
* Hennessy, Christopher, and Whited, Toni, Debt Dynamics, Journal of Finance, 2005.
* Hopenhayn, Hugo, Entry, Exit, and Firm Dynamics in Long Run Equilibrium, *Econometrica*, 60, 1127-50, 1992.
* Leland, Hayne, Corporate Debt Value, Bond Covenants, and Optimal Capital Structure, Journal of Finance 49, 1213-1252, 1994.
* Romer, Chapter 8, 1996.

**6 - General Equilibrium in a Production Economy**

* King, Robert, Charles Plosser and Sergio Rebelo, “Production, Growth and Business Cycles I: The Basic Neoclassical Model”, *Journal of Monetary Economics*, pp. 195-232, 1988.
* Cooley, Thomas (ed.) *Frontiers of Business Cycle Research*, Princeton University Press, Chapter 1 and 10, 1995.
* Cochrane, John, “Production-Based Asset Pricing and the Link Between Stock Returns and Economic Fluctuations”, *Journal of Finance*, pp. 209-237, 1991.
* Jermann, Urban, “Asset Pricing in Production Economies”, *Journal of Monetary Economics,* pp. 257-276 1998.