

Syllabus

Theory of Income

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This class focuses on basic general equilibrium concepts used in macroeconomics as well as in tools used to analyze dynamic models. I will use them to analyze the neoclassical growth model, OLG models, endogenous growth models, models of investment subject to adjustment cost, and models used to analyze business cycles. Most, but not all, the analysis will be conducted with deterministic models. I will cover as many of these topics as time permit, I do not expect I will cover all of them.

My lectures will follow the notes posted in my web page:

<http://home.uchicago.edu/~falvare/>

Your TAs are Lorenzo Caliendo, <lcaliend@uchicago.edu>, and Nicholas Trachter <trachter@uchicago.edu>.

The grades will be based on a final (90%) and problem sets (10%). Problem sets, can be handed in teams (up to 6)

My lectures will be at 9:00 on Mon., Wed. and some, but not all, Fridays. There is also a review session on Friday afternoon.

I will be away on Wednesday Sept 26th, and Wed. and Friday October 3rd and 5th. The TAs will take over my lectures on Wed. Sept 26th and Oct. 3rd.

Below there is a summary of the contents of each note. The class notes contains exercises to be solved together with the problem sets, also posted in my web page.

While the lecture notes are self-contained, here there is some supplementary reading material.

Math Review. Definition of and Economy Appendices MC, ME, MG, MJ, Mk, ML of MT.

Welfare Theorem. Ch 16 of MT.

Euler Equations and transversality in cts and discrete time, deterministic. Ch 2 LM, Ch 2 RMED, Ch. 2 EG

Dynamic programming (deterministic) Ch 2 RMT, Ch 3 of RMED.

Analysis of dynamics and comparative static of neoclassical growth model: determinants of steady states, rate of convergence, etc (deterministic), effect of transitory vs permanent productivity and government expenditure, etc.. Ch 2 EG, Ch 2 LM, Ch 6 RMED.

Other applications: adjustment cost on investment: q theory, and equilibrium search models. Ch 2 LM, Ch 3 EG.

Introduction to stochastic models and Euler equations. Tobin's q revisited. Asset pricing, Hal's random walk Ch. 7 and Ch 10 RMT.

Computation of linear approximations to resource allocation problems and equilibrium (1 class or less) Ch 4 RMT, Harald Uhlig program at

<http://www.iue.it/Personal/Marimon.BAK/book/main.htm>

References

MT: Microeconomic Theory, Andreu Mas Collé, Michael Whinston, and Jerry Green, Oxford.

RMED: Recursive Methods in Economic Dynamics, by Stokey and Lucas with Prescott. Harvard.

RMT: Recursive Macroeconomic Theory, by L. Ljungqvist and T. Sargent, MIT press.

LM: Lectures on Macroeconomics, by O. Blanchard and S. Fischer. MIT Press.

EG: Economic Growth by Barro and Sala-i-Martin, Mc Graw Hill.

Summary of the contents of the lecture notes:

Lecture Notes 1:

Math review (envelope theorem, hyperplane separation theorem)
(Abstract) Definition of Economy, Competitive Equilibrium (CE), Pareto
Optimal (PO) allocations
1st and 2nd Welfare Theorem

Lecture Notes 2:

OLG pure exchange example
Social Security and 1st welfare theorem

Lecture Notes 3:

PO allocations, CE allocations and Representative Agent.
Aggregation

Lecture Notes 4:

Uncertainty, risk aversion and risk sharing.
Asset Pricing and Arbitrage in 1 period setting.
Complete vs Incomplete Markets.
Risk premium.

Lecture Notes 5:

Euler Equations (EE) and Transversality (TC) for Optimal Control Problems.
Continuous vs Discrete time case. Hamiltonian. Neoclassical Growth Model.

Lecture Notes 6:

Principle of Optimality and Bellman Equations.
Discrete vs Continuous time.

Lecture Notes 7:

Local stability of Optimal Trajectories (discrete and continuous time).

Lecture Notes 8:

Neoclassical Growth Model: Planning Problem vs CE.
Income Taxes and Steady States. Calibration.

Lecture Notes 9:

Adjustment cost and Q-theory

Lecture Notes 10:

Ramsey Taxation in Neoclassical growth model
Tax smoothing and Capital Taxation

Lecture Notes 11:

Dynamics in the Neoclassical Growth model with variable labor supply.
Numerical computations of approximate transitions paths.

Lecture Notes 12:

Stochastic Dynamic programming and stochastic Euler Equations.

Quadratic problems and Certainty equivalence.

Examples: Asset Pricing and Permanent Income Hypothesis.

Problem Sets (there may be more!):

PS 1: OLG models, Privatizing Social Security

PS 2: Aggregation, CE and Risk Sharing

PS 3: No Arbitrage and Asset Pricing.

PS 4: OLG and Asset Pricing.

PS 5: Neoclassical Growth Model and Balanced Growth Paths

PS 6. Continuous time Budget Equations. Local Dynamics in the Neoclassical Growth model and comparative statics.

PS 7. More on local Dynamics in the Neoclassical Growth model and comparative statics. Habit formation.

PS 8: Adjustment cost. Intertemporal elasticity of substitution. Brute force computation of Neoclassical Growth Model.

PS 9: Examples of Dynamic Problems: Lucas-Uzawa growth model, population growth. Fiscal Policy in Steady State in the Neoclassical Growth model. Optimal fiscal policy in an economy without capital.

PS 10: Ramsey Taxation with endogenous growth.

PS 11: Stochastic Euler Equations.