Macroeconomics (300 Level): Introduction, Philosophy and History Lec 1-2

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Prerequisites

i. Knowledge of basic calculus. Can refer to Simon & Blume (1994), Mathematics for Economists, for example or the mathematical appendices of GLS (2020) (course textbook) may also be enough.

ii. Pre-Req: Principles of Macroeconomics.

iii. This is a junior level course in macroeconomics or sophomore level for the ambitious student.

Textbooks

i. **Main Textbook:** Garin, J., Lester, R., & Sims, E. (2020). Intermediate Macroeconomics. Latest version will be available at https://www3.nd.edu/~esims1/gls_textbook.html.

ii. **Reference 1:** Carlin, W., & Soskice, D. W. (2014). Macroeconomics: Institutions, Instability, and the Financial system. Oxford University Press, USA.

iii. **Reference 2:** Chugh, Sanjay. (2015). Modern Macroeconomics. MIT Press.

iv. **Easier Reference:** Jones, C. I. (2018). Macroeconomics, 4th ed (especially good for long run growth and sophomores.).

Syllabus

i. **Introduction (Lec 1-2):** Course Overview, Philosophy of Macroeconomics and History of Macroeconomic Thought (chapters 2-3 from Garin, J., Lester, R., & Sims, E. (2020) henceforth GLS (2020) and chapter 10 from Chugh (2015)).

ii. **Macroeconomic Data (Lec 3):** Defining Macroeconomic Data (chapter 1 from GLS (2020)).

iii. **Hands on Applications (Lec 4-5):** Some hands on exercises in R regarding basic techniques of empirical macroeconomics.

iv. **The Long Run (Lec 6-8):** Stylized Facts about Economic Growth, Understanding Cross-Country Income Differences and Solow Model (chapters 4, 5 and 7 from GLS (2020))

Syllabus

i. **The Microeconomics of Macroeconomics (Lec 9-11):** Dynamic consumption saving decisions and Production, Labor Demand, Investment, Labor Supply and Monopolistic Competition (chapters 9, 10, 12 and 16 from GLS (2020))

ii. **Fiscal Policy (Lec 12-13)**: Basics of Fiscal Policy and Fiscal Policy in Production Economy Model (chapter 13 from GLS (2020)).

iii. **Money (Lec 14)**: What is Money and how do we define it? Money in Production Economy Model (chapter 14 from GLS (2020)).

iv. **Labor Markets (Lec 15-16):** Stylized facts about labor markets and business cycles, efficiency wage theory of unemployment, search, matching and unemployment (chapter 17 from GLS (2020)).

Syllabus

i. **The Medium Run (Lec 17-19):** The Neoclassical Model, Money, Inflation and Interest Rates (chapters 18-22 from GLS (2020)).

ii. **The Short Run (Lec 20-23):** The New Keynesian Demand Side: IS-LM-AD, New Keynesian Supply Side (NKPC), Dynamics in New Keynesian Model: Transition from short run to medium run, Monetary Policy and Zero Lower Bound (ZLB) in the New Keynesian Model, Open Economy New Keynesian Model (chapters 24-30 from GLS (2020)).

Syllabus

i. **Money, Credit, Banking and Macro-Finance (Lec 24-26):** Basics of Banking and Money Creation Process, Financial Crises and the Great Recession (chapters 31-32, 35-37 from GLS (2020)), **Financial Regulation:** Macroprudential Policy, BASEL Accords, QE (Quantitative Easing) and Unconventional Monetary Policy (additional readings number 5-6 and 8-16 from course outline reading list. starred readings are compulsory).

ii. **Review (Lec 27-28):** Course Summary and Current Frontiers in Research.

Evaluation

i. 3 Assignments (21%, 7% each).
ii. 5 Quizzes (39 %, 13% each, worst two quizzes will be dropped, best 3 will count, $n-2$ policy).
iii. Final Exam (40%).
iv. Relative grading with no less than B on mean, unless mean is less than 60%.

LaTeX

i. What is LaTeX and how can I learn it?

ii. LaTeX is a modern typsetting system in which you can typeset equations, graphs, text in article, book or slide format. For example, these slides were typeset in LaTeX.

iii. Countless online resources are available. You can also use https://www.overleaf.com/ or https://www.sharelatex.com/ for a start.

iv. Why is it useful?

Special advice for potential graduate students

i. Math, coding and LaTeX.

ii. Take Physics, CS and Math courses if possible.

iii. Math: Take at least 1 course on real analysis. Take 2 courses on linear algebra, at least 1/2 on mathematical statistics, 1 on probability theory and 1 on stochastic processes.

iv. Take calculus, multivariable calculus, matrix calculus, 1 course on differential equations and a course on optimization if possible.

v. Also study numerical analysis and difference equations for macro. You can ask me for further guidance any time.

Special advice for potential graduate students

i. Learn to code in C++ (low level language), Julia (highly recommend), R (fantastic for statistics packages and graphics) and may be Python (general purpose). You should also know how to use stata and LaTeX. At the very least, you should know stata, LaTeX, R and Julia.

ii. Learn the basics of stata since it is commonly used but try to rely more on R and less on stata.

Defining Macroeconomics

i. Macroeconomics is the study of collections of people and firms and how their interactions through markets determine the overall economic activity in a country or region or even the world economy as a whole.

ii. Why have some countries experienced rapid growth in incomes over the past century while others have not?

iii. Why do some countries have high rates of inflation while others maintain stable prices?

iv. Why do all countries experience recessions and depressions and how can government policy dampen these business cycle fluctuations?

v. What is the impact of globalization on national and world level income inequality levels?

Philosophy of Economics: Scientific Status of Economics

i. Science or pseudo-science? In what sense is economics a science, if at all?

ii. What is it which makes economics a science? Scientific method: Hypothesis generation, testing and falsification (Karl Popper). Rodrik suggests otherwise for economics.

iii. Can we really be value neutral and objective as self-reflecting creatures dealing with social reality, which partly consists of our own ideas, which are themselves socially constructed (Hegel)?

iv. **Optional:** Can read Dani Rodrik's book "Economics Rules" and Ariel Rubinstein's book "Economic Fables" to get slightly different views on economics as a science.

Philosophy of Economic Models 1: Borges' Story

"In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast Map was Useless, and ... that they delivered it up to the Inclemencies of Sun and Winters. In the Deserts of the West, still today, there are Tattered Ruins of that Map, inhabited by Animals and Beggars..." (On Exactitude in Science Jorge Luis Borges, Collected Fictions, translated by Andrew Hurley).

Philosophy of Economic Models 1: What are models?

i. "All models are wrong. Some are useful"
ii. Models are abstractions or simplified representations of reality which are designed to answer very specific and well defined questions.
iii. Models act as labortaries for economists, allowing us to conduct counter factual exercises and scientific experiments, which are otherwise impossible in social sciences due to technical implausibility or ethical concerns.

Philosophy of Economic Models 2: Prediction versus Identification of Causal Mechanisms

i. Prediction versus identification of causal mechanisms.
ii. Milton Friedman's methodological positivism paper: prediction is crucial, assumptions do not matter (Reading Number 1 from course outline).
iii. Billiard balls example of Friedman.

Philosophy of Macroeconomics 1: Lucas Critique and Microfoundations

i. Lucas critique: policy relevant parameters are not invariant to any systematic change in policy which limits the predictive and explanatory power of econometric methods based on past data.

ii. Need for micro founded models with forward looking, optimizing behavior which take optimal reactions of agents to any systematic change in economic policy into account. Such models are robust to Lucas critique and enable valid policy analysis and counterfactual analysis.

iii. Readings 3 and 4 from course outline.

Philosophy of Macroeconomics 2: Emergence: Is all of macro just applied micro?

i. Emergent behavior and different levels or hierarchy of explanations. Emergence means the system at some level of aggregation has qualitative properties which are not shared by any of the constituent parts of system.

ii. Examples: market system, world wide web, consciousness, foams and complex liquids (shaving foam, ketchup, sand), ripple patterns in sand dune, water crystal formation etc.

iii. Does the distinction between micro and macro make sense? Is all of macro applied micro? Can it be so?

History of Macroeconomic Thought 1: The Early Period 1936-1968

i. Macroeconomics as a distinct field did not exist until the 1930s with the publication of John Maynard Keynes' *The General Theory of Employment, Interest, and Money*.

ii. John Hicks authored a graphical interpretation of Keynes' work which came to be known as IS-LM model Hicks (1937).

iii. 1950's: Advances in computational power due to mainframe computers allowed development of Keynesian macroeconometric models for positive economic analysis as well as normative, policy advice.

iv. James Tobin, Robert Solow, Paul Samuelson and Lawrence Klien were some major early Keynesian economists.

History of Macroeconomic Thought 1: Structure of Keynesian Macroeconometric Models

i. $x_{1,t} = \alpha_1 x_{1,t-1} + \alpha_2 x_{2,t} + \alpha_3 x_{3,t} + ... + \alpha_{policy,\, t-1}\, policy_{t-1} + ..$

ii. $x_{2,t} = \beta_1 x_{2,t-1} + \beta_2 x_{1,t} + \beta_3 x_{3,t} + ... + \beta_{policy,\, t}\, policy_{t-1} + ..$

iii. $x_{3,t} = ...$

iv. $policy_t = ...$

v. ....

vi. ...

History of Macroeconomic Thought 1: The Early Period 1936-1968

i. The MIT/Penn/Federal Reserve Board model took center stage.

ii. In the 1950's, Lawrence Klein and his colleagues developed large, sophisticated econometric models to forecast the path of the economy at Cowles' foundation, Yale.

iii. After estimating these models, economists and policy makers could predict the dynamic path of economy after any shock such as oil shock or monetary policy shock.

iv. View of macroeconomic policy as a mechanical and auto-pilot like implementation of insights from estimated policy coefficients α's from these statistical models.

History of Macroeconomic Thought 1: The Early Period 1936-1968

i. During the 1950's and 1960's, US inflation was low and stable at around 2.2 percent, whereas growth rates averaged about 4.3 percent per year, in part due to success of Keynesian policy.

ii. In fact, this was the Golden Age of US economy and many economists even believed that the problem of business cycle fluctuations had been solved.

iii. Confidence in the Philips curve relationship was high.

History of Macroeconomic Thought 1: The Early Period 1936-1968

i. Phillips Curve: Phillips (1958) showed a robust downward-sloping relationship between inflation and unemployment rate.

ii. Economists reasoned that policy makers could tinker with monetary and fiscal policy to achieve a target rate of inflation and unemployment. The trade off was that if unemployment increased during a recession, the central bank could increase the money supply thereby increasing inflation but lowering unemployment.

iii. Economists thought that the trade off between unemployment and inflation was clear, predictable and exploitable by policy makers.

History of Macroeconomic Thought 1: The Early Period 1936-1968

i. Some early critics of Keynesian economics remained skeptical of the Philips curve.

ii. Milton Friedman: In order to achieve a lower U, the central bank would need to cut interest rates, thereby increasing money supply and inflation. In the medium to long run, this would increase nominal interest rates i.

iii. To keep U at this low level, there would need to be an even bigger expansion of the money supply and more inflation, leading to an inflationary spiral where more and more inflation would be needed to achieve the same level of U.

History of Macroeconomic Thought 2: Intellectual Conflict and the Rational Expectations Revolution (1968-1982)

i. There was no microeconomic behavior at the foundation of first-generation Keynesian models; instead, decision rules for investment, consumption, labor supply, etc. were assumed rather than derived.

ii. Early Keynesian models were also analyzed in partial equilibrium, so, for instance, a consumer's optimal consumption-savings schedule was derived taking the interest rate as given.

iii. Econometric forecasting continued to be conducted in this *ad hoc framework.*

History of Macroeconomic Thought 2: Intellectual Conflict and the Rational Expectations Revolution (1968-1982)

i. **Stagflation** of the late 1970's and early 1980's: Inflation was as high as above 10% during 1979-1983 and growth was only about 0.5%, violating the Philips curve and leading to failure of Keynesian macroeconometrics.

ii. **Lucas Critique:** The relationship between macroeconomic variables cannot be assumed to be invariant to policy, but instead actually depends on policy i.e $\alpha_{policy,\,t-1} = \alpha_{policy,\,t-1}\left(policy_{t-1}\right)$.

History of Macroeconomic Thought 2: Intellectual Conflict and the Rational Expectations Revolution (1968-1982)

i. **Rational Expectations Revolution:** John Muth, Lucas, Tom Sargent and others.

ii. Model consistent expectations.

iii. REH $\Longrightarrow$ predictable changes have no impact. For example if everyone anticipates that money supply will increase by $x\%$, relative prices will not change and no stimulation of output can come from expansionary monetary policy.

iv. **Time Inconsistency Problem:** what is optimal in a static sense is not optimal in a dynamic sense and any policy designed to trick people (even if it is for their own good) is doomed to fail.

History of Macroeconomic Thought 2: Example of Time Inconsistency

i. For example, governments have an incentive to promise to keep the tax rate on capital gains low to encourage capital investment. Once the capital goods are completed, the government has an incentive to renege on its promise and tax the capital gains.

ii. Since a tax on a perfectly inelastic good like capital causes no dead weight loss, even a perfectly benevolent government would have an incentive to renege on its promise.

iii. Rational individuals would anticipate the government's incentive structure and not ever invest in capital goods.

History of Macroeconomic Thought 3: Modern Macroeconomics (1982-2020)

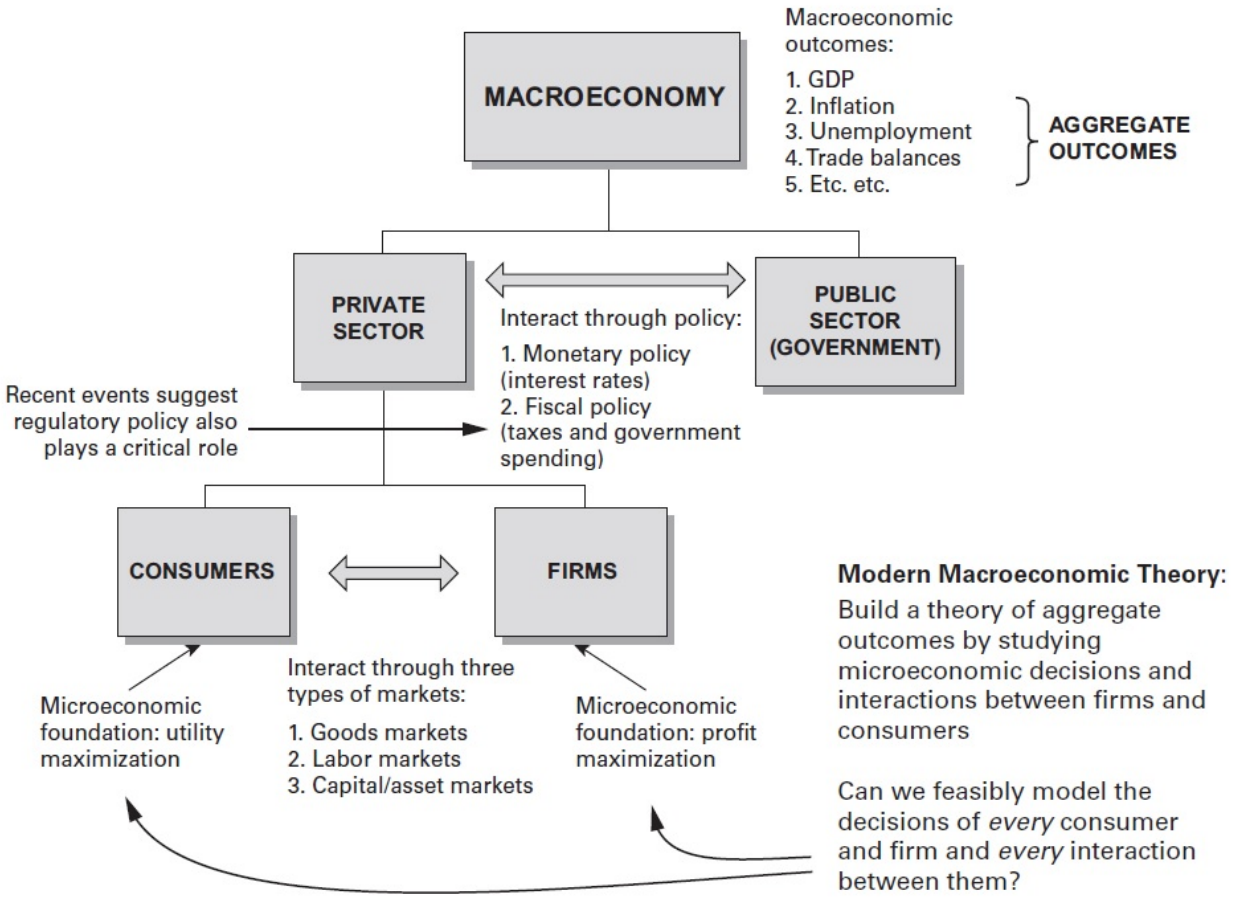
i. Real Business Cycle Theory: no role of stabilization policy and no price rigidities.

ii. New Keynesian Models: sticky prices, role of policy.

iii. Dynamic Stochastic General Equilibrium Models (DSGE) can be of RBC or NK variety. They can have qualitative and quantitative goals and are heavily used by central banks.

iv. All of economics including macroeconomics uses the tools of microeconomics due to the *microfoundations revolution.*

Schematic of Modern Macroeconomics



Thank you