

MACROECONOMICS

The convenor of the course, who can be contacted in the event of any questions is John Muellbauer (john.muellbauer@economics.ox.ac.uk)

Aims and Objectives

The lectures in macroeconomics are designed to give students an overview of the main views of the subject, which may be broadly defined as the study of the economy as a whole. Last year the course was significantly restructured, to emphasize general equilibrium issues in a logical sequence. The logic goes from equilibrium growth models to their dynamic stochastic extensions in a classical setting. Various relaxations of the classical setting towards greater realism about markets, including wage and price stickiness, and asset and credit market problems are then introduced.

In Michaelmas term, the lectures by Mary Gregory will introduce students to some of the main advances in macroeconomics of the last 20 years, exploring the roles of explicit optimising microfoundations and of expectations-formation. In particular they will focus on the implications for general equilibrium system behaviour.

Godfrey Keller will present tools of dynamic optimization, which are applied to macroeconomics and will discuss the inter-temporal approach to macroeconomics, focusing on overlapping generations models.

Simon Wren-Lewis will present key aspects of a number of intertemporal models of closed and open economies, where prices are assumed to be fully flexible. These include simple exogenous and endogenous growth models, a closed and open economy model based around ‘infinitely lived’ intertemporal consumers, the overlapping generations model, the real business cycle model, and the new open economy model. This course segment ends with a discussion of the long run determination of prices.

In Hilary Term, Kevin Roberts will examine the microfoundations of wage rigidity, examining unemployment in models with price flexibility, efficiency wage models, and search equilibria.

John Muellbauer discusses micro-foundations under uncertainty and empirical evidence for the determination of consumption, employment, and investment. Euler equation and solved out models will be contrasted. Asset prices and credit receive special attention, given their roles in understanding the transmission mechanism of monetary policy and of other shocks.

In the second half of Hilary Term, David Vines and Richard Mash will present short-run macroeconomics in a New Keynesian framework. Short run price stickiness with Calvo pricing will be introduced. Taylor rules for monetary policy and their relation to optimal policy, time inconsistency (inflation bias and stabilisation bias) will be discussed. Some open economy and fiscal policy issues will also be introduced.

Lectures are given on Wednesday, Thursday, and Friday, 11:30-1:00 during Michaelmas and Hilary Terms. There are also classes each discussing problems on the material of about two weeks’ lectures; students are expected to attend all the lectures and to hand in solutions to the problems prior to the class. Relevant reading will be indicated by the lecturers. The examination will focus on the topics introduced in the lectures, and include problem questions similar to those set in the problems classes. Revision classes are held in Trinity Term.

The lecture courses, their current lecturers, and the topics they cover are as follows:

Michaelmas Term		
Macroeconomics I Introduction to Macroeconomic Ideas W. Th. F. 11:30-1	wks. 1-2	Mary Gregory Lecture Theatre, Manor Road Building

The first lecture will introduce the structure of the course for the term, characterising in broad terms the main alternative approaches to macroeconomics and their implications. The remainder of Macroeconomics I will focus on developments leading to the ‘new’ Keynesian-Neo-classical synthesis’.

Tracing the developments through New Classical Macroeconomics the main perspective will be the view of the macroeconomy as a dynamic general equilibrium system. The main elements to this analytical approach are: optimising agents (households and firms); the primitives of preferences and technology; forward-looking decision-making; a stochastic world; competitive markets with full market-clearing. The lectures will show how this approach has modified the analysis of both consumption and investment, producing forward-looking theories of both of these two core macroeconomic aggregates, and also how it has changed views on the functioning of the labour market. Rational expectations will be a key element. The New Keynesian contribution will be traced through the introduction of imperfect competition leading to models of sticky prices with staggered price setting.

Reading

For those wishing to review the material at an undergraduate level the best presentation is Barro, R.J., *Macroeconomics*; now 5th edition.

The course will be closest to parts of the exposition in Sargent, T., *Macroeconomic Theory*, 2nd edition, ch.12, 14, 16, and 18.

Standard graduate macro texts which will be helpful are

Scarth, W.M. *Macroeconomics: An Introduction to Advanced Methods*, 2nd ed.

Romer, D., *Advanced Macroeconomics*, 2nd. Ed..

Blanchard, O. and S. Fischer, *Lectures on Macroeconomics*, especially chs.6, 8.

Michaelmas Term		
Macroeconomics II Dynamic Optimisation W. Th. F. 11:30-1	wks. 3-4	Godfrey Keller Lecture Theatre, Manor Road Building

Techniques of dynamic optimisation, dynamic programming and optimal control.

Reading

R. J. Barro and X. Sala-i-Martin, *Economic Growth*, McGraw-Hill, 1995 (Chapters 1, 2 and Appendix on Mathematical Methods).

Chiang, A. C. *Elements of Dynamic Optimization*, McGraw-Hill, 1992 (Especially Part 3).

Dixit, A. *Optimization in Economic Theory* (2nd edition), Oxford University Press, 1990 (Chapters 10 and 11).

Michaelmas Term		
Macroeconomics III Intertemporal Models W. Th. F. 11:30-1	wks. 5-8	Simon Wren-Lewis Lecture Theatre, Manor Road Building

The course considers a number of handouts, each of which outlines either a model or a topic. The Solow model (handout SG) defines two issues that carry over into later handouts. The first is what determines the capital stock and output in the long run, which in turn depends on how savings and investment interact. An issue that continues into handouts IR, OG and PY is whether there might be a role for government to encourage or discourage saving. The second issue is whether changes in saving lead to temporary or permanent increases in the growth rate, which becomes the focus of the handout EG on endogenous growth. EG looks at three, apparently very different mechanisms (human capital formation, investment in R&D and learning by doing), that lead to models with quite similar structures and implications.

At the heart of modern macroeconomics is an analysis of the intertemporal consumer. The key points of this analysis will be familiar to many of you from the simple two period model, and so to some extent handout IC is a restatement of those ideas in models involving many periods. However, we do look at one particular point that is best illustrated in a multi-period model, which is the power of expectations in models of this class. The handout SO on the small open economy shows how the Intertemporal consumer, if representative, in effect gives us a complete macromodel, if we ignore the diversity of goods produced in the world (we assume a single good, so there is no exchange rate) and assume perfect capital markets. Retaining the assumption of fixed labour supply means that the world real interest rate fixes domestic production, so all the action is with the consumer, and their saving behaviour becomes a model of the current account. We look at how this economy will handle the discovery of a finite resource like oil. We add for the first time in these handouts a government sector, and ask three questions that will recur in later handouts: what is the impact of a shift in the timing of taxes (Ricardian Equivalence), what is the impact of public debt, and how do changes in government spending influence the economy?

The Ramsey Intertemporal model (handout IR) replaces the fixed savings propensity assumption in the Solow model with the 'infinitely lived' Intertemporal consumer. This leads to a very distinctive analysis of macro dynamics, where consumption becomes a 'jump' variable unshackled by history. It implies a clear sequence of events that might result from a large increase in the supply of labour in the global economy, of the kind that many people argue has taken place with the emergence of China and India as industrial economies. We introduce government again, and see how a closed economy analysis differs from the small open economy.

The Ramsey model assumes consumers are infinitely lived, an assumption that can be justified but which many are uncomfortable with. The next two handouts, in contrast, assume finite lives. Handout OG outlines the overlapping generations model, which uses the two period intertemporal model at its heart. This means that one period in the model last decades, not quarters. We first look at the implications of overlapping generations for our small open economy, and then for the closed (global) economy. In many ways the model is much more interesting than its infinite life counterpart: aggregate savings are no longer optimal, Ricardian Equivalence no longer holds, we can look at demographic effects on the current account, and the impact of unfunded pension schemes. However the fact that a single period last for decades means that other issues are more difficult to address. In handout PY the model of perpetual youth brings our time period back to a quarter or a year. This allows us to model in a practical way the impact of debt and government spending on the economy (in turns out that both crowd out capital). Handout PY ends with a few notes on discounting, and its crucial role in the debate over climate change.

The Real Business Cycle model, as outlined in RB, is in essence just the Ramsey model with endogenous labour supply, which until now we have been treating as exogenous. After checking that the key welfare result from the Ramsey model still holds, we focus on the impact of persistent but temporary productivity shocks on the economy. The 'new open economy model' in handout NO also introduces endogenous labour supply, but it also makes one additional and crucial addition to the small open economy model analysed so far: we allow different countries to produce different goods, which introduces for the first time a meaningful (i.e. non-constant) measure of the real exchange rate. We provide a microfoundation for the well known 'Swan diagram' relating the real exchange rate and output. We relate this analysis to the empirical literature which has attempted to calculate 'equilibrium' exchange rates.

In this new open economy model (which was originally introduced by Obstfeld and Rogoff), consumers in different economies consume identical baskets of goods, but are linked to their own economies through the income they receive from production. The first assumption means that PPP in terms of consumer prices continues to hold. We look at two reasons why this will not be true in practice. The first is because of non-traded goods, which is the subject of handout NT. The second is 'home bias', which is outlined in HB. This handout also discusses UIP, which tells us how real interest rates and real exchange rates are related, and becomes useful when PPP no longer holds. It also outlines how Uncovered Interest Parity can become International Risk Sharing, which breaks the link between the consumer and national income. All the models considered above involve real variables.

As a prelude to models based of sticky prices discussed in later parts of MPhil macro, handout MN considers some general issues concerning the long run determination of the price level. In particular, is money essential in considering nominal models, or can we instead work with a 'cashless economy', as recently suggested by Michael Woodford? The concepts of neutrality and super neutrality will be considered, as well as whether

nominal anchors are necessary or desirable. Finally we look at the role that public debt may have in determining prices, which addresses the recent and highly controversial Fiscal Theory of the Price Level.

Reading

Obstfeld, M and Rogoff, K Foundations of International Macroeconomics, MIT Press

Romer, D Advanced Macroeconomics, McGraw-Hill

Blanchard, O and Fischer, S Lectures on Macroeconomics, MIT Press

Michaelmas Term		
How to write an MPhil thesis M. 11:15-12:45, 2:30-4:30 T. 11:15-12.15 W. 11:15-12.45 Th. 11:15-12:45	 wk. 9	 Paul Klemperer and others Lecture Theatre Manor Road Building

These classes discuss ways to begin to do research, and how to write a thesis. Materials will be handed out by the lecturers.

Hilary Term		
Macroeconomics IV Microfoundations W. Th. F. 11:30-1	 wks. 1-2	 Kevin Roberts Lecture Theatre, Manor Road Building

This course examines macroeconomic models with an explicit microeconomic structure based upon the rationality of agents; these can be used to explain short-run macroeconomic phenomena that are at centre stage in Keynesian macroeconomics. The introduction of market failures into a competitive microeconomic model will be shown to produce elements of wage-rigidity with macroeconomic consequences. After a consideration of optimal (first-best) wage contracts in an uncertain environment (lecture 1), we will examine efficiency wages derived within optimization models based upon asymmetric information (lectures 2 and 3). We will then examine whole economy models where coordination failures may arise (lecture 4). This leads to an investigation of matching models where economic activity is subject to frictions (lecture 5) and where money can have an efficiency role as a medium of exchange (lecture 6).

Hilary Term		
Macroeconomics V Consumption and Investment W. Th. F. 11:30-1	 wks 3-4	 John Muellbauer Lecture Theatre, Manor Road Building

One approach to macroeconomics is the bottom up, sectoral approach emphasising micro-foundations of household and firm decision making under uncertainty. These lectures aim to integrate empirical evidence with the theory, and to throw light on the monetary transmission mechanism and how it is likely to vary with institutional features of economies. The role of asset prices and credit in the transmission of changes in policy rates will be discussed. The consumption CAPM and empirical asset price puzzles will be analysed. The implications of uncertainty for consumption and investment will be highlighted. Euler and solved out equations for consumption and investment will be compared. The analysis of the implications of credit market developments and their interactions with housing help to understand current controversies about the role of house price fluctuations in explaining consumption, and the potential impact of credit shocks on economic activity.

Hilary Term		
Macroeconomics VI Policy Macro I W. Th. F. 11:30-1	wks. 5-6	David Vines Lecture Theatre, Manor Road Building

Hilary Term		
Macroeconomics VII Policy Macro II W. Th. F. 11:30-1	wks. 7-8	Richard Mash Lecture Theatre, Manor Road Building

This course will look at modern approaches to the conduct of monetary policy in the presence of both forward-looking behaviour by economic agents, and wage-and-price stickiness. In doing this it aims to provide an overview of key topics from the recent New Keynesian monetary policy literature.

We will begin with the Cagan critique of fixing the money supply as an anchor for monetary policy in the presence of wage-and-price stickiness, and will study the use of a Taylor rule as a way of stabilising an economy with such features. We then consider the *optimal* speed of disinflation in the face of an inflation shock in such an economy. We repeat this analysis in the presence of forward-looking agents. Next these ideas will be generalised to a discussion of the conduct of macroeconomic policy in an open economy. Following on from this we will consider the time-inconsistency problem and the issue of “inflation bias” in macroeconomic policy.

We then go on to consider how the models used to examine these issues can be given more serious microfoundations. Finally we will examine the optimal conduct of monetary policy under both discretion and commitment, how the difference between discretion and commitment can give rise to a “stabilisation bias”, and how an optimal delegation scheme can be devised, of a kind which would correct this bias.

Throughout this course of lectures there will be an emphasis on the data consistency of the models discussed, and on the methods of solutions of the models presented, in both continuous time and discrete time.

Examination Rubric

The rubric gives general guidance on the topics on which questions may be set, but candidates will not be expected to answer questions from all parts of the field.

Investment, consumption, and the demand for money and other assets. The IS-LM and fixed price models. Inflation and unemployment. Rational expectations. Open economy models. Overlapping generations models. Price formation, price stickiness, and the effects of imperfect information. Monetary and fiscal policy. Business cycles and economic growth.