ADVANCED TOPICS IN ASSET PRICING cod 40946
Methods in Macro-Finance
BOCCONI UNIVERSITY
COURSE SYLLABUS
Professor M. M. Croce

Course Description

How can we quickly replicate the results of a study that is based on a dynamic stochastic model? How can we quickly solve the dynamic stochastic model that we want to use in our next research paper? These two questions motivate this course. The ultimate goal of this course is to enable students to easily and quickly solve stochastic dynamic models through standard perturbation methods. Becoming knowledgeable about these techniques is extremely beneficial as it increases both the quantity and the quality of research papers that can be produced in a short amount of time.

This course is mainly applied, in the sense that we will devote most of our time learning how to solve a model and get results. We will see only a minimum set of theoretical concepts that are essential to check the correctness of the solution and debug our codes. By the end of the course, solving a dynamic stochastic general equilibrium (DSGE) model should be a routine task.

We will work with **dynare++.exe,** a free stand-alone package that solves stochastic systems of smooth equations. We will also learn how to integrate **dynare++.exe** with **Matlab** in order to generate nice tables and figures in an efficient way.

Preliminary Outline

Detailed instructions about the homeworks (HWs) will be given during the course. Our preliminary schedule is at the end of this document.

Class 1-2: dynare++ and a simple example

How can we solve a basic no-arbitrage equation with time-additive CRRA preferences? We will answer this question by (i) solving a log-linear approximation `by pencil', and (ii) using dynare++. The goal of this class is to understand what dynare++ really computes and how to code in dynare++.

Class 3-4: Bansal and Yaron (2004) [link]

How can we solve a basic no-arbitrage equation with recursive preferences? We will answer this question in class by solving a log-linear approximation `by pencil'.

HW#1: Solve the Bansal-Yaron (2004) model in dynare++.

Class 5-6 (27 Febr): Croce (2006) in dynare++ [link]

How can we characterize the equity risk premium in a model with recursive preferences and production? In class we will derive all the dynamic equations that are required to characterize the equilibrium of a basic production economy. We will also study the dynare++ code for the Croce (2006) paper.

HW#2: Derive the system of equations required to solve the Croce (2006) production economy model with adjustment costs. Solve it in dynare++ after adding adjustment costs to the code seen in class.

Class 7-8: Ai-Croce-Li (2011) [link]

We review the methods in Ai-Croce-Li (2011) and then focus on the contribution of this paper for the cross-section of returns.

Class 9: Ai-Croce-Diercks-Li (2012) [link]

What is the term structure of equity returns? How does it evolve in a production economy? In this class, I derive all the dynamic equations that are required to characterize the term structure of equities.

HW#3: Using the recursive equations in Lettau and Wachter (JFE 2011), use dynare++ to solve for the real and nominal term structures generated by the Bansal and Yaron (2004) model.

Class 10-11: Colacito-Croce (2012) [link]

How can we solve a DSGE model with recursive preferences in an open economy? How can we characterize the exchange rate? In class we will derive all the dynamic equations that are required to characterize the equilibrium of a basic exchange economy with 2 agents, 2 goods and recursive preferences.

HW#4: Solve the Colacito-Croce (2012) model in dynare++.

Class 12: Colacito-Croce-Ho-Howard (2012) [link]

How can we solve a DSGE model with recursive preferences in an open economy with production? In this class, we will derive all the dynamic equations that are required to characterize the equilibrium of a production economy with 2 agents, 2 goods and recursive preferences.

Exams and Grading Criteria

There will be no final exam. The final grade will be based solely on the quality of your homeworks. Timely and high-quality reports will grant you A. Homeworks showing lack of professional commitment will be associated to a B. The default grade I expect to give is A- .

Office hours

I will be having office hours in my office, by appointment. I can be reached by e-mail at: **mmc287@gmail.com**.

You have a great TA for this course: **Biao**