

COURSE OUTLINE AND READING LIST

1. COURSE OVERVIEW AND ORGANIZATION

This class covers topics in advanced macroeconomics in monetary economics. The first part of the course focuses on models of stickiness and rational inattention, price determination in general equilibrium, quantitative easing and forward guidance. The second part of the course will consider topics on identification of monetary policy shocks, models of mortgages and refinancing, redistributive effects of monetary policy, and rigidities and markups. The class meets on Monday and Wednesday, 9-10:30am. The course grade will be based on problem sets, presentation, a research proposal and exam.

2. CONTACT DETAILS

Instructors: Chris Sims (sims@princeton.edu) and Arlene Wong (arlenewong@princeton.edu). Office hours for Sims are Thursday 3-5PM, with signup on <http://wass.princeton.edu>. Office hours for Wong are by appointment.

3. ASSESSMENTS

Assignments: Students can collaborate on the problem sets, and be prepared to present the answers individually in class when it is due.

Presentation: (second part of the course) The last 15 minutes of each class will be devoted to a student presentation of a paper on the reading list on the topic of the week.

Exams: There will be a takehome midterm exam and a separate exam during exam period for the second part of the course.

Proposal: (second part of the course) The second part of the final assignment consists of an extended proposal on a topic related to the course. Students will meet with Professor Wong during session to discuss the idea for approval. The proposal should include the proposed question, related literature, proposed methodology, data (if applicable) and any preliminary results. Students will

present their proposal in class during the first week of December. The written proposal will be due end January.

4. TOPICS AND READINGS FOR THE FIRST PART OF THE COURSE

4.1. **Stickiness.**

“Some International Evidence on Output-Inflation Tradeoffs”, Lucas (1973)

“Reference Prices and Nominal Rigidities”, (Eichenbaum, Jaimovich, and Rebelo, 2008)

“Menu Costs, Multi-Product Firms, and Aggregate Fluctuations”, (Midrigan, 2010)

4.2. **Rational inattention.**

“Rational Inattention and Monetary Economics”, (Sims, 2010)

“Discrete actions in information-constrained tracking problems”, (Jung, Kim, Matějka, and Sims, 2015)

“Optimal Sticky Prices under Rational Inattention”, (Maćkowiak and Wiederholt, 2009)

“Rationally Inattentive Seller: Sales and Discrete Pricing”, (Matějka, 2008)

“Rigid Pricing and Rationally Inattentive Consumer”, (Matějka, 2009)

“Business Cycle Dynamics under Rational Inattention”, Mackowiak and Wiederholt (2015)

Optimal monetary policy with RI: Wiederholt and Paciello (2014)

If you want further background on information theory:

Elements of Information Theory, (Cover and Thomas, 1991)

Information Theory, Inference, and Learning Algorithms, (MacKay, 2003)

4.3. **Econometric History: The rise and fall of US inflation.**

Did monetary policy change at all? (Sims and Zha, 2006)

Learning the Phillips curve (Primiceri, 2006)

Learning the natural rate model (Sargent, Williams, and Zha, 2006)

“Stepping on a Rake”, (Sims, 2008b)

“Fluctuating Macro Policies and the Fiscal Theory”, (Davig and Leeper, 2006)

“Monetary/Fiscal Policy Mix and Agents’ Beliefs”. (Bianchi and Ilut, 2013)
Fiscal-Monetary coordination at exit from ZLB: Bianchi and Melosi (2017)
“Generalizing the Taylor Principle”, Leeper and Davig (2007)
Solution methods for linear switching RE models: Farmer, Waggoner, and Zha (2011)

4.4. **Policy at the zero lower bound.**

Eggertsson and Woodford (2003)
Discussion of this by Bianchi and Ilut at the end of their paper. (Bianchi and Ilut, 2013)

4.5. **Econometric history: 2007-present.**

Del Negro, Giannoni, and Schorfheide (2013)
Stock and Watson (2012)
Bernanke, Gertler, and Gilchrist (1999)
Hubrich and Tetlow (2014)
Leeper, Traum, and Walker (2017)
Schularick and Taylor (2012)
Brunnermeier, Palia, Sastry, and Sims (2017)

4.6. **Non-neutrality of price level changes.**

paper on the Phillips curve and monetary policy, (Sims, 2009)
“Modeling Inflation After the Crisis”, (Stock and Watson, 2010)
Two articles by Sbordone on the empirical New Keynesian Phillips Curve: (Sbordone, 2002), (Sbordone, 2003)
Gertler, Sala, and Trigari on unemployment with search in a DSGE, (Gertler, Sala, and Trigari, 2006), (Gertler and Trigari, 2006)

4.7. **Bubbles.**

“Bubbles, Rational Expectations, and Financial Markets”, (Blanchard and Watson, 1982)
“Monetary Policy and Asset Price Volatility” (Bernanke and Gertler, 1999)

- “Speculative investor behavior in a stock market with heterogeneous expectations” (Harrison and Kreps, 1978)
- “Inflation Expectations, Uncertainty and Monetary Policy” (Sims, 2008a)
- “Money Illusion and Housing Frenzies” (Brunnermeier and Julliard, 2008)
- “Heterogeneous Beliefs, Speculation and Trading in Financial Markets” (Scheinkman and Xiong, 2004)
- “Lending Booms: Latin America and the World” (Gourinchas, Valdes, and Landerretche, 2001)
- “Bubbles and Crashes” (Abreu and Brunnermeier, 2003)
- “Bubbly Liquidity” (Farhi and Tirole, 2010)

LIST OF COURSE TOPICS (PART 2)

Identifying Monetary Policy Shocks. We will study various approaches to identifying monetary policy shocks. We will discuss the main identification challenges, the assumptions behind the different approaches, sample periods, and datasets available. We will cover SVARs, narrative approaches, high frequency data, as well as uses of micro data that focus on particular episodes.

- Christiano, Eichenbaum, and Evans (1999). Monetary Policy Shocks: What Have We Learned and To What End?, Handbook of Macroeconomics chapter.
- Ramey (2016). Macroeconomic Shocks and Their Propagation. Prepared for the Handbook of Macroeconomics.
- Romer and Romer (2004). A New Measure of Monetary Policy Shocks: Derivation and Implications. American Economic Review 94 (September): 1055-1084
- Grkaynak, Sack, and Swanson (2005). Do Actions Speak Louder than Words? The Response of Asset Prices to Monetary Policy Actions and Statements. International Journal of Central Banking 1 (1): 55-93.
- Gertler and Karadi (2015). “Monetary Policy Surprises, Credit Costs, and Economic Activity.” American Economic Journal: Macroeconomics, 7(1): 44-76.
- Kuttner (2001). Monetary policy surprises and interest rates: Evidence from the Fed funds futures market. Journal of Monetary Economics 47 (3): 523-44
- Nakamura and Steinsson (2017), High Frequency Identification of Monetary Non-Neutrality: The Information Effect, Quarterly Journal of Economics, forthcoming.

- Swanson and Williams (2014). Measuring the Effect of the Zero Lower Bound on Medium and Longer-Term Interest Rates. *American Economic Review* 104 (10): 3154-85.
- Sims and Zha, (2006) Were there Regime Switches in U.S. Monetary Policy? *American Economic Review*, Vol. 96, No. 1 (Mar., 2006), pp. 54-81.
- Swanson, University of California at Irvine and NBER (2017), Measuring the Effects of Federal Reserve Forward Guidance and Asset Purchases on Financial Markets, Working Paper.

Monetary Policy, Mortgages and Refinancing. We will discuss the role of mortgage structure, long term debt and refinancing for the transmission of monetary policy. We will cover recent models of mortgages, and empirical approaches to estimate the transmission of monetary policy through the mortgage channel.

- Beraja, Fuster, Hurst and Vavra (2017), Regional Heterogeneity and Monetary Policy NBER Working Paper 23270
- Garriga, Kydland, and Sustek (2013). Mortgages and Monetary Policy. Working Paper 19744, NBER.
- Greenwald (2016). The Mortgage Credit Channel of Macroeconomic Transmission. Working Paper, MIT Sloan
- Wong (2016), Population Aging and the Transmission of Monetary Policy to Consumption. Working Paper, Princeton.
- Hurst, Keys, Seru and Vavra (2016). Regional Redistribution Through the US Mortgage Market. *American Economic Review* 106 (10).
- Best, Cloyne, Ilzetzki, and Kleven (2017), Estimating the Elasticity of Intertemporal Substitution Using Mortgage Notches, Working Paper.
- Gruber, Jensen and Kleven (2017), Do People Respond to the Mortgage Interest Deduction? Quasi-Experimental Evidence from Denmark, Working Paper.

Redistributive Effects of Monetary Policy and Implications for the Aggregate.

- Doepke, Schneider and Selezneva (2015), Distributional Effects of Monetary Policy, Working Paper, Northwestern.
- Doepke and Schneider (2006) Inflation and the Redistribution of Nominal Wealth, *Journal of Political Economy*.

- Doepke and Schneider (2006) Aggregate Implications of Wealth Redistribution: The Case of Inflation, *Journal of the European Economic Association*, April-May 2006.
- Auclert, A. (2014): Monetary Policy and the Redistribution Channel. Mimeo, Stanford.
- Coibion, Gorodnichenko, Kueng and Silvia (2017) Innocent bystanders? Monetary policy and inequality in the U.S. *Journal of Monetary Economics* 88, 70-88
- Gornemann, Kuester, and Nakajima (2014). Doves for the Rich, Hawks for the Poor? Distributional Consequences of Monetary Policy. Discussion paper, Federal Reserve Bank of Philadelphia.
- Sterk and Tenreyro (2015). The Transmission of Monetary Policy through Redistributions and Durable Purchases.

Rigidities and Markups. We will cover standard models with price rigidities and discuss the empirical evidence from aggregate data on intermediate goods shares and micro data on prices.

- Gorodnichenko and Weber (2016), "Are Sticky Prices Costly? Evidence From The Stock Market," with Michael Weber, *American Economic Review* 106(2016), 165-199
- Coibion, Gorodnichenko, and Gee Hee Hong (2015), The Cyclicalities of Sales, Regular and Effective Prices: Business Cycle and Policy Implications, *American Economic Review* 105(2015), 993-1029
- Guimaraes and Sheedy (2011). Sales and Monetary Policy, *American Economic Review* 101(2), 844-876.
- Bills and Klenow (2004). Some Evidence on the Importance of Sticky Prices, *J.P.E.* 112(5), 947-985.
- Klenow and Malin (2011). "Microeconomic Evidence on Price-Setting", *Handbook of Monetary Economics* 3A, B. Friedman and M. Woodford ed.: Elsevier, 231-284.
- Bills, Klenow and Malin (2017). "Resurrecting the Role of the Product Market Wedge in Recessions, Working Paper.
- Nakamura and Steinsson (2008). Five Facts About Prices: A Reevaluation of Menu Cost Models, *Quarterly Journal of Economics* 123(4), 1415-1464.

- Nakamura and Steinsson (2010). Monetary Non-Neutrality in a Multi-Sector Menu Cost Model, *Quarterly Journal of Economics*, 125(3), 961-1013.
- Anderson, Malin, Nakamura, Simester, and Steinsson (2017). Informational Rigidities and the Stickiness of Temporary Sales, *Journal of Monetary Economics*, 90, 64-83.
- Eichenbaum, Jaimovich, and Rebelo (2011). Reference Prices and Nominal Rigidities, *American Economic Review* 101(1), 234-262.
- Kehoe and Midrigan (2012). Price Are Sticky After All, Federal Reserve Bank of Minneapolis Research Department Staff Paper 413.
- Nakarda and Ramey (2013). The Cyclical Behavior of the Price-Cost Markup, NBER Working Paper No. 19099.

Long-Run Trends and Monetary Policy.

- Eggertsson, Robbins and Mehrotra (2017), A Model of Secular Stagnation: Theory and Quantitative Evaluation, Working Paper.
- Coeurdacier, Guibaud, and Jin. (2015). Credit Constraints and Growth in a Global Economy. *American Economic Review*, 105(9): 2838-2881.
- Bernanke (2005). The Global Saving Glut and the US Current Account Deficit.
- Gagnon, Johannsen, and Lopez-Salido (2016). Understanding the New Normal: The Role of Demographics. Mimeo. Federal Reserve Board.

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- BERNANKE, B., AND M. GERTLER (1999): "Monetary Policy and Asset Volatility," *Federal Reserve Bank of Kansas City Economic Review*, 84(4), 17–52.
- BERNANKE, B. S., M. GERTLER, AND S. GILCHRIST (1999): "The Financial Accelerator in a Quantitative Business Cycle Framework," in *Handbook of Macroeconomics*, ed. by J. B. Taylor, and M. Woodford, vol. 1C, chap. 21, pp. 1341–1396. North-Holland.
- BIANCHI, F., AND C. ILUT (2013): "Monetary/Fiscal Policy Mix and Agents' Beliefs," Discussion paper, Duke University.
- BIANCHI, F., AND L. MELOSI (2017): "The Dire Effects of the Lack of Monetary and Fiscal Coordination," Discussion paper, Duke University, http://public.econ.duke.edu/~fb36/Papers_Francesco_Bianchi/BianchiMelosi_Lack_of_Coordination.pdf.

- BLANCHARD, O., AND M. WATSON (1982): "Bubbles, Rational Expectations, and Financial Markets," in *Crisis in the Economic and Financial Structure: Bubbles, Bursts, and Shocks*, ed. by P. Wachtel. Lexington Books, <http://www.nber.org/papers/w0945>.
- BRUNNERMEIER, M., AND C. JULLIARD (2008): "Money Illusion and Housing Frenzies," *Review of Financial Studies*, 21(1), 135–180.
- BRUNNERMEIER, M., D. PALIA, K. A. SASTRY, AND C. A. SIMS (2017): "Feedbacks: Financial Markets and Economic Activity," Discussion paper, Princeton University, http://sims.princeton.edu/yftp/bpss/bpss_draft.pdf.
- COVER, T. M., AND J. A. THOMAS (1991): *Elements of Information Theory*. Wiley-Interscience.
- DAVIG, T., AND E. M. LEEPER (2006): "Fluctuating Macro Policies and the Fiscal Theory," *NBER Macroeconomics Annual*, pp. 247–298.
- DEL NEGRO, M., M. P. GIANNONI, AND F. SCHORFHEIDE (2013): "Inflation in the Great Recession and New Keynesian Models," Discussion paper, University of Pennsylvania.
- EGGERTSSON, G., AND M. WOODFORD (2003): "Optimal Monetary Policy in a Liquidity Trap," Discussion paper, International Monetary Fund and Princeton University, <http://www.columbia.edu/~mw2230/Japan.pdf>.
- EICHENBAUM, M., N. JAIMOVICH, AND S. REBELO (2008): "Reference Prices and Nominal Rigidities," Discussion paper, Northwestern University and Stanford University, NBER Working paper 13829.
- FARHI, E., AND J. TIROLE (2010): "Bubbly Liquidity," Discussion paper, Harvard University and Toulouse School of Economics, http://www.economics.harvard.edu/faculty/farhi/files/bubbles_liquidity.pdf.
- FARMER, R. E. A., D. F. WAGGONER, AND T. ZHA (2011): "Minimal State Variable Solutions to Markov-Switching Rational Expectations Models," *Journal of Economic and Dynamic Control*, 2011, 35(12), 2150–2166.
- GERTLER, M., L. SALA, AND A. TRIGARI (2006): "An Estimated Monetary DSGE Model with Unemployment and Staggered Nominal Wage Bargaining," Discussion paper, New York University, <http://www.econ.nyu.edu/usr/gertlerm/papers>.
- GERTLER, M., AND A. TRIGARI (2006): "Unemployment Fluctuations with Staggered Nash Wage Bargaining," Discussion paper, New York University.
- GOURINCHAS, P.-O., R. VALDES, AND O. LANDERRETICHE (2001): "Lending Booms: Latin America and the World," Working Paper 8249, National Bureau of Economic

- Research, <http://www.nber.org/papers/w8249>.
- HARRISON, J. M., AND D. M. KREPS (1978): "Speculative investor behavior in a stock market with heterogeneous expectations," *Quarterly Journal of Economics*, 92(2), 323–336.
- HUBRICH, K., AND R. J. TETLOW (2014): "Financial stress and economic dynamics: the transmission of crises," Working Paper 1728, European Central Bank.
- JUNG, J., J.-H. KIM, F. MATĚJKA, AND C. SIMS (2015): "Discrete actions in information-constrained tracking problems," Discussion paper, Princeton University, <http://sims.princeton.edu/yftp/RIDiscrete/DiscreteTracking2PropX2.pdf>.
- LEEPER, E., AND T. DAVIG (2007): "Generalizing the Taylor Principle," *American Economic Review*, 97(3), 607–635.
- LEEPER, E. M., N. TRAUM, AND T. B. WALKER (2017): "Clearing Up the Fiscal Multiplier Morass," *American Economic Review*, 107(8), 2409–54.
- LUCAS, R. E. J. (1973): "Some International Evidence on Output-Inflation Tradeoffs," *American Economic Review*, 63(3), 326–334.
- MACKAY, D. J. C. (2003): *Information Theory, Inference, and Learning Algorithms*. Cambridge University Press.
- MAĆKOWIAK, B., AND M. WIEDERHOLT (2009): "Optimal Sticky Prices under Rational Inattention," *American Economic Review*, 99(3), 769–803.
- MAĆKOWIAK, B., AND M. WIEDERHOLT (2015): "Business Cycle Dynamics under Rational Inattention," *Review of Economic Studies*, 82(4), 1502–1532.
- MATĚJKA, F. (2008): "Rationally Inattentive Seller: Sales and Discrete Pricing," Discussion paper, PACM, Princeton University, http://home.cerge-ei.cz/matejka/RI_seller.pdf.
- (2009): "Rigid Pricing and Rationally Inattentive Consumer," Discussion paper, Princeton University.
- MIDRIGAN, V. (2010): "Menu Costs, Multi-Product Firms, and Aggregate Fluctuations," Discussion paper, New York University, http://homepages.nyu.edu/~vm50/Paper_Mar2010.pdf.
- PRIMICERI, G. (2006): "Why Inflation Rose and Fell: Policymakers' Beliefs and US Postwar Stabilization Policy," *Quarterly Journal of Economics*, 121, 867–901.
- SARGENT, T. J., N. WILLIAMS, AND T. ZHA (2006): "Shocks and Government Beliefs: The Rise and Fall of American Inflation," *American Economic Review*, 96(4), 1193–1224, NBER Working Paper w10764.

- SBORDONE, A. (2003): "U.S. Wage and Price Dynamics: A Limited-Information Approach," *International Journal of Central Banking*, 2(3), 155–189.
- SBORDONE, A. M. (2002): "Prices and Unit Labor Costs: A New Test of Price Stickiness," *Journal of Monetary Economics*, 49(2), 265–292, <http://www.sciencedirect.com/science/article/B6VBW-44VX2C9-1/2/6acd1a4c1348d7945dffaba81aa86c80>, author="ArgiaM.Sbordone, ftp://snde.rutgers.edu/Rutgers/wp/2001-12.pdf.
- SCHEINKMAN, J., AND W. XIONG (2004): *Heterogeneous Beliefs, Speculation and Trading in Financial Markets*, Lecture Notes in Mathematics 1847. Springer-Verlag, <http://www.princeton.edu/~joses/wp/survey.pdf>.
- SCHULARICK, M., AND A. M. TAYLOR (2012): "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008," *American Economic Review*, 102(2), 1029–61.
- SIMS, C. (2009): "Inflation Expectations, Uncertainty, the Phillips Curve, and Monetary Policy," in *Understanding Inflation and the Implications for Monetary Policy: A Phillips Curve Retrospective*, ed. by J. Fuhrer, J. S. Little, Y. K. Kodrzycki, and G. P. Olivei. MIT Press, <http://sims.princeton.edu/yftp/CapeCod2008>, Presented at the June, 2008 Boston Federal Reserve Bank monetary policy conference.
- SIMS, C. A. (2008a): "Inflation Expectations, Uncertainty, and Monetary Policy," Discussion paper, Princeton University, <http://sims.princeton.edu/yftp/BIS608>.
- (2008b): "Stepping on a Rake: The Role of Fiscal Policy in the Inflation of the 1970's," Discussion paper, Princeton University.
- (2010): "Rational Inattention and Monetary Economics," in *Handbook of Monetary Economics*. Elsevier, <http://sims.princeton.edu/yftp/RIMP>.
- SIMS, C. A., AND T. ZHA (2006): "Were There Regime Switches in US Monetary Policy?," *American Economic Review*, 96(1), 54–81.
- STOCK, J., AND M. WATSON (2010): "Modeling Inflation After the Crisis," in *Macroeconomic Challenges: The Decade Ahead*, Federal Reserve Bank of Kansas City Macroeconomic Policy Symposium (Jackson Hole Conference), <http://www.kansascityfed.org/publicat/sympos/2010/stock-watson.pdf>.
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WIEDERHOLT, M., AND L. PACIELLO (2014): "Exogenous Information, Endogenous Information and Optimal Monetary Policy," *Review of Economic Studies*, 81(1), 356–388.