Macro III

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Course Description:
This course is divided into two parts. Part I presents computational methods that are useful for solving dynamic optimization problems and for computing equilibria. The spirit of this part is to build confidence in using computational methods and recursive methods in particular. Part II considers Applications. The applications start with a substantive question and employ computation to make possible a project that would otherwise be impossible. Applications come from different areas of macroeconomics. One role of the Applications part of the course is to give students an idea of the status of active research areas.

Requirements:
1. Students will be given quite a few homework problems that involve computation. Students may work in two-person teams to do all assignments and presentations.

2. Teams will be asked to present homework results in class. Teams will also present papers from the Applications section of the course. Papers are grouped by theme. Most of the papers make use of computational methods and have an empirical component. A typical presentation will involve presenting (i) the main question of the paper, (ii) the main computational approach and (iii) the main result. The idea is NOT to give a full seminar and NOT to waste time on items that are not central. Instead, quickly (15 minutes or a little longer) present items (i)-(iii) and then give a few interesting comments in regards to these items. An interesting comment might describe what is critical for the main result or indicate the degree to which data properties determine a main quantitative result. The general presentation strategy is a version of “Grasp the large. Let go of the small”.

3. There will be a take-home final exam. You will have a few weeks to complete it. Here are some ground rules. Students can talk about exam problems “in the hallway”. However, all students should do their own work as to (i) writing up answers, (ii) producing algorithm and computer code, (iii) producing numerical answers and (iv) producing any theoretical claims.

References on Computational Methods and Recursive Methods:
Dynamic Economics: Quantitative Methods ... - Adda and Cooper (2003)
Dynamic General Equilibrium Modelling: ... - Heer and Maussner (2005)
OUTLINE:

PART I

1. Background Readings

2. Dynamic Programming
   Finite horizon problems
   Infinite horizon problems

3. Computation of Solutions to DP Problems
   a Finite DP Problems
      * Finite Horizon
      * Infinite Horizon
      * Howard’s Algorithm
   b Continuous DP Problems
      * Working on Bellman’s Equation
        • Discrete Methods
        • Smooth Methods
      * Working on Euler Equations
   c Quadrature and Discretizing a Markov Process
   d Simulating Optimal Decision Rules
   e If Euler Eq. Error is Small, Then How Good is the Approximation?

4. Computing Equilibria in Growth Models
   a time domain methods
   b recursive methods
   c approximating about a steady state
   d models with idiosyncratic and/or aggregate risk

PART II: Applications

1 Macroeconomics with Consumer Heterogeneity:
some basic models of inequality: Huggett (1996)*, Storesletten, Telmer and Yaron (2004)*, Huggett, Ventura and Yaron (2011)*
accounting for changes in inequality: Kaymak and Poshke (2016)*, Hubmer Krusell and Smith (2017)*
facts paper: Guvenen, Karahan Ozkan and Song (2015)

2 Macroeconomics with Firm Heterogeneity:
models: Hopenhayn and Rogerson (1993)*, Midrigan and Xu (2014)*
review paper: Restuccia and Rogerson (2017)

3 Progressive Taxation
sufficient statistic formulae: Diamond and Saez (2011)*, Piketty and Saez (2013a), Piketty and Saez (2013b)
a general top tax rate formula: Badel and Huggett (2017a)*
empirics for elasticities: Saez, Slemrod and Giertz (2012)*

4 Pareto Tail Coefficient Papers:
review/ general interest papers: Gabaix (2009), Jones (2015), Benhabib and Bisin (2017)*
earnings/income/wealth: Gabaix, Lasry, Lions and Moll (2016)
wealth facts: Saez and Zucman (2016)*
Agent Heterogeneity and New-Keynesian Models:
Auclert (2017), McKay and Reis (2016), Kaplan, Moll and Violante (2015),
Broer, Hansen, Krusell, Oberg (2016)
References:


Auclert (2017), Monetary Policy and the Redistribution Channel, manuscript.

Auclert and Rognlie (2017), AER P and P.

Badel and Huggett (2017a) The Sufficient Statistic Approach: Predicting the Top of the Laffer Curve, JME


Benhabib and Bisin (2017), Skewed Wealth Distributions, NBER 21924.

Behabib, Bisin and Zhu (2011), The distribution of wealth ..., Econometrica.

Behabib, Bisin and Luo (2017), AEA: P and P, Earnings Inequality and Other Determinants of Wealth Inequality.

Berger, Guerrieri, Lorenzoni, Vavra (2015), House Prices and Consumer Spending.


Broer, Hansen, Krusell, Oberg (2016), The New Keynesian Transmission Mechanism: A Heterogeneous-Agent Perspective, NBER.

Cagetti and De Nardi (2006), Entrepreneurship, Frictions and Wealth, JPE.


De Nardi (2015), QUANTITATIVE MODELS OF WEALTH INEQUALITY: A SURVEY, NBER.

Den Haan (2011) Solving Models w/ heterogeneous Agents, JEDC.


Gabaix, Lasry, Lions, Moll (2016), The Dynamics of Inequality, Econometrica.
Guner, Lopez-Daneri and Ventura (2014), Heterogeneity and Government Revenues: Higher Taxes at the Top?

Guvenen, Karahan, Ozkan and Song (2016) What do data on Millions of US Workers Reveal about Life-Cycle Earnings Risk?, manuscript


Huggett (1996), Wealth Distribution ..., JME, 38, 469- 94.

Huggett (1997), The One-Sector Growth Model with Idiosyncratic Shocks: Steady States and Dynamics, JME, 39, 385– 403.

Huggett, Ventura and Yaron (2011) Sources of Lifetime Inequality, AER.


Kaplan, Moll and Violante (2015), Monetary Policy According to HANK, NBER 21897

Kaymak and Poschke (2016) , The Evolution of Wealth Inequality Over Half a Century, JME.


Krusell and Smith (1998) JPE.


Meghir and Pistaferri (2010), Earnings, CONsumption and Lifecycle Choices, NBER 15914.


Reiter (2009) Solving Heterogenous agent models ..., JEDC.


Saez and Zucman (2016), Wealth Distribution ..., QJE.


Storesletten, Telmer and Yaron (2004), Consumption and Risk Sharing Over the Life Cycle, JME.


Trabandt and Uhlig (2011), The Laffer Curve Revisited, JME 58, 305-27.

Winberry (2016), Toolbox for Solving and Estimating Heterogeneous Agent Macro Models