

Department of Economics, Norwegian University of Science and Technology

Ph.D. course:

Macroeconomics and monetary policy



Time

10 to 14 October, 2011

Lectures: 09:00-10:30 and 11:00-12:30.

Lecturer

professor Antti Ripatti, University of Helsinki

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Aims and content

The aim of this course is to enable students to build macroeconomic models using the The New Keynesian approach to macroeconomics and Dynamic Stochastic General Equilibrium (DSGE) models.

The course follows chapters 1–5, 7 of Jordi Galí's book "[Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework](#)". It shows why monetary policy is neutral in classical, RBC-type macro models and explains cases where it is not. The classical model is augmented with imperfect competition and price rigidities leading to the canonical New Keynesian model. Next, various monetary policy rules are studied in this framework. Discretion and commitment in monetary policy making is introduced. The course also gives a glance at open economy dimension of monetary policy.

Credits and evaluation

The course credits are 7.5 ECTs.

Evaluation will be based on class participation as well as a research paper, due on 1 February 2012. Students must write a paper of 4000 to 6000 words that develops their own empirical or theoretical research on a topic related to the course. Students must submit a one-page proposal regarding what they plan to do no later than 1 November 2011 for approval by the instructor.

Local organizer

Professor [Gunnar Bårdsen](#). Email: Gunnar.Bardsen@svt.ntnu.no

Participation

Application deadline is September 15. Send application to econ@svt.ntnu.no. There is no course fee. Funds are available to support travel and accommodation for external participants.

Outline

(This is subject to revisions!)

Technical background: Blanchard&Kahn condition, generalizations, introduction to Dynare,

Dynare User Guide (see www.dynare.org)

Introduction: RBC revolution, empirical regularities, Galí ch. 1

Classical model: Introducing money into simplified RBC model, optimal monetary policy

Galí ch. 2;

ch 2 in Walsh (2003) *Monetary Theory and Policy*, 2nd Edition

The basic new Keynesian model: Imperfect competition, price rigidities

Galí ch. 3,

Richard Clarida & Jordi Galí & Mark Gertler, 1999. "The Science of Monetary Policy: A New Keynesian Perspective," *American Economic Association*, vol. 37(4), pages 1661-1707,

Monetary policy rules in the new Keynesian model

Monetary policy rules, characterising optimal rule, Galí ch. 4

Monetary policy trade-offs: discretion vs. commitment: Trade-off between stabilisation (of real economy) and inflation, discretion vs. commitment

Galí ch. 5,

Kydland, Finn and Edward Prescott (1977) "Rules Rather than Discretion: The Inconsistency of Optimal Plans", *Journal of Political Economy*, vol. 85, no. 3, pp. 473–91,

Walsh book (see above) ch. 8.

Monetary policy in an open-economy setting: Role of exchange rates

Galí ch. 7

Jordi Galí & Tommaso Monacelli, 2005. "Monetary Policy and Exchange Rate Volatility in a Small Open Economy," *Review of Economic Studies*, Blackwell Publishing, vol. 72(3), pages 707-734, 07.

Computations and exercises

Modern quantitative macroeconomics relies on computation since analytical solutions may be provided rarely. The assignments contain both analytical and computational exercises. We recommend using Dynare that is a Matlab library to solve standard dynamic models using perturbation methods. Octave is an opensource [Matlab](http://www.gnu.org/software/octave/) 'clone' and provides useful alternative if you do not have Matlab. Follow the [Dynare](http://www.dynare.org) (<http://www.dynare.org>) instructions (<http://www.dynare.org/DynareWiki/DynareOctave>) to [install Dynare with Octave](#). We have tested both Windows and Ubuntu versions of Octave/Dynare and both of them do the job; those using Ubuntu may enjoy better user interface

How to Prepare for the Course

To a large extent, dynamic macro models utilize difference equations. Therefore, it is important to develop a routine in calculating and solving difference equations, and familiarize oneself with lag operators (and, possibly, z-transform). A good source for difference equations and lag/lead operators is Sargent's old book (Thomas J. Sargent, *Macroeconomic Theory*, 2nd edition, Academic Press, San Diego 1987; Chapter IX. The first edition has an identical chapter!). Hamilton's *Time Series Analysis*, chapters 1-2 also contain most of the results needed.

You will also need a basic knowledge of dynamic optimization, calculus of variations, optimal control theory, and dynamic programming. In particular, the knowledge of the principles of dynamic programming (e.g. chapter 2 in Ljungqvist and Sargent (2004) *Recursive Macroeconomic Theory*) is essential. Other sources are Kamien, M., and Schwartz, N., *Dynamic optimization*, chapters 1-3, 9, 17, part II, and appendixes A and B; or de la Fuente, Angel, *Mathematical Methods and Models for Economists*, Cambridge 2000. I also assume that you are familiar with neoclassical growth model that is the workhorse of the RBC models.

I will extensively use the Dynare toolbox in solving models using the perturbation method (see more from the Syllabus). I recommend that you familiarize yourself with Dynare by redoing some of its examples listed in the User Guide.