Spring, 2016
Prof. Cosmin Ilut

Expectations and Macroeconomics
(tentative course description)

Course description

This module covers some recent advances in the macroeconomics literature on ambiguity/robust control, which departs from rational expectations modeling and Bayesian learning. Here we study, based on decision theoretical foundations (ambiguity aversion), how agents faced with model uncertainty act on robust decision rules. We will review the main concepts of ambiguity/robust control and we will cover some of its applications to asset pricing, business cycles, heterogenous beliefs and sticky prices.

For each application we emphasize the specific economic question (marked by **model** below) as well as the associated *methodological* aspects. Throughout the applications we will encounter and analyze additional specific `concepts` and issues pertaining to that literature.

Grading will be based on:

1. in-class students' presentations/discussions of articles chosen in advance.
2. a research proposal.

Each student will have a 30 minute presentation on a paper selected in advance and the presentation of the research proposal of 30 minutes.

The research proposal will be due for the last meeting, when it will be presented in class.

Course plan

Lectures 1, 2: General ideas on robust control and ambiguity.

a. Ellsberg paradox and decision theoretical models of ambiguity aversion

b. Robust control, entropy and model misspecification

c. Ambiguity and non-stationarity

d. Certainty equivalent

e. Basic asset pricing puzzles

Based on 1) "Robustness", by Hansen and Sargent, Princeton University Press, 2008; 2) "Ambiguity and Asset Markets", by Epstein and Schneider, Annual Reviews of Financial Economics, 2010 and 3) "Doubts or Variability?", by Barillas, Hansen, and Sargent, Journal of Economic Theory, 2009.

Lectures 3, 4, 5:

Ambiguity in macroeconomic models

1. a. **Model** of business cycle dynamics under ambiguity

b. *Methodological*: Uncertainty variation with first-order approximations

Additional macroeconomic literature `concepts` to be encountered here: approximation and estimation methods; New Keynesian model; news shocks; welfare cost of uncertainty; confidence shocks

2. a. **Model** of incomplete markets with heterogenous uncertainty

b. *Methodological*: Uncertainty and heterogenous beliefs

Additional macroeconomic literature `concepts` to be encountered here: secular stagnation; belief disagreement.

3. a. **Model** of asset prices, capital structure and business cycle

b. *Methodological*: Volatility shocks with first-order approximations

Additional macroeconomic literature `concepts` to be encountered here: excess price volatility and return predictability; capital structure; regime-switching models.

4. a. **Model** of learning, endogenous confidence and wedges

b. *Methodological*: Endogenous uncertainty and the role of law of large numbers under ambiguity in a heterogenous firm model

Additional macroeconomic literature `concepts` to be encountered here: comovement over the business cycle; business cycle wedges; learning under ambiguity.

5. a. **Model** of sticky and discrete prices

b. *Methodological*: Non-parametric learning and inaction

Additional macroeconomic literature `concepts` to be encountered here: nominal and real rigidity; imperfect information; reference prices.

Lecture 6: Student presentations

Lecture 7: Research proposals due and to be presented