Professor Valerie Ramey Fall 2020 UCSD

Economics 214 Topics in Applied Macroeconomics (Nov. 1, 2020 version)

Overview of Course

The goals for this course are the following:

- (i) Introduce students to important papers and research questions with relevance to macroeconomics, broadly defined.
- (ii) Introduce students to basic methods for analyzing quantitative economic models that serve as a basis for policy analysis and empirical investigations.
- (iii) Introduce students to a variety of empirical methods and data sources that can be used to test, calibrate and develop models of interest for macroeconomics and related fields.
- (iv) Inspire students to think hard about best practices in empirical work, and how to combine creativity, tools, and high standards to produce successful research.
- (v) Assist students in building up a toolbox of simulation and estimation computer programs that can be used as a basis for future research.

Grade:

- **75% for homework assignments**. There are two types of homework assignments:
- (1) **Questions about papers in the literature.** These homework assignments are meant to help guide your reading of the literature and help you put results in context. While you may discuss readings and questions with classmates, you must write up your own answers.
- (2) **Computer-based quantitative models and empirical estimation projects.** These homework assignments ask questions that require you to code quantitative models or estimation and answer questions using the results. Acceptable homework must have both report and code (if applicable). The code should be self-contained so that anyone can run it (which means that I should be able to run

it and reproduce the results you present in your report). The computer projects may be done in small groups (no more than three students per group), but each homework must be submitted individually. You can use any programming language that you like. I will be talking mostly about (1) Dynare (for simulating DSGE models); (2) Stata for estimation; and (3) Matlab for estimation. I will grade the homework assignments on a scale of 0 to 10. If you turn in a complete homework on time but receive less than 10 points because of programming errors, I will return the homework assignment to you so that you can make corrections and hand it in for a regrade, due one week after I returned the homework. Only one regrade per assignment is allowed. My goal is for you to finish the class with a toolbox of programs that don't have errors in them.

• 25% for a take-home final exam

The final exam will ask questions about the material discussed in class. It will not involve coding. You must complete it on your own.

Resources for Class

Zoom permitting, we will be doing some "real-time" programming, model simulation, and empirical estimation in class. You should have access to the following programs.

- 1. Matlab
- 2. Dynare (available for free at: <u>http://www.dynare.org/</u>)
- Harald Uhlig's Smets-Wouter Simulator (available for free at: <u>https://www.wiwi.hu-</u> <u>berlin.de/de/professuren/vwl/wipo/research/Macro_App_Soft/SmeWouToolkit</u> (you might have to add the extension ".exe" to the file after downloading it.)
- 4. Software for empirical estimation (such as Matlab, Stata, R, Eviews, etc.)

The following reading list includes many papers on each topic. Papers with a * are required. I expect you to read some, but certainly not the majority of the papers. This reading list is meant to be a useful bibliographic reference so that you may concentrate on topics that interest you.

Note – because one-third of the students registered for the course are 2^{nd} year students who are currently taking 220D, I am discussing quantitative models first and delaying the empirical part until the 2^{nd} year students have had a chance to learn more time series.

I. The Effects of Monetary and Fiscal Policy in Benchmark Models

- **A. Review of Preferences -** Elasticities, income effects, implications for balanced growth
- Frisch vs. Hicks vs. Marshall elasticities (MaCurdy JPE 1981, IER 1983, Blundell-MaCurdy 1999, Keane and Rogerson JEL 2012, Keane and Wasi EJ 2016)
- KPR preferences (King, Plosser, Rebelo JME 1988, King and Rebelo Handbook of Macro, 1999)
- GHH preferences (Greenwood, Hercowitz, and Huffman AER 1988)
- JR preferences (Jaimovich and Rebelo AER 2009)
- BP preferences (*Boppart and Krusell JPE 2020)

B. Neoclassical Models

- Aiyagari, Rao, Laurence Christiano, and Martin Eichenbaum, "The Output, Employment and Interest Rate Effects of Government Consumption," *Journal of Monetary Economics*, 30 (1992), 73–86.
- *Baxter, Marianne, and Robert G. King, "Fiscal Policy in General Equilibrium," *American Economic Review*, 83 (1993), 315–334.
- Atkeson, Andrew, V.V. Chari and Patrick Kehoe, "Taxing Capital Income: A Bad Idea," *Federal Reserve Bank of Minneapolis Quarterly Review,* Summer 1999.
- Leeper, Eric M., Todd B. Walker, and Shu-Chun S. Yang. "Government investment and fiscal stimulus." *Journal of monetary Economics* 57.8 (2010): 1000-1012.

C. New Keynesian Models

(Review your notes from 210C)

- Woodford, Michael. "Simple Analytics of the Government Expenditure Multiplier." *American Economic Journal: Macroeconomics* 3, no. 1 (2011): 1-35.
- Eggertsson, Gauti, "What Fiscal Policy is Effective at Zero Interest Rates?" NBER Macroeconomics Annual 2010.

- *Christiano, Lawrence J, Martin Eichenbaum, Charles L. Evans, "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy," *Journal of Political Economy*, Vol. 113, No. 1, February 2005.
- Smets, Frank and Raf Wouters, "An Estimated Dynamic Stochastic General Equilibrium Model of the Euro Area," *Journal of the European Economics Association*, <u>Volume 1, Issue 5, pages 1123–1175</u>, September 2003.
- Smets, Frank and Raf Wouters, "Shocks and Frictions in U.S. Business Cycles: A Bayesian DSGE Approach," *American Economic Review*, 97(3) June 2007: 586-606.
- Galí, Jordi, Mark Gertler, and David López-Salido, "Markups, Gaps, and the Welfare Costs of Business Cycles," *Review of Economics and Statistics*, 2007.
- *Gali, Jordi, J. David López-Salido, and Javier Vallés, "Understanding the Effects of Government Spending on Consumption," *Journal of the European Economic* Association, 5 (2007): 227-270.
- McKay, Alisdair, Emi Nakamura, and Jón Steinsson. "The power of forward guidance revisited." *American Economic Review* 106, no. 10 (2016): 3133-58.
- *Kaplan, Greg, Benjamin Moll, and Giovanni L. Violante. "Monetary policy according to HANK." *American Economic Review* 108, no. 3 (2018): 697-743.
- Kaplan, Greg, Benjamin Moll, and Giovanni L. Violante. "A Further Look at the Propagation of Monetary Policy Shocks in HANK." Forthcoming *Journal of Money, Credit, and Banking.* <u>https://benjaminmoll.com/wp-content/uploads/2020/08/JMCB.pdf</u>
- *Broer, Tobias, Niels-Jakob Harbo Hansen, Per Krusell, Erik Oberg, "The New Keynesian Transmission Mechanism: A Heterogeneous Agent Perspective," *Review of Economic Studies* 2019.
- Sims, Eric and Jonathan Wolff. 2018a. "The Output and Welfare Effects of Government Spending Shocks over the Business Cycle." *International Economic Review* 59 (3): 1403-1435.
- Sims, Eric and Jonathan Wolff. 2018b. "The State-Dependent Effects of Tax Shocks." *European Economic Review* 107: 57-85.
- *Broer, Tobias, Per Krusell, Erik Oberg, "Fiscal Multipliers: A Heterogeneous Agent Perspective," February 2020 <u>working paper</u>.
- *Auclert, Adrien, Bence Bardoczy, and Matthew Rognlie, "A Trilemma for New Keynesian Models," June 2020 working paper.

Ramey, Valerie A. "The Macroeconomic Consequences of Infrastructure Investment," NBER working paper #27625, July 2020.

II. Estimating Causal Effects in Macroeconomics: General Methods and Pitfalls

- *Lucas Jr, Robert E., "Econometric policy evaluation: A critique," *Carnegie-Rochester Conference Series on Public Policy*, Volume 1, 1976, Pages 19-46
- *Ramey, Valerie A., "Macroeconomic Shocks and Their Propagation," *Handbook of Macroeconomics, 2016,* Sections 1 and 2.
- Stock, James and Mark Watson, "Factor Models and Structural Vector Autoregressions in Macroeconomics," *Handbook of Macroeconomics, 2016.*
- Canova, Fabio and Luca Sala, "Back to Square One: Identification Issues in DSGE Models," *Journal of Monetary Economics* 56 (May 2009): 431-449.
- Stock JH, Watson MW. <u>Identification and Estimation of Dynamic Causal Effects in</u> <u>Macroeconomics</u>. Economic Journal. 2018;128 (May) :917-948.
- Plagborg-Møller, Mikkel, and Christian K. Wolf. "<u>Local Projections and VARs Estimate</u> <u>the Same Impulse Reponses</u>," June 2020.
- Goldsmith-Pinkham, Paul, Isaac Sorkin, and Henry Swift. "Bartik instruments: What, when, why, and how." *American Economic Review* 110.8 (2020): 2586-2624.

III. Estimating the Effects of Fiscal Policy

A. Government Spending

- *Ramey, Valerie A., "Macroeconomic Shocks and Their Propagation," *Handbook of Macroeconomics, 2016,* Section 4.
- *Blanchard, Olivier, and Roberto Perotti, "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output," *Quarterly Journal of Economics*, 117 (2002), 1329-1368.
- Mountford, Andrew and Harald Uhlig, "What are the Effects of Fiscal Policy Shocks? Journal of Applied Econometrics 24 (September/October 2009): 960-992.
- Ramey, Valerie A., "Identifying Government Spending Shocks: It's All in the Timing," *Quarterly Journal of Economics*, 126 (February 2011): 1-50.
- Fisher, Jonas D.M., and Ryan Peters, "Using Stock Returns to Identify Government Spending Shocks," *The Economic Journal*, 120 (May 2010): 414-436.
- Ben Zeev, Nadav, and Evi Pappa. 2017. "Chronicle of a War Foretold: The Macroeconomic Effects of Anticipated Defence Spending Shocks." *The Economic Journal* 127 (603): 1568-1597.
- Ilzetski, Ethan, Enrique G. Mendoza, Carlos A. Végh, "How Big (Small?) are Fiscal Multipliers?" 2013. "How big (small?) are fiscal multipliers?," *Journal of Monetary Economics*, Elsevier, vol. 60(2), pages 239-254.
- Blanchard, Olivier J., and Daniel Leigh. 2013. "Growth Forecast Errors and Fiscal Multipliers." *American Economic Review*, 103(3): 117-20.
- *Auerbach, Alan and Yuriy Gorodnichenko. 2012a. "Measuring the Output Responses to Fiscal Policy." *American Economic Journal: Economic Policy* 4 (2): 1-27.
- Auerbach, Alan and Yuriy Gorodnichenko. 2012b. "Fiscal Multipliers in Recession and Expansion" forthcoming in *Fiscal Policy After the Financial Crisis*, eds. Alberto Alesina and Francesco Giavazzi, University of Chicago Press.
- Ramey, Valerie A. and Sarah Zubairy, "Government Spending Multipliers in Good Times and in Bad: Evidence from 20th Century Historical Data," forthcoming, *Journal of Political Economy*.
- Miyamoto, Wataru, Nguyen, Thuy Lan, and Dmitriy Sergeyev. 2018. "Government Spending Multipliers Under the Zero Lower Bound." *American Economic Journal: Macroeconomics* 10 (3): 247-277.

B. Taxes

- *Ramey, Valerie A., "Macroeconomic Shocks and Their Propagation," *Handbook of Macroeconomics, 2016,* Section 4.
- *Blanchard, Olivier, and Roberto Perotti, "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output," *Quarterly Journal of Economics*, 117 (2002), 1329-1368.
- *Romer, Christina D., and David H. Romer, "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks," *American Economic Review*, 100 (June 2010): 763-801.
- Barro, Robert J., and Charles J. Redlick. 2011. "Macroeconomic Effects from Government Purchases and Taxes." *Quarterly Journal of Economics* 126 (1): 51-102.
- Leeper, Eric M., Todd B. Walker, Shu-Chun Susan Yang, "Fiscal Foresight and Information Flows," *Econometrica* 81 (3) May 2013: 1115-1145.
- House, Christopher L., and Matthew D. Shapiro. 2006. "Phased-In Tax Cuts and Economic Activity." *American Economic Review*, 96(5): 1835-1849.
- Mertens, Karel, and Morten O. Ravn. 2012. "Empirical Evidence on the Aggregate Effects of Anticipated and Unanticipated US Tax Policy Shocks." *American Economic Journal: Economic Policy*, 4(2): 145-81.
- *Mertens, Karel, and Morten O. Ravn., "A Reconciliation of SVAR and Narrative Estimates of Tax Multipliers," *Journal of Monetary Economics* 2014.
- Mertens, Karel, and Morten O. Ravn. 2013. "The Dynamic Effects of Personal and Corporate Income Tax Changes in the United States." *American Economic Review*, 103(4): 1212-47.

C. Cross-Sectional and Panel Data: Theory and Evidence

* Chodorow-Reich, Gabriel. Forthcoming. "Geographic Cross-Sectional Fiscal Spending Multipliers: What Have We Learned?" *American Economic Journal: Economic Policy*.

- *Nakamura, Emi, and Jon Steinsson. "Fiscal stimulus in a monetary union: Evidence from US regions." *The American Economic Review* 104.3 (2014): 753-792.
- *Farhi, Emmanuel, and Ivan Werning. "Fiscal multipliers: Liquidity traps and currency unions." *Handbook of Macroeconomics* 2 (2016): 2417-2492.
- Nekarda, Christopher J. and Valerie A. Ramey, "Industry Evidence on the Effects of Government Spending," *American Economic Journal: Macroeconomics*: Vol. 3 No. 1 (January 2011).

IV. Household Consumption Responses to Fiscal Shocks

- *Parker, Jonathan A, Nicolas S. Souleles, David S. Johnson, Robert McClelland, "Consumer Spending and the Economic Stimulus Payments of 2008," *The American Economic Review*, 103 (October 2013): 2530-2553.
- Broda, Christian, and Jonathan A. Parker. "The economic stimulus payments of 2008 and the aggregate demand for consumption." *Journal of Monetary Economics* 68 (2014): S20-S36.
- *Gelman, Michael, Shachar Kariv, Matthew D. Shapiro, Dan Silverman, and Steven Tadelis. "How individuals respond to a liquidity shock: Evidence from the 2013 government shutdown." *Journal of Public Economics* (2018).
- Sahm, Claudia R., Matthew D. Shapiro, Joel Slemrod, "Check in the Mail or More in the Paycheck: Does the Effectiveness of Fiscal Stimulus Depend on How it is Delivered?" American Economic Journal: Economic Policy, 4 (August 2012): 216-250.
- Shapiro, Matthew D., and Joel Slemrod. "Did the 2008 tax rebates stimulate spending?." *American Economic Review* 99, no. 2 (2009): 374-79.
- *Kaplan, Greg and Gianluca L. Violante, "A Model of the Consumption Response to Fiscal Stimulus Payments," *Econometrica* Volume 82, Issue 4, pages 1199–1239, July 2014.
- Kueng, Lorenz, "Tax News: Identifying the Household Consumption Response to Tax Expectations using Municipal Bond Prices," 2016 working paper. <u>http://ssrn.com/abstract=2746486</u>
- *James Cloyne and Paolo Surico, "<u>Household Debt and the Dynamic Effects of Income</u> <u>Tax Changes</u> ". *Review of Economic Studies.* Volume 84(1) 45-81, January 2017.

V. Estimating the Effects of Monetary Policy

- *Ramey, Valerie A., "Macroeconomic Shocks and Their Propagation," *Handbook of Macroeconomics, 2016,* Sections 3.
- Olivei, Giovanni, and Silvana Tenreyro. "The timing of monetary policy shocks." *American Economic Review* 97, no. 3 (2007): 636-663.
- Romer, Christina D., and David H. Romer, "A New Measure of Monetary Policy Shocks: Derivation and Implications," *American Economic Review*, 94(4) (September 2004): 1055-84.
- Cochrane, John, "Comments on 'A new measure of monetary shocks: Derivation and implications' By Christina Romer and David Romer." July 17 2004, presented at NBER EFG meeting

http://faculty.chicagobooth.edu/john.cochrane/research/papers/talk_notes_new_m easure_2.pdf

- *Coibion, Olivier, "Are the Effects of Monetary Policy Shocks Big or Small?" <u>American</u> <u>Economic Journal: Macroeconomics</u>, Volume 4, Number 2, April 2012, pp. 1-32(32)
- Barakchian, S. Mahdi and Christopher Crowe, "Monetary Policy Matters: Evidence from New Shocks," *Journal of Monetary Economics*, <u>Volume 60, Issue 8</u>, November 2013, Pages 950–966
- Faust, Jon, Eric T. Swanson, and Jonathan H. Wright (2004), "Identifying VARS based on high frequency futures data," *Journal of Monetary Economics*, Volume 51, <u>Issue 6</u>, September 2004, Pages 1107–113.
- Boivin, Jean, Michael T. Kiley, and Frederick S. Mishkin, "How Has the Monetary Transmission Mechanism Evolved Over Time?" *Handbook of Monetary Economics.* 2010.
- Tenreyro, Silvana, and Gregory Thwaites. "Pushing on a string: US monetary policy is less powerful in recessions." *American Economic Journal: Macroeconomics* 8, no. 4 (2016): 43-74.
- *Gertler, Mark and Peter Karadi, "Monetary Policy Surprises, Credit Costs, and Economic Activity," *American Economic Journal: Macroeconomics*, 7(1) (January 2015) 44–76.

- Nakamura, Emi, and Jón Steinsson. "High-frequency identification of monetary nonneutrality: The information effect." *The Quarterly Journal of Economics* 133, no. 3 (2018): 1283-1330.
- Gürkaynak, Refet S., Brian Sack, and Eric Swanson. "The sensitivity of long-term interest rates to economic news: Evidence and implications for macroeconomic models." *American economic review* 95, no. 1 (2005): 425-436.
- Miranda-Agrippino, Silvia and Giovanni Ricco, "The Transmission of Monetary Policy Shocks," December 2019 working paper. <u>http://silviamirandaagrippino.com/s/MAIN_TransmissionMP-mnbl.pdf</u>
- Swanson, Eric T., and John C. Williams. "Measuring the effect of the zero lower bound on medium-and longer-term interest rates." *American Economic Review* 104, no. 10 (2014): 3154-85.
- *Wolf, Christian, "SVAR (Mis)Identification and the Real Effects of Monetary Shocks," *American Economic Journal: Macroeconomics* 12, no. 4 (Oct. 2020): 1-32.
- *Bauer, Michael and Eric T. Swanson, "The Fed's Response to Economic News Explains the 'Fed Information Effect'" UC Irvine working paper. <u>http://www.socsci.uci.edu/~swanson2/papers/fedinfo.pdf</u>

VI. Introduction to Pandemic Macroeconomics

- *Eichenbaum, Martin S., Sergio Rebelo, and Mathias Trabandt. *The macroeconomics of epidemics*. No. w26882. National Bureau of Economic Research, 2020.
- Kaplan, Greg, Benjamin Moll, and Giovanni L. Violante. The Great Lockdown and the Big Stimulus: Tracing the Pandemic Possibility Frontier for the US. No. w27794. National Bureau of Economic Research, 2020.

(Some more papers might be added later.)

- Cochrane, John, "Shocks," Carnegie-Rochester Conference Series on Public Policy, 41 (December 1994): 295-364.
- Barro, Robert J., and Robert G. King. 1984. "Time-Separable Preferences and Intertemporal Substitution Models of Business Cycles," *Quarterly Journal of Economics*, 99 (4), 817-839.
- *Beaudry, Paul and Frank Portier, "Stock Prices, News, and Economic Fluctuations," *American Economic Review*, 2006, 96(4), 1293-1307.
- Kurmann, André and Elmar Mertens, "Stock Prices, News, and Economic Fluctuations: Comment," *American Economic Review* " 104.4 (2014): 1439-1445.
- Olivier J. Blanchard & Jean-Paul L'Huillier & Guido Lorenzoni, 2013. "News, Noise, and Fluctuations: An Empirical Exploration," *American Economic Review*, vol. 103(7), pages 3045-70, December.
- *Jaimovich, Nir and Sergio Rebelo, "Can News about the Future Drive the Business Cycle?" *American Economic Review*, 99(4) 2009, 1097-1118.
- Jaimovich, Nir and Sergio Rebelo. 2008. "News and Business Cycles in Open Economies," *Journal of Money, Credit and Banking*, 40 (8), 1699–1711.
- *Barsky, R. B., and E. R. Sims (2011) "News shocks and business cycles," Journal of Monetary Economics, 58(3), 273-289.
- Kurmann, André and Eric Sims, "Revisions in Utilization-Adjusted TFP and Robust Identification of News Shocks," November 2017 working paper.
- Barsky, Robert. B. and Eric Sims, "Information, Animal Spirits, and the Meaning of Innovations in Consumer Confidence," *American Economic Review*, 102(4), 2012.
- Beaudry, Paul and Frank Portier, "News Driven Business Cycles: Insights and Challenges," *Journal of Economic Literature* 2014, 52(4), 993–1074.
- *Arezki, Rabah, Valerie A. Ramey, and Liugang Sheng. "News Shocks in Open Economies: Evidence from Giant Oil Discoveries." *The Quarterly Journal of Economics* (2016).