Universitat Pompeu Fabra
Barcelona GSE
Spring 2011
Jordi Galí

Advanced Macroeconomics II (second half)
Monetary Policy, Inflation, and the Business Cycle

Mo-Tu, 9-11am, room 20.053

This part of the course will provide an overview of the literature on monetary aspects of the business cycle, with a special emphasis on optimizing sticky price models, their associated inflation dynamics, and their implications for monetary policy. We will cover both the main theoretical models as well as some relevant empirical evidence. Lecture notes and problem sets will be handed out during the course. The TA for the course will be Lien Laureys.

The list of topics covered, together with a basic reading list is provided below, with key articles marked with an asterisk.

The main textbook for the course is:

Galí, Jordi (2008): *Monetary Policy, Inflation, and the Business Cycle. An Introduction to the New Keynesian Framework*, Princeton University Press (Princeton, NJ).

An excellent, but more advanced textbook is:

Woodford, Michael (2003): *Interest and Prices: Foundations of a Theory of Monetary Policy*, Princeton University Press (Princeton, NJ).

A third textbook covering a wider range of topics on monetary economics is:

Walsh, Carl E. (2010): *Monetary Theory and Policy*, Third Edition, MIT Press (Cambridge, MA)

A Classical Monetary Model

Households. Firms. Equilibrium. Neutrality. Monetary policy rules and price level determination. Sources of non-neutrality. Optimal monetary policy. Empirical assessment.

(*) Galí, chapter 1-2
Walsh, chapter 1-3
Woodford, chapters 1-2.

Cooley, Thomas F. and Gary D. Hansen (1995): "Money and the Business Cycle," in in T. Cooley ed.: *Frontiers of Business Cycle Research* (Princeton University Press).

Cooley, Thomas F. and Gary D. Hansen (1989): "Inflation Tax in a Real Business Cycle Model," *American Economic Review* 79, 733-748.

Chari, V.V., and Patrick J. Kehoe (1999): "Optimal Fiscal and Monetary Policy," in in J.B. Taylor and M. Woodford eds., *Handbook of Macroeconomics*, volume 1C, 1671-1745.

Correia, Isabel, and Pedro Teles (1999): "The Optimal Inflation Tax," *Review of Economic Dynamics*, vol. 2, no.2 325-346.

The Basic New Keynesian Model

The Calvo model. The New Keynesian Phillips curve. The output gap and the natural rate of interest. The effects of monetary policy shocks. The Effects of Technology Shocks. Micro and macro evidence on the New Keynesian Phillips Curve.

(*) Galí, chapter 3.
Walsh, chapters 1, 6 and 8.
Woodford, chapter 4.

(*) Yun, Tack (1996): "Nominal Price Rigidity, Money Supply Endogeneity, and Business Cycles," *Journal of Monetary Economics* 37, 345-370.

King, Robert G., and Alexander L. Wolman (1996): "Inflation Targeting in a St. Louis Model of the 21st Century," *Federal Reserve Bank of St. Louis Review*, vol. 78, no. 3. (NBER WP #5507).

Rotemberg, Julio (1982): "Monopolistic Price Adjustment and Aggregate Output," *Review of Economic Studies,* 159, 517-531..

Chari, V.V., Patrick J. Kehoe, Ellen R. McGrattan (2000): "Sticky Price Models of the Business Cycle: Can the Contract Multiplier Solve the Persistence Problem?," *Econometrica*, vol. 68, no. 5, 1151-1180.

Wolman, Alexander (1999): "Sticky Prices, Marginal Cost, and the Behavior of Inflation," *Economic Quarterly*, vol 85, no. 4, 29-48.

Romer, Christina, and David Romer (1989): "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz," *NBER Macroeconomics Annual*, 4, 121-170.

(*) Christiano, Lawrence J., Martin Eichenbaum, and Charles L. Evans (1998): "Monetary Policy Shocks: What Have We Learned and to What End ?," in J.B. Taylor and M. Woodford eds., *Handbook of Macroeconomics*, volume 1A, 65-148. (also NBER WP 6400).

Peersman, Gert and Frank Smets (2003): "The Monetary Transmission Mechanism in the Euro Area: More Evidence from VAR Analysis," in Angeloni et al. (eds.) *Monetary Policy Transmission in the Euro Area,* Cambridge University Press, (also ECB WP no. 91).

Galí, Jordi (1992): "How Well Does the IS-LM Model Fit Postwar U.S. Data ?," *Quarterly Journal of Economics* 709-738.

Galí, Jordi (1999): "Technology, Employment, and the Business Cycle: Do Technology Shocks Explain Aggregate Fluctuations?," *American Economic Review*, vol. 89, no. 1, 249-271.

Álvarez, Luis J. (2006): "Sticky Prices in the Euro Area: A Summary of New Micro Evidence," *Journal of the European Economic Association*, vol. 4, no. 2-3, 575-584.

Bils, Mark and Peter J. Klenow (2004): "Some Evidence on the Importance of Sticky Prices," *Journal of Political Economy*, vol 112 (5), 947-985.

(*) Dhyne, Emmanuel et al. (2006): "Price Changes in the Euro Area and the United States: Some Facts from Individual Consumer Price Data," *Journal of Economic Perspectives*, vol. 20, no. 2, 171-192.

Mackowiak, Bartosz and Frank Smets (2008): "On the Implications of Microeconomic Price Data for Macroeconomic Models," in J. Fuhrer et al. (eds) *Understanding Inflation and the Implications for Monetary Policy: A Phillips Curve Retrospective*, MIT Press, Cambridge, Massachusetts, 2009.

Nakamura, Emi and Jón Steinsson (2008): "Five Facts about Prices: A Reevaluation of Menu Cost Models," *Quarterly Journal of Economics*, vol. CXXIII, issue 4, 1415-1464.

(*) Galí, Jordi and Mark Gertler (1998): "Inflation Dynamics: A Structural Econometric Analysis," *Journal of Monetary Economics*, vol 44, no. 2, 195-222.

Galí, Jordi, Mark Gertler, David López-Salido (2001): "European Inflation Dynamics," *European Economic Review* vol. 45, no. 7, 1237-1270.

Mankiw, N. Gregory and Ricardo Reis (2002): "Sticky Information vs. Sticky Prices: A Proposal to Replace the New Keynesian Phillips Curve," *Quartely Journal of Economics*, vol. CXVII, issue 4, 1295-1328.

Special issue of the *Journal of Monetary Economics* on "The Econometrics of the Pricing Equation," September 2005.

Monetary Policy Design in the Baseline Model

A benchmark case. Optimal monetary policy and its implementation. The Taylor Principle. Simple Monetary Policy Rules. Second order approximation to welfare losses. Evidence on Monetary Policy Rules.

(*) Galí, chapter 4.

Woodford, chapter 6.

Yun, Tack (2005): "Optimal Monetary Policy with Relative Price Distortions" *American Economic Review*, vol. 95, no. 1, 89-109

Blanchard, Olivier and Charles Kahn (1980), "The Solution of Linear Difference Models under Rational Expectations", *Econometrica*, 48, 1305-1311

Bullard, James, and Kaushik Mitra (2002): "Learning About Monetary Policy Rules," *Journal of Monetary Economics*, vol. 49, no. 6, 1105-1130.

(*) Woodford, Michael (2001): "The Taylor Rule and Optimal Monetary Policy," *American Economic Review* 91(2): 232-237 (2001).

Rotemberg, Julio and Michael Woodford (1999): "Interest Rate Rules in an Estimated Sticky Price Model," in J.B. Taylor ed., *Monetary Policy Rules*, University of Chicago Press.

Clarida, Richard, Jordi Galí, and Mark Gertler (2000): "Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory," *Quarterly Journal of Economics*, vol. 105, issue 1, 147-180.

(*) Taylor, John B. (1998): "An Historical Analysis of Monetary Policy Rules," in J.B. Taylor ed., *Monetary Policy Rules*, University of Chicago Press.

Orphanides, Athanasios (2003): "The Quest for Prosperity Without Inflation," *Journal of Monetary Economics* 50, 633-663

Extensions of the Baseline Model

Cost-push shocks. Wage rigidities. Unemployment. Monetary and Fiscal Policy. Open Economy. Zero lower bound. State-dependent models. Financial imperfections. Estimated DSGE Models for Policy Analysis.

(*) Galí, chapters 5-7.
Woodford, chapters 6-8.

(*) Clarida, Richard, Jordi Galí, and Mark Gertler (1999): "The Science of Monetary Policy: A New Keynesian Perspective," *Journal of Economic Literature*, vol. 37, no. 4, 1661-1707.

(*) Erceg, Christopher J., Dale W. Henderson, and Andrew T. Levin (2000): "Optimal Monetary Policy with Staggered Wage and Price Contracts," *Journal of Monetary Economics* vol. 46, no. 2, 281-314.

Galí, Jordi (2011): "The Return of the Wage Phillips Curve," *Journal of the European Economic Association*, forthcoming.

Galí, Jordi (2011): *Unemployment Fluctuations and Stabilization Policies: A New Keynesian Perspective*, MIT Press (Cambridge, MA), forthcoming.

Blanchard, Olivier J. and Jordi Galí (2010): "Labor Markets and Monetary Policy: A New Keynesian Model with Unemployment," *American Economic Journal: Macroeconomics*, 2 (2), 1-33.

Galí, Jordi (2011): "Monetary Policy and Unemployment," in B. Friedman and M. Woodford (eds.) *Handbook of Monetary Economics*, vol 3A, 487-546.

Gertler, Mark, Antonella Trigari, and Luca Sala (2008): "An Estimated Monetary DSGE Model with Unemployment and Staggered Nominal Wage Bargaining," *Journal of Money, Credit and Banking* 40(8), 1713-1763.

Thomas, Carlos (2008a): "Search and Matching Frictions and Optimal Monetary Policy," *Journal of Monetary Economics* 55 (5), 936-956..

Trigari, Antonella (2009): "Equilibrium Unemployment, Job Flows, and Inflation Dynamics," *Journal of Money, Credit and Banking* 41 (1), 1-33.

Walsh, Carl (2005): "Labor Market Search, Sticky Prices, and Interest Rate Rules", *Review of Economic Dynamics*, 8, 829-849.

Benigno, Gianluca, and Benigno, Pierpaolo (2003): "Price Stability in Open Economies," *Review of Economic Studies*, vol. 70, no. 4, 743-764.

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

Clarida, Richard, Jordi Galí, and Mark Gertler (2002): "A Simple Framework for International Monetary Policy Analysis," *Journal of Monetary Economics*, vol. 49, no. 5, 879-904.

Corsetti, Giancarlo, Luca Dedola, and Sylvain Leduc (2011): "Optimal Monetary Policy in Open Economies," in B. Friedman and M. Woodford (eds.) *Handbook of Monetary Economics*, vol 3B, 861-934.

Galí, Jordi, J. David López-Salido and Javier Vallés (2007): "Understanding the Effects of Government Spending on Consumption," *Journal of the European Economics Association*, vol. 5, issue 1, 227-270.

Woodford, Michael (2011): "Simple Analytics of the Government Spending Multiplier," *American Economic Journal; Macroeconomics*, 3, 1-35.

Benhabib, Jess, Stephanie Schmitt-Grohe, and Martin Uribe (2001): "The Perils of Taylor Rules," *Journal of Economic Theory* 96, 40-69.

Eggertson, Gauti, and Michael Woodford (2003): "The Zero Bound on Interest Rates and Optimal Monetary Policy," *Brookings Papers on Economic Activity*, vol. 1, 139-211.

Adam, Klaus and Roberto Billi (2006): "Optimal Monetary Policy under Commitment with a Zero Bound on Nominal Interest Rates," *Journal of Money, Credit and Banking* 38, 1877-1905.

Adam, Klaus and Roberto Billi (2007): "Discretionary Monetary Policy and the Zero Bound on Nominal Interest Rates," *Journal of Monetary Economics* 54 (3), 728-752.

Jung, Taehun, Yuki Teranishi, and Tsutomo Watanabe, (2005): "Optimal Monetary Policy at the Zero Interest Rate Bound," Journal of Money, Credit and Banking 37 (5), 813-835.

Nakov, Anton (2008): "Optimal and Simple Monetary Policy Rules with a Zero Floor on the Nominal Interest Rate," International Journal of Central Banking vol 4(2), 73-127.

Dotsey, Michael, Robert G. King, and Alexander L. Wolman (1999): "State Dependent Pricing and the General Equilibrium Dynamics of Money and Output," *Quarterly Journal of Economics*, vol. CXIV, issue 2, 655-690.

Golosov, Mikhail, Robert E. Lucas (2007): "Menu Costs and Phillips Curves," *Journal of Political Economy* 115 (2), 171-199.

Gertler, Mark and John Leahy (2008): "A Phillips Curve with an Ss Foundation," *Journal of Political Economy* 116 (3), 533-572

Klenow, Peter J. and Oleksiy Kryvstov (2008): "State-Dependent or Time-Dependent Pricing: Does it Matter for Recent U.S. Inflation?" *Quarterly Journal of Economics*, CXXIII, 863-904.

Midrigan, Virgiliu (2007): "Is Firm Pricing State or Time-Dependent? Evidence from U.S. Manufacturing" *Review of Economics and Statistics*, forthcoming.

Nakamura, Emi and Jón Steinsson (2008): "Five Facts about Prices: A Reevaluation of Menu Cost Models," *Quarterly Journal of Economics*, vol. CXXIII, issue 4, 1415-1464.

Bernanke, Ben, Mark Gertler, and Simon Gilchrist (1999): "The Financial Accelerator in a Quantitative Business Cycle Framework," in J.B. Taylor and M. Woodford eds., *Handbook of Macroeconomics*, volume 1C, 1341-1397, Elsevier, New York.

Christiano, Lawrence J., Roberto Motto and Massimo Rostagno (2006): "Monetary Policy and Stock Market Boom-Bust Cycle," mimeo

Cúrdia, Vasco and Michael Woodford (2010): "Credit Spreads and Monetary Policy," Journal of Money, Credit and Banking, vol. 42(S1), 3-35.

Cúrdia, Vasco and Michael Woodford (2009): "Credit Frictions and Optimal Monetary Policy," unpublished manuscript.

Cúrdia, Vasco and Michael Woodford (2010): "Conventional and Unconventional Monetary Policy," Federal Reserve Bank of St. Louis Review, 92(4), p. 229-264.

Iacoviello, Matteo (2005): "House Prices, Borrowing Constraints and Monetary Policy in the Business Cycle," *American Economic Review*, 95, 3 739-764.

Monacelli, Tommaso (2006): "Optimal Monetary Policy with Collateralized Household Debt and Borrowing Constraints," in J. Campbell (ed.) *Asset Prices and Monetary Policy*, University of Chicago Press.

Christiano, Lawrence J., Martin Eichenbaum, and Charles L. Evans (2005): "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy," *Journal of Political Economy*, vol. 113, no. 1, 1-45

Smets, Frank, and Raf Wouters (2003): "An Estimated Dynamic Stochastic General Equilibrium Model of the Euro Area," *Journal of the European*

Economic Association, vol 1, no. 5, 1123-1175.

(*) Smets, Frank, and Raf Wouters (2007): "Shocks and Frictions in US Business Cycles: a Bayesian DSGE Approach," *American Economic Review*, vol. 97 (3), 586-606.

Erceg, Christopher J., Luca Guerrieri, Christopher Gust (2006): "SIGMA: A New Open Economy Model for Policy Analysis," *International Journal of Central Banking*, vol. 2 (1), 1-50.

Edge, Rochelle M., Michael T. Kiley and Jean-Philippe Laforte (2007): "Documentation of the Research and Statistics Division's Estimated DSGE Model of the U.S. Economy: 2006 Version," Finance and Economics Discussion Series 2007-53, Federal Reserve Board, Washington D.C.

Coenen, Günter, Peter McAdam, Roland Straub (2008): "Tax Reform and Labour Market Performance in the Euro Area: A Simulation-Based Analysis unsing the New Area-Wide Model," *Journal of Economic Dynamics and Control*, 32(8), 2543-2583.

Christoffel, Kai, Günter Coenen, and Anders Warne (2008): "The New Area-Wide Model of the Euro Area: A Micro-Founded Open-Economy Model for Forecasting and Policy Analysis," ECB WP 944.

Smets, Frank, Kai Kristoffel, Günter Coenen, Roberto Motto, and Massimo Rostagno (2010): "DSGE Models and their Use at the ECB," *SERIEs* 1, 51-65.

Bayoumi, Tam (2004): "GEM: A New International Macroeconomic Model," IMF Occasional Paper no. 239.