# Curriculum Vitae MICHAEL WOODFORD

December 2022

John Bates Clark Professor of Political Economy Columbia University

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#### Education

A.B., University of Chicago, 1977.

J.D., Yale Law School, 1980.

Ph.D. (Economics), Massachusetts Institute of Technology, 1983.

### **Primary Academic Appointments**

Assistant Professor, Department of Economics, Columbia University, 1984-86.

Assistant Professor of Business Economics, Graduate School of Business, University of Chicago, 1986-1989.

Associate Professor, Department of Economics, University of Chicago, 1989-1992.

Professor, Department of Economics, University of Chicago, 1992-1995.

Professor, Department of Economics, Princeton University, 1995-1998.

Harold H. Helm '20 Professor of Economics and Banking, Princeton University, 1998-2004.

John Bates Clark Professor of Political Economy, Columbia University, 2004-present.

Affiliate Member, Zuckerman Mind, Brain and Behavior Institute, Columbia University, 2018-present.

Steering Committee, Program on Cognitive Science, Columbia University, 2022-present.

#### Other Activities

Visiting Fellow, Department of Economics, Princeton University, Autumn 1983.

Visiting Assistant Professor, Department of Economics, Univ. of Pennsylvania, Spring 1984.

Visiting Assistant Professor, Graduate School of Industrial Administration, Carnegie-Mellon University, Autumn 1985.

Visiting Associate Professor, Department of Economics, New York University, Spring 1986.

Visitor, Research Department, Federal Reserve Bank of Minneapolis, November 1987.

Visiting Assistant Professor, Department of Economics, Massachusetts Institute of Technology, Autumn 1988.

Visiting Professor, Ecole des Hautes Etudes en Sciences Sociales, Paris, March 1989.

Visiting Professor, Fondation National des Sciences Politiques, Paris, March-April 1990.

Visitor, Research Department, Observatoire Française des Conjunctures Economiques, Paris, March-April 1990.

Visiting Fellow, Institut d'Anàlisi Econòmica, Universitat Autònoma de Barcelona, April-June 1990.

Lecturer, European Economics Association Summer School, Lisbon, September 1990.

Visitor, Innocenzo Gasparini Institute for Economic Research, Milan, April-June 1992.

Visiting Professor, Università Commerciale L. Bocconi, Milan, March 1993.

Visitor, Div. of Monetary Affairs, Federal Reserve Board of Governors, September 1993.

Visiting Professor, Università Commerciale L. Bocconi, Milan, May 1994.

Visitor, Innocenzo Gasparini Institute for Economic Research, Milan, May 1994.

Consultant, Research Department, Federal Reserve Bank of New York, 1995-1997.

Visitor, Division of Monetary Affairs, Federal Reserve Board of Governors, September 1996.

Visitor, Institute for International Economic Studies, Stockholm, May-June 1997.

Lecturer, NAKE Workshop, Netherlands Network for Quantitative Economics, Wageningen, The Netherlands, June 1998.

Visitor, Division of Monetary Affairs, Federal Reserve Board of Governors, July 1998.

Visitor, Research Department, Federal Reserve Bank of Kansas City, August 1998.

Visitor, Institute for International Economic Studies, Stockholm, September 1998.

Academic Visitor, London School of Economics, February 1999.

Professorial Fellow in Monetary Economics, Reserve Bank of New Zealand, June 2000.

Lecturer, IMF Institute, International Monetary Fund, July 2000.

Visitor, Research Department, Federal Reserve Bank of Atlanta, August 2000.

Visitor, Servizio Studi, Banca d'Italia, June 2001.

Visitor, Hong Kong University, June 2002.

Lecturer, IMF Institute, International Monetary Fund, July 2002.

Visitor, Division of Monetary Affairs, Federal Reserve Board of Governors, July 2002.

Visiting Professor, Department of Economics, Harvard University, Fall 2002.

Visitor, Division of Monetary Affairs, Federal Reserve Board of Governors, April 2003.

Visiting Lecturer, European Central Bank, May 2003.

Visitor, Servizio Studi, Banca d'Italia, June-July 2003.

Lecturer, IMF Institute, International Monetary Fund, September 2003.

Consultant, Banco Central do Brasil, December 2003.

Lecturer, Advanced Doctoral Program, Study Center Gerzensee, Swiss National Bank, August 2004.

Consultant, Banco Central do Brasil, December 2004.

Consultant, European Central Bank, June 2005.

Consultant, Research Department, Federal Reserve Bank of New York, 2005-present.

Lecturer, Advanced Seminar for Central Bankers, CIED, Northwestern University, September 2005.

Consultant, European Central Bank, January 2006, May 2006, September 2006.

Lecturer, IMF Institute, International Monetary Fund, February 2006.

Lecturer, MIT Central Bank Research Network meeting, December 2006.

Lecturer, IMF Institute, International Monetary Fund, March 2007.

Arthur Okun and Kumho Visiting Professor, Department of Economics, Yale University, 2007-08.

Lecturer, Advanced Seminar for Central Bankers, CIED, Northwestern University, September 2007.

Lecturer, IMF Institute, January 2008.

Consultant, European Central Bank, March 2008.

Visiting Scholar, Federal Reserve Board, June 2008.

Visitor, Einaudi Institute for Economics and Finance, June-July 2008.

Lecturer, Advanced Seminar for Central Bankers, CIED, Northwestern University, September 2008.

Lecturer, IMF Institute, International Monetary Fund, January 2009.

Lecturer, IMF Institute, International Monetary Fund, February 2010.

Visitor, Banque de France, June-July 2010.

Lecturer, Banco Central do Brasil, December 2010.

Lecturer, Central Bankers and Regulators Workshop, Duisenberg School of Finance, Amsterdam, January 2011.

Lecturer, IMF Institute, International Monetary Fund, March 2011.

Visitor, Banque de France, June-July 2011.

Taussig Visiting Professor, Department of Economics, Harvard University, 2011-2012.

Lecturer, Advanced Seminar for Central Bankers, CIM, Northwestern University, September 2011, September 2012.

Lecturer, Econometric Society Summer School on Bounded Rationality, Seoul, August 2013.

Kumho Visiting Professor, Department of Economics, Yale University, 2013-2014.

Visitor, Department of Physics, Ecole Normale Superieure, Paris, August 2018, March 2019, May 2019.

Lecturer, NBER Behavioral Macroeconomics Boot Camp, March 2020 [online].

Lecturer, Delhi Winter School, Delhi School of Economics and Econometric Society [online], December 2021.

Visiting Associate in Economics, California Institute of Technology, January-March 2022.

Lecturer, NBER Behavioral Macroeconomics Boot Camp, UC Berkeley, May 2022.

Lecturer, Yale Summer School on Behavioral Finance, Yale University, June 2022.

Lecturer, Sloan-NOMIS Summer School on Cognitive Foundations of Economic Behavior, Vitznau, Switzerland, June-July 2018, June-July 2019, June-July 2022.

# **Grants and Awards**

National Science Foundation Graduate Fellowship, Economics, 1980-83.

John D. and Catherine T. MacArthur Foundation Prize Fellowship, 1981-86.

National Science Foundation Research Grants, 1987-89, 1989-92, 1992-95, 1995-98, 1998-2001, 2001-2004, 2004-2007, 2008-2011, 2014-2017, 2020-2023.

John Simon Guggenheim Memorial Foundation Fellowship, 1998-99.

Association of American Publishers Award for Best Professional/Scholarly Book in Economics [for *Interest and Prices*], for the year 2003.

Deutsche Bank Prize in Financial Economics, 2007.

Research Grant, Institute for New Economic Thinking, 2011-2013.

Best Paper Prize, American Economic Journal: Macroeconomics [for "Simple Analytics of the Government Expenditure Multiplier"], 2012.

Alfred P. Sloan Foundation grant, for a series of conferences and workshops on the attentional and perceptual foundations of economic behavior, 2017-2022.

NOMIS Foundation grant, for a series of summer schools on the attentional and perceptual foundations of economic behavior, 2018-2022.

Research Initiatives in Science and Engineering grant, Columbia University, 2017-2019.

Banque de France/TSE Prize in Monetary Economics and Finance, 2018.

Research Grant, Alfred P. Sloan Foundation, 2020-2023.

#### **Professional Honors and Affiliations**

Fellow, Econometric Society, since 1991.

Research Associate, Programs in Economic Fluctuations and Growth and in Monetary Economics, National Bureau of Economic Research, since 1994.

Fellow, American Academy of Arts and Sciences, since 2004.

Research Fellow, Centre for Economic Policy Research, 2004-2022.

Honorary Professorship, Mundell International University, Beijing, China, May 2005.

Honorary Professorship, Capital University of Economics and Business, Beijing, China, June 2005.

Honorary Professorship, Renmin University of China, June 2005.

Distinguished Fellow, Center for Financial Studies, Frankfurt University, since 2007.

Charter Fellow, Society for Economic Measurement, since 2014.

Economic Theory Fellow, Society for the Advancement of Economic Theory, since 2015.

Fellow, CESifo Research Network, since 2016.

Charter Fellow, Center for Financial Studies, New York, since 2017.

#### **Professional Service**

Program Committee, Sixth World Congress, Econometric Society, 1990.

Associate Editor, Econometrica, 1990-1993.

Co-Editor, Economic Theory, 1992-1995.

Associate Editor, Quarterly Journal of Economics, 1995-2000.

Editorial Board, Complexity, 1995-1998.

Walras-Bowley Lecture Committee, Econometric Society, 1995.

Advisory Editor, *Macroeconomic Dynamics*, 1996-present.

Associate Editor, American Economic Review, 1997-1999.

Chair of Program Committee, North American Winter Meetings, Econometric Society, 1997.

Frank P. Ramsey Prize Committee, Macroeconomic Dynamics, 2000-present.

Economics Panel, National Science Foundation, 2000-2002.

Nominating Committee, American Economic Association, 2001.

Visiting Committee, Harvard Department of Economics, 2001-2003.

Member, Brookings Panel on Economic Activity, Brookings Institution, 2003.

Program Committee, Annual Meeting of American Economic Association, January 2004.

Advisory Panel, DYNARE, 2004-present.

Co-Editor, International Journal of Central Banking, 2004-2007.

Monetary Policy Panel, Federal Reserve Bank of New York, 2004-2019.

Co-Editor, NBER Macroeconomics Annual, 2005-2014.

Frisch Medal Committee, Econometric Society, 2005.

Chair, Interim Visiting Committee, Harvard Department of Economics, 2006-07.

Editorial Board, American Economic Journal: Macroeconomics, 2007-2016.

Advisory Panel, Brookings Papers on Economic Activity, 2008-2012.

Advisory Board, International Journal of Central Banking, 2008-present.

Economic Advisory Panel, Federal Reserve Bank of New York, 2009-2017.

Editorial Board, Annual Review of Economics, 2010-2016.

Executive Committee, American Economic Association, 2011-2013.

Advisory Committee on Editorial Appointments, American Economic Association, 2011-2014.

Ad Hoc Search Committee for Editor of AEJ: Macroeconomics, American Econ. Assn, 2011.

Program Committee, Annual Meeting of American Economic Association, 2012.

Scientific Advisor, Sveriges Riksbank, 2012-2016.

Node Leader, International Network on Expectational Coordination, 2012-2016.

Program Committee, Annual Meeting of American Economic Association, 2014.

Series Co-Editor, Handbooks of Economics, Elsevier Press, 2013-2018.

Ad Hoc Search Committee for Editor of AEJ: Macroeconomics, American Econ. Assn, 2013.

Nominating Committee, American Economic Assocation, 2014.

Advisory Board, NBER Macroeconomics Annual, 2014-2016.

Honors and Awards Committee, American Economic Association, 2015-17.

Advisory Board, Marie Curie Innovative Training Network ExSIDE, 2015-2021.

Advisory Panel, Bank for International Settlements, 2016-present.

Search Committee for Editor of *Theoretical Economics*, Econometric Society, 2017.

Canvassing Committee, Section III:2 [Economics], Amer. Academy of Arts and Sciences, 2017.

Membership Committee, Section III:2 [Economics], Amer. Academy of Arts and Sciences, 2017.

Nominator, NOMIS Foundation, 2017-present.

Advisory Board, PhD program in Neuroeconomics, University of Zurich, 2018-present.

Co-Organizer, Summer School on Cognitive Foundations of Economic Behavior, Vitznau, Switzerland, June-July 2018, June-July 2019, June-July 2022.

Visiting Committee, Brown Department of Economics, 2018.

Selection Committee, Sloan Foundation/NBER Behavioral Macroeconomics Pre-Doctoral Fellowship Program, 2019-present.

Search Committee for Co-Editor of *Theoretical Economics*, Econometric Society, 2020-21.

Advisory Board, Applied Macroeconomics and Econometrics Center, Federal Reserve Bank of New York, 2021-present.

#### **Publications: Books**

- Handbook of Macroeconomics, Amsterdam: Elsevier, vols. 1A-1C, 1999. (Editor, with J.B. Taylor.)
- Knowledge, Information and Expectations in Modern Macroeconomics: In Honor of Edmund S. *Phelps*, Princeton: Princeton University Press, 2002. (Editor, with P. Aghion, R. Frydman, and J. Stiglitz.)
- Interest and Prices: Foundations of a Theory of Monetary Policy, Princeton: Princeton University Press, 2003. [Winner of the 2003 Association of American Publishers Award for Best Professional/Scholarly Book in Economics.] South Asian edition, New Delhi: New Age International Ltd., 2005. Simplified Chinese translation, Beijing: China Renmin University Press, 2009. Russian translation, Moscow: Delo Publishers, forthcoming.
- Monitoring the European Central Bank 5: The Monetary Policy Strategy of the ECB Reconsidered, London: Centre for Economic Policy Research, 2004. (With J. Gali, S. Gerlach, J. Rotemberg, and H. Uhlig.)
- The Inflation Targeting Debate, Chicago: University of Chicago Press, 2005. (Editor, with B.S. Bernanke.) Paperback edition, 2006.
- Handbook of Monetary Economics, Amsterdam: Elsevier, vols. 3A-3B, 2011. (Editor, with B.M. Friedman.)

- Monetary Policy Through Asset Markets: Lessons from Unconventional Measures and Implications for an Integrated World, Santiago: Central Bank of Chile, 2016. (Editor, with E. Albagli and D. Saravia.)
- International Macroeconomics, Princeton: Princeton University Press, 2022. (With S. Schmitt-Grohé and M. Uribe.)

#### **Publications: Articles**

- "How Reinforcers Are Aggregated in Reinforcement-Density Discrimination and Preference Experiments," in M.L. Commons, R.J. Herrnstein, and H. Rachlin, eds., *Quantitative Analyses of Behavior: Vol. 2. Matching and Maximizing Accounts*, Cambridge, MA: Ballinger, 1982, pp. 25-78. (With M.L. Commons and J.R. Ducheny.)
- "Acquisition of Preference During Shifts Between Terminal Links in Concurrent Chain Schedules," in M.L. Commons, R.J. Herrnstein, and A.R. Wagner, eds., *Quantitative Analyses of Behavior: Vol. 3. Acquisition*, Cambridge, MA: Ballinger, 1982, pp. 391-426. (With M.L. Commons, G.A. Boitano, J.R. Ducheny, and J.R. Peck.)
- "Stationary Sunspot Equilibria in a Finance Constrained Economy," *Journal of Economic Theory* 40: 128-137 (1986). [Reprinted in J.-M. Grandmont, ed., *Nonlinear Economic Dynamics*, New York: Academic Press, 1987.]
- "Three Questions About Sunspot Equilibria as an Explanation of Economic Fluctuations," American Economic Review Papers and Proceedings, 77: 93-98 (May 1987).
- "Credit Policy and the Price Level in a Cash-in-Advance Economy," in W.A. Barnett and K.J. Singleton, eds., *New Approaches in Monetary Economics*, New York: Cambridge University Press, 1987.
- "Expectations, Finance Constraints, and Aggregate Instability," in M. Kohn and S.C. Tsiang, eds., *Finance Constraints, Expectations, and Macroeconomics*, New York: Oxford University Press, 1988.
- "Determinacy of Equilibrium in Stationary Economies with both Finite and Infinite Lived Agents," *Journal of Economic Theory* 46: 255-290 (1988). (With W.J. Muller, III.)
- "Imperfect Financial Intermediation and Complex Dynamics," in W.A. Barnett, J. Geweke, and K. Shell, eds., *Economic Complexity: Chaos, Sunspots, Bubbles, and Nonlinearity*, New York: Cambridge Univ. Press, 1989. [Reprinted in J. Benhabib, ed., *Cycles and Chaos in Economic Equilibrium*, Princeton Univ. Press, 1992; in M. Jarsulic, ed., *Non-Linear Dynamics in Economic Theory*, Edward Elgar, 1993; and in S. Zamagni and E. Agliardi, eds., *Time in Economic Theory*, Edward Elgar, 2003.]
- "Finance, Instability and Cycles," in W. Semmler, ed., *Financial Dynamics and Business Cycles*, Armonk, N.Y.: M.E. Sharpe, 1989.
- "On the Determinacy of Stationary Equilibrium in a Stochastic Overlapping Generations Model," *Journal of Economic Theory* 50: 265-284 (1990). (With S. Spear and S. Srivastava.)
- "Learning to Believe in Sunspots," Econometrica 58: 277-307 (1990).
- "Public Debt as Private Liquidity," *American Economic Review* 80-2: 382-388 (1990).
- "The Optimum Quantity of Money," in B. Friedman and F.H. Hahn, eds., *Handbook of Monetary Economics*, vol. II, Amsterdam: North-Holland, 1990.
- "Equilibrium Models Displaying Endogenous Fluctuations and Chaos," *Journal of Monetary Economics* 25: 189-222 (1990). (With M. Boldrin.) [Reprinted in J. Benhabib, ed., *Cycles and Chaos in Economic Equilibrium*, Princeton Univ. Press, 1992.]

- "How Each Reinforcer Contributes to Value: 'Noise' Must Reduce Reinforcer Value Hyperbolically," in M.L. Commons, J.A. Nevin, and M.C. Davison, eds., *Signal Detection: Mechanisms, Models and Applications,* Hillsdale, NJ: Lawrence Erlbaum, 1991, pp. 139-168. (With M.L. Commons and E.J. Trudeau.)
- "Stability of Cycles with Adaptive Learning Rules," in W.A. Barnett, B. Cornet, C. D'Aspremont, J. Gabszewicz, and A. Mas-Colell, eds., *Equilibrium Theory and Applications*, Cambridge: Cambridge Univ. Press, 1991. (With R. Guesnerie.)
- "Self Fulfilling Expectations and Fluctuations in Aggregate Demand," in N.G. Mankiw and D. Romer, eds., *The New Keynesian Macroeconomics*, Cambridge: M.I.T. Press, 1991.
- "Does Competition Between Currencies Lead to Price Level and Exchange Rate Stability?" in A. Giovannini and C. Mayer, eds., *European Financial Integration*, Cambridge: Cambridge Univ. Press, 1991.
- "Gross Substitutability in Large Square Economies," *Journal of Economic Theory* 54: 1-25 (1991). (With T.J. Kehoe, D.K. Levine, and A. Mas-Colell.)
- "Markups and the Business Cycle," in O.J. Blanchard and S. Fischer, eds., *NBER Macroeconomics Annual 1991*, Cambridge: M.I.T. Press, 1991. (With J.J. Rotemberg.)
- "The Optimum Quantity of Money Revisited," in D. Gale and O. Hart, eds., *Economic Analysis of Markets and Games*, Cambridge: M.I.T. Press, 1992. (With T.J. Kehoe and D.K. Levine.)
- "Equilibrium Models of Endogenous Fluctuations: An Introduction," in A. Vercelli and N. Dimitri, eds., *Macroeconomics: A Survey of Research Strategies*, New York: Oxford Univ. Press, 1992.
- "Endogenous Fluctuations," in J.-J. Laffont, ed., *Advances in Economic Theory: Proceedings of the Sixth World Congress of the Econometric Society*, Cambridge: Cambridge Univ. Press, 1992. (With R. Guesnerie.)
- "Oligopolistic Pricing and the Effects of Aggregate Demand on Economic Activity," *Journal of Political Economy*, 100: 1153-1207 (1992). (With J.J. Rotemberg.)
- "Aggregate Fluctuations from Independent Sectoral Shocks: Self-Organized Criticality in a Model of Production and Inventory Dynamics," *Ricerche Economiche* 47: 3-30 (1993). (With P. Bak, K. Chen, and J. Scheinkman.) [Reprinted in J. Barkley Rosser, Jr., ed., *Complexity in Economics*, Edward Elgar, 2003.]
- "Monetary Policy and Price Level Determinacy in a Cash-in-Advance Economy," *Economic Theory* 4: 345-380 (1994).
- "Self-Organized Criticality and Économic Fluctuations," *American Economic Review* 84(2): 417-421 (1994). (With J.A. Scheinkman.)
- "Non-Standard Indicators for Monetary Policy: Can Their Usefulness be Judged from Forecasting Regressions?," in N.G. Mankiw, ed., *Monetary Policy*, Chicago: Univ. of Chicago Press, 1994.
- "Energy Taxes and Economic Activity," in J. Poterba, ed., *Tax Policy and the Economy* <u>8</u>, Cambridge: M.I.T. Press, 1994. (With J.J. Rotemberg.)
- "Price Level Determinacy without Control of a Monetary Aggregate," *Carnegie-Rochester Conference Series on Public Policy* 43: 1-46 (1995).
- "Dynamic General Equilibrium Models with Imperfectly Competitive Product Markets," in T. Cooley, ed., *Frontiers of Business Cycle Research*, Princeton: Princeton Unversity Press, 1995. (With J.J. Rotemberg.) [Published in French translation in *Annales d'Economie et de Statistique* 37/38: 357-410 (1995).]
- "Real Business Cycles and the Forecastable Movements in Output, Hours and Consumption," *American Economic Review* 86: 71-89 (1996). (With J.J. Rotemberg.)

- "Loan Commitments and Optimal Monetary Policy," *Journal of Monetary Economics* 37: 573-605 (1996).
- "Imperfect Competition and the Effects of Energy Price Increases on Economic Activity," *Journal of Money, Credit and Banking* 28: 549-577 (1996). (With J.J. Rotemberg.)
- "Rational Asset Pricing Bubbles," *Econometrica* 65: 19-58 (1997). (With M.S. Santos.) [Reprinted in M. Magill and M. Quinzii, eds., *Incomplete Markets, Vol. II: Infinite Horizon Economies*, Cheltenham, UK: Edward Elgar, 2008.]
- "Inflation Forecasts and Monetary Policy," *Journal of Money, Credit and Banking* 29: 653-685 (1997). (With B.S. Bernanke.)
- "Control of the Public Debt: A Requirement for Price Stability?" in G. Calvo and M. King, eds., The Debt Burden and Monetary Policy, London: Macmillan, 1997. [Published version is excerpted from NBER working paper no. 5684, July 1996.]
- "Self-Fulfilling Prophecies and the Business Cycle," *Macroeconomic Dynamics* 1: 740-769 (1997). (With R.E.A. Farmer.) [Previously published in Spanish translation in *Cuadernos Economicos de ICE* (Madrid) 35: 129-160 (1987).]
- "An Optimization-Based Econometric Framework for the Evaluation of Monetary Policy," *NBER Macroeconomics Annual 1997*, 297-346. (With J.J. Rotemberg.) [An expanded version of this paper circulated as NBER Technical Working Paper no. 233, May 1998.]
- "Doing Without Money: Controlling Inflation in a Post-Monetary World," *Review of Economic Dynamics* 1: 173-219 (1998).
- "Interest Rate Rules in an Estimated Sticky-Price Model," in J.B. Taylor, ed., *Monetary Policy Rules*, Chicago: Univ. of Chicago Press, 1999. (With J.J. Rotemberg.)
- "Optimal Monetary Policy Inertia," *The Manchester School* 67 (Supplement): 1-35 (1999). [An expanded version of this paper circulated as NBER Working Paper no. 7261, July 1999.]
- "The Cyclical Behavior of Prices and Costs," in J.B. Taylor and M. Woodford, eds., *Handbook of Macroeconomics*, Amstersdam: North-Holland, 1999. (With J.J. Rotemberg.)
- "Commentary: How Should Monetary Policy Be Conducted in an Era of Price Stability?" in *New Challenges for Monetary Policy*, Kansas City: Federal Reserve Bank of Kansas City, 1999.
- "Pitfalls of Forward-Looking Monetary Policy," *American Economic Review* 90(2): 100-104 (2000).
- "Monetary Policy in a World without Money," *International Finance* 3: 229-260 (2000). [Reprinted in A. Chrystal and P. Mizen, eds., *Recent Developments in Monetary Policy*, Cheltenham, UK: Edward Elgar, 2008.]
- "The Taylor Rule and Optimal Monetary Policy," *American Economic Review* 91(2): 232-237 (2001).
- "Fiscal Requirements for Price Stability," *Journal of Money, Credit and Banking* 33: 669-728 (2001).
- "Monetary Policy in the Information Economy," in *Economic Policy for the Information Economy*, Kansas City: Federal Reserve Bank of Kansas City, 2001. [Reprinted in: C.-E. Bai and C.-W. Yuen, eds., *Technology and the New Economy*, Cambridge: M.I.T. Press, 2002.]
- "Inflation Stabilization and Welfare," *Contributions to Macroeconomics*, 2(1), Article 1 (2002). "Financial Market Efficiency and the Effectiveness of Monetary Policy," Federal Reserve Bank
  - of New York Economic Policy Review, 8(1): 85-94 (2002).
- "Imperfect Common Knowledge and the Effects of Monetary Policy," in P. Aghion, R. Frydman, J. Stiglitz, and M. Woodford, eds., *Knowledge, Information and Expectations in Modern Macroeconomics*, Princeton: Princeton University Press, 2003.

- "Indicator Variables for Optimal Policy," *Journal of Monetary Economics* 50: 691-720 (2003). (With L.E.O. Svensson.)
- "Optimal Interest-Rate Smoothing," *Review of Economic Studies* 70: 861-886 (2003). [Reprinted in: S. Eijffinger and D. Masciandaro, eds., *Modern Monetary Policy and Central Bank Governance*, Cheltenham, UK: Edward Elgar, 2014.]
- "How Forward-Looking is Optimal Monetary Policy?" *Journal of Money, Credit and Banking* 35(6 pt. 2): 1425-1469 (2003). (With M.P. Giannoni.)
- "The Zero Bound on Interest Rates and Optimal Monetary Policy," *Brookings Papers on Economic Activity* 2003:1, pp. 139-211. (With G.B. Eggertsson.)
- "Optimal Monetary and Fiscal Policy: A Linear-Quadratic Approach," *NBER Macroeconomics Annual 2003*, pp. 271-333. (With P. Benigno.)
- "Policy Options in a Liquidity Trap," *American Economic Review* 94(2): 76-79 (2004). (With G.B. Eggertsson.)
- "Indicator Variables for Optimal Policy under Asymmetric Information," *Journal of Economic Dynamics and Control* 28: 661-690 (2004). (With L.E.O. Svensson.)
- "Inflation Targeting and Optimal Monetary Policy," Federal Reserve Bank of St. Louis *Economic Review*, July/August 2004, pp. 15-41.
- "Implementing Optimal Policy through Inflation-Forecast Targeting," in B.S. Bernanke and M. Woodford, eds., *The Inflation Targeting Debate*, Chicago: Univ. of Chicago Press, 2005. (With L.E.O. Svensson.)
- "Optimal Inflation Targeting Rules," in B.S. Bernanke and M. Woodford, eds., *The Inflation Targeting Debate*, Chicago: Univ. of Chicago Press, 2005. (With M.P. Giannoni.)
- "Optimal Monetary Policy when Wages and Prices are Sticky: The Case of a Distorted Steady State," in J. Faust. A. Orphanides, and D. Reifschneider, eds., *Models and Monetary Policy*, Washington, D.C.: Federal Reserve Board, 2005. (With P. Benigno.)
- "Firm-Specific Capital and the New-Keynesian Phillips Curve," *International Journal of Central Banking* 1(2): 1-46 (2005).
- "Inflation Stabilization and Welfare: The Case of a Distorted Steady State," *Journal of the European Economic Association* 3: 1185-1236 (2005). (With P. Benigno.)
- "Central-Bank Communication and Policy Effectiveness," in *The Greenspan Era: Lessons for the Future*, Kansas City: Federal Reserve Bank of Kansas City, 2005.
- "Optimal Tax Policy in an RBC Model: A Linear-Quadratic Approach," *Journal of Economic Dynamics and Control* 30: 1445-1489 (2006). (With P. Benigno.)
- "Optimal Monetary and Fiscal Policy in a Liquidity Trap," *NBER International Seminar on Macroeconomics* 2004, pp. 75-131. (With G.B. Eggertsson.)
- "An Example of Robustly Optimal Monetary Policy with Near-Rational Expectations," *Journal of the European Economics Association* 4(2-3): 386-395 (2006).
- "Optimal Inflation Targeting under Alternative Fiscal Regimes," in F. Mishkin and K. Schmidt-Hebbel, eds., *Monetary Policy under Inflation Targeting*, Santiago: Central Bank of Chile, 2007. (With P. Benigno.)
- "The Case for Forecast Targeting as a Monetary Policy Strategy," *Journal of Economic Perspectives*, Fall 2007, pp. 3-24. [Reprinted in V. Wieland, ed., *The Science and Practice of Monetary Policy Today*, Berlin: Springer-Verlag, 2010.]
- "Does a 'Two-Pillar Phillips Curve' Justify a Two-Pillar Monetary Policy Strategy?" in Andreas Beyer and Lucrezia Reichlin, eds., *The Role of Money: Money and Monetary Policy in the 21st Century*, Frankfurt: European Central Bank, 2007.
- "How Important is Money in the Conduct of Monetary Policy?" *Journal of Money, Credit and Banking* 40: 1561-1598 (2008).

- "The Fed's New Communication Strategy: Is It Stealth Inflation Targeting? Or Is It Simply Enhanced Transparency?" *Business Economics*, July 2008.
- "Convergence in Macroeconomics: Elements of the New Synthesis," *American Economics Journal: Macroeconomics* 1: 267-279 (2009). [Also published in Russian translation, *Voprosy Economiki* 10: 17-30 (2010).]
- "Information-Constrained State-Dependent Pricing," *Journal of Monetary Economics* 56(S): 100-124 (2009).
- "Globalization and Monetary Control," in J. Gali and M. Gertler, eds., *International Dimensions of Monetary Policy*, Chicago: University of Chicago Press, 2009.
- "Robustly Optimal Monetary Policy with Near-Rational Expectations," *American Economic Review* 100: 274-303 (2010). [Also published in Serbo-Croation translation, *Panoeconomicus* 58(2): 157-193 (2011).]
- "Conventional and Unconventional Monetary Policy," Federal Reserve Bank of St. Louis *Review* 92(4): 229-264 (2010). (With V. Curdia.)
- "Credit Spreads and Monetary Policy," *Journal of Money, Credit and Banking* 42(S1): 3-35 (2010). (With V. Curdia.)
- "Financial Intermediation and Macroeconomic Analysis," *Journal of Economic Perspectives* 24(4): 21-44 (Fall 2010). [Also published in Polish translation as "Posrednictwo finansowe i analiza makroekonomiczna," *Gospodarka Narodowa*, Warsaw School of Economics, issue 11-12, pp. 109-139 (2011).]
- "Optimal Monetary Stabilization Policy," in B.M. Friedman and M. Woodford, eds., *Handbook of Monetary Economics*, vol. 3B, Amsterdam: Elsevier, 2011.
- "Simple Analytics of the Government Expenditure Multiplier," *American Economic Journal: Macroeconomics* 3: 1-35 (2011). [Winner, Best Paper Prize, *American Economic Journal: Macroeconomics*, 2012.]
- "The Central-Bank Balance Sheet as an Instrument of Monetary Policy," *Journal of Monetary Economics* 58: 54-79 (2011). (With V. Curdia.)
- "Forecast Targeting as a Monetary Policy Strategy: Policy Rules in Practice," in E.F. Koenig, R. Leeson, and J.B. Taylor, eds., *The Taylor Rule and the Transformation of Monetary Policy,* Stanford, CA: Hoover Institution Press, 2012.
- "Linear-Quadratic Approximation of Optimal Policy Problems," *Journal of Economic Theory* 147: 1-42 (2012). (With P. Benigno.)
- "Inflation Targeting and Financial Stability," Sveriges Riksbank *Economic Review* 2012:1, pp. 7-32.
- "Prospect Theory as Efficient Perceptual Distortion," *American Economic Review* 102(3): 1-8 (2012).
- "Robustly Optimal Monetary Policy in a Microfounded New Keynesian Model," *Journal of Monetary Economics* 59: 468-487 (2012). (With K. Adam.)
- "Methods of Policy Accommodation at the Interest-Rate Lower Bound," in *The Changing Policy Landscape*, Federal Reserve Bank of Kansas City, 2012.
- "Principled Policymaking in an Uncertain World," in R. Frydman and E.S. Phelps, eds., Rethinking Expectations: The Way Forward for Macroeconomics, Princeton: Princeton University Press, 2013.
- "Macroeconomic Analysis without the Rational Expectations Hypothesis," *Annual Review of Economics* 5: 303-346 (2013).
- "Forward Guidance by Inflation-Targeting Central Banks," Sveriges Riksbank *Economic Review* 2013:3, pp. 81-120.

- "Monetary Policy Targets After the Crisis," in G. Akerlof *et al.*, eds., *What Have We Learned? Macroeconomic Policy After the Crisis*, MIT Press, 2014.
- "Stochastic Choice: An Optimizing Neuroeconomic Model," *American Economic Review* 104(5): 495-500 (2014).
- "Conventional and Unconventional Monetary Policy with Endogenous Collateral Constraints," *American Economic Journal: Macroeconomics* 7: 1-43 (2015). (With A. Araujo and S. Schommer.)
- "Flexibilización cuantitativa y estabilidad financier," *Economía Chilena* 19(2): 4-77 (2016). [Spanish translation of "Quantitative Easing and Financial Stability," below.]
- "Quantitative Easing and Financial Stability," in E. Albagli, D. Saravia, and M. Woodford, eds., Monetary Policy Through Asset Markets: Lessons from Unconventional Measures and Implications for an Integrated World, Santiago, Central Bank of Chile, 2016.
- "Credit Frictions and Optimal Monetary Policy," *Journal of Monetary Economics* 84: 30-65 (2016). (With V. Curdia.)
- "Optimal Target Criteria for Stabilization Policy," *Journal of Economic Theory* 168: 55-106 (2017). (With M.P. Giannoni.)
- "Discrete Adjustment to a Changing Environment: Experimental Evidence," *Journal of Monetary Economics* 91: 88-103 (2017). (With M.W. Khaw and L. Stevens.)
- "Temporal Discounting and Search Habits: Evidence for a Task-Dependent Relationship," *Frontiers in Psychology: Decision Neuroscience*, vol. 9, art. 2102, November 2018. (With M.W. Khaw and Z. Li.)
- "Efficient Coding of Subjective Value," *Nature Neuroscience* 22: 134-142 (2019). (With R. Polania and C.C. Ruff.)
- "Are Low Interest Rates Deflationary? A Paradox of Perfect Foresight Analysis," *American Economic Review* 109: 86-120 (2019). (With M. Garcia-Schmidt.)
- "Diverse Motives for Human Curiosity," *Nature Human Behaviour* 3: 587-595 (2019). (With K. Kobayashi, S. Ravaioli, A. Baranès, and J. Gottlieb.)
- "Monetary Policy Analysis when Planning Horizons are Finite," *NBER Macroeconomics Annual* 33: 1-50 (2019).
- "Policy Options at the Zero Lower Bound when Foresight is Limited," *AEA Papers and Proceedings* 109: 433-437 (2019). (With Y. Xie.)
- "Noisy Memory and Over-Reaction to News," *AEA Papers and Proceedings* 109: 557-561 (2019). (With R. Azeredo da Silveira.)
- "Modeling Imprecision in Perception, Valuation and Choice," *Annual Review of Economics* 12: 579-601 (2020).
- "Efficient Sampling and Noisy Decisions," *eLife* 9: e54962 (2020). (With J.A. Heng and R. Polania.) [https://elifesciences.org/articles/54962]
- "Individual Differences in the Perception of Probability," *PLoS Computational Biology* 17(4): e1008871 (2021). (With M.W. Khaw and L. Stevens.)
- "Cognitive Imprecision and Small-Stakes Risk Aversion," *Review of Economic Studies* 88: 1979-2013 (2021). (With M.W. Khaw and Z. Li.)
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- "Robustly Optimal Monetary Policy in a New Keynesian Model with Housing," *Journal of Economic Theory*, vol. 198, art. 105352, December 2021. (With K. Adam.)
- "Fiscal and Monetary Stabilization Policy at the Zero Lower Bound: Consequences of Limited Foresight," *Journal of Monetary Economics* 125: 18-35 (2022). (With Y. Xie.)

- "Outlier Blindness: A Neurobiological Foundation for Neglect of Financial Risk," *Journal of Financial Economics* 143: 1316-1343 (2022). (With E. Payzan-LeNestour.)
- "Effective Demand Failures and the Limits of Monetary Stabilization Policy," *American Economic Review* 112: 1475-1521 (2022).
- "Bias and Variance of the Bayesian-Mean Decoder," in M. Ranzato et al., eds., *Advances in Neural Information Processing Systems*, vol. 34 (NeurIPS 2021), 2022. (With A. Prat-Carrabin.) [Online at: <a href="https://proceedings.neurips.cc/paper/2021">https://proceedings.neurips.cc/paper/2021</a>]
- "Efficient Coding of Numbers Explains Decision Bias and Noise," *Nature Human Behaviour* 6: 1142-1152 (2022). (With A. Prat-Carrabin.)

# **Publications: Comments, Book Reviews and Introductions**

- "Comment on J.-M. Grandmont, 'On Endogenous Business Cycles'," in H. Sonnenschein, ed., Models of Economic Dynamics, New York: Springer-Verlag, 1986.
- "Seven Schools of Macroeconomic Thought by E.S. Phelps: A Book Review," Journal of Economic Dynamics and Control 16: 391-398 (1992).
- "Determinacy of Equilibrium under Alternative Policy Regimes: Introduction to the Symposium," *Economic Theory* 4: 323-326 (1994).
- "Bounded Rationality and Learning: Introduction," *Economic Theory* 4: 811-820 (1994). (With Y. Nyarko and N.C. Yannelis.)
- "Structural Slumps," Journal of Economic Literature, 32: 1784-1815 (1994).
- "Comment on M. Kimball, 'The Quantitative Analytics of the Basic Neomonetarist Model'," *Journal of Money, Credit and Banking* 27: 1278-89 (1995).
- "Comment on R. Caballero, E. Engel, and J. Haltiwanger, 'Plant Level Adjustment and Aggregate Investment Dynamics'," *Brookings Papers on Economic Activity*, 1995:2, pp. 40-47.
- "Comment on John Cochrane, 'A Frictionless View of U.S. Inflation'," *NBER Macroeconomics Annual 1998*, pp. 390-418.
- "An Interview with William A. Brock," Macroeconomic Dynamics 4: 108-138 (2000).
- "Edmund S. Phelps and Modern Macroeconomics," in P. Aghion, R. Frydman, J. Stiglitz, and M. Woodford, eds., *Knowledge, Information and Expectations in Modern Macroeconomics*, Princeton: Princeton University Press, 2002. (With P. Aghion, R. Frydman, and J. Stiglitz.)
- "Comment on McCallum, 'Multiple-Solution Indeterminacies in Monetary Policy Analysis," *Journal of Monetary Economics* 50: 1177-1188 (2003).
- "Comments on the Conference on Price Adjustment and Monetary Policy," in *Price Adjustment and Monetary Policy*, Ottawa: Bank of Canada, 2003.
- "Comments on McGough *et al.*, 'Using a Long-Term Interest Rate as the Instrument of Monetary Policy'," *Journal of Monetary Economics* 52: 881-887 (2005).
- "Comment: Optimal Fiscal and Monetary Policy in a Medium-Scale Macroeconomic Model," *NBER Macroeconomic Annual* 20: 445-456 (2006).
- "Comments on the Symposium on *Interest and Prices*," *Journal of the History of Economic Thought* 28: 197-198 (2006).
- "Central-Bank Communication and Macroeconomic Stability," in *Nobel Laureates' Perspectives* on the Chinese Economy, Beijing: Chinese Economic Times, 2006.
- "Staggered Pricing Models Face the Facts," *International Journal of Central Banking*, 2006. (With J.B. Taylor, H.S. Shin, F. Smets, and K. Ueda.)

- "Interpreting Inflation Persistence: Comments on the Conference on Quantitative Evidence on Price Determination," *Journal of Money, Credit and Banking* 39(supp1): 203-210 (2007).
- "Transparency, Communication and Commitment," *International Journal of Central Banking*, March 2007. (With John Taylor, Hyun Shin, Frank Smets and Kazuo Ueda.)
- "Comment on Gosselin, Lotz and Wyplosz, 'Interest Rate Signals and Central Bank Transparency,' *NBER International Seminar on Macroeconomics 2007*, pp. 55-62.
- "Comment on Dani Rodrik, 'The Real Exchange Rate and Economic Growth,'" *Brookings Papers on Economic Activity*, Fall 2008.
- "Comment on John C. Williams, 'Heeding Daedalus: Optimal Inflation and the Zero Lower Bound," *Brookings Papers on Economic Activity*, Fall 2009, pp. 38-45.
- "Preface to the New Volumes," in B.M. Friedman and M. Woodford, eds., *Handbook of Monetary Economics*, vol. 3A, Amsterdam: Elsevier, 2011.
- "Comments on Ashcraft, Garleanu and Pedersen, 'Two Monetary Tools: Interest Rates and Haircuts'," *NBER Macroeconomics Annual 2010*, pp. 193-204.
- "Bernanke Should Clarify Policy and Sink QE3," Financial Times, August 26, 2011.
- "Comments on Campbell et al., 'Macroeconomic Effects of FOMC Forward Guidance'," Brookings Papers on Economic Activity, Spring 2012.
- "What's Wrong with Macroeconomic Models?" *Voprosy Ekonomiki* 5: 14-21 (2012). [Published in Russian translation. Original English text circulated as INET Research Note #9, Institute for New Economic Thinking, July 2012.] [Also published in Spanish translation as: "¿Qué pasa con los modelos económicos?" CEMLA *Boletín* 58: 267-273 (2012).]
- "In Defense of the Fed's New Interest-Rate Policy," *Wall Street Journal*, January 6, 2013. (With F.S. Mishkin.)
- "Report: Ad Hoc Committee on Criteria for the John Bates Clark Medal," *American Economic Review*, 2013. (With J. Gruber, C. Paxson, and V.A. Ramey.)
- "Inflation Targeting: Fix It, Don't Scrap It," in L. Reichlin and R. Baldwin, eds., *Is Inflation Targeting Dead? Thinking Ahead About Central Banking After the Crisis*, Centre for Economic Policy Research, 2013.
- "Helicopter Money as a Policy Option," vox.EU.org, posted May 20, 2013. (With L. Reichlin and A. Turner.)
- "Introduction," in E. Albagli, D. Saravia, and M. Woodford, eds., *Monetary Policy Through Asset Markets: Lessons from Unconventional Measures and Implications for an Integrated World,* Santiago, Central Bank of Chile, 2016. (With E. Albagli and D. Saravia.)
- "Forecasting the Outcome of a Time-Varying Bernoulli Process: Data from a Laboratory Experiment," *Data in Brief* 15: 469-473 (2017). (With M.W. Khaw and L. Stevens.)
- "Individualistic Welfare Analysis in the Age of Behavioral Science," *Capitalism and Society*, vol. 13, issue 1, article 3, posted online October 15, 2018.
- "Emi Nakamura: 2019 John Bates Clark Medalist," *Journal of Economic Perspectives*, Winter 2020, pp. 222-239. (With J. Eberly.)
- "Multiple Conceptions of Resource Rationality," *Behavioral and Brain Sciences* 43: e15, posted online March 11, 2020. (With W.J. Ma.) [doi: 10.1017/S0140525X19001754]
- "Post-Pandemic Monetary Policy and the Effective Lower Bound," in *Navigating the Decade Ahead: Implications for Monetary Policy*, Federal Reserve Bank of Kansas City, 2020.
- "'The New Neoclassical Synthesis and the Role of Monetary Policy,' by Marvin Goodfriend and Robert G. King," in Robert G. King and Alexander L. Wolman, eds., *Essays in Honor of Marvin Goodfriend: Economist and Central Banker*, Federal Reserve Bank of Richmond, 2022. [Also available online at <a href="https://www.richmondfed.org/goodfriend">www.richmondfed.org/goodfriend</a>]

- "Is the Demand for Money the Source of Economic Slumps?" *Just Money*, posted March 25, 2022. [URL: <a href="https://justmoney.org/michael-woodford-is-the-demand-for-money-the-source-of-economic-slumps/">https://justmoney.org/michael-woodford-is-the-demand-for-money-the-source-of-economic-slumps/</a>]
- "Beyond the Natural Rate: Stephen Marglin on the Instability of Market Economies," *Journal of Economic Literature*, forthcoming.

# **Unpublished Working Papers**

- "Indeterminacy of Equilibrium in the Overlapping Generations Model: A Survey," May 1984.

  [Presented at IMSSS Summer School in Mathematical Economics, Stanford University, July 1984.]
- "Stationary Sunspot Equilibria: The Case of Small Fluctuations About a Deterministic Steady State," December 1986.
- "Price Level Determinacy in an Inside Money Economy," December 1987.
- "Least Squares Learning and Inflation Dynamics: A Stochastic, Nonlinear Model," July 1991.
- "Real Effects of Monetary Shocks in an Economy with Sequential Purchases," NBER working paper no. 4250, January 1993. Revised April 1994. (With R.E. Lucas, Jr.)
- "Notes on Dynamic Efficiency Wage Models," August 1994.
- "Public Debt and the Price Level," June 1998.
- "Revolution and Evolution in Twentieth-Century Macroeconomics," June 1999. [Presented at a conference, "Frontiers of the Mind in the Twenty-First Century," U.S. Library of Congress, Washington, D.C., June 1999.]
- "Optimal Monetary Policy Inertia," NBER working paper no. 7261, August 1999. [This is a considerably extended version of the paper with the same name published in *The Manchester School.*]
- "Optimal Policy with Partial Information in a Forward-Looking Model: Certainty-Equivalence Redux," NBER working paper no. 9430, January 2003. (With Lars E.O. Svensson.)
- "Optimal Monetary Policy in a Liquidity Trap," NBER working paper no. 9968, September 2003. (With G.B. Eggertsson.) [Updated and extended version of paper in *Brookings Papers*, presented at two conferences in Tokyo, September 2003.]
- "Inflation and Output Dynamics with Firm-Specific Investment," May 2004. [An excerpt from this paper was published under the title "Firm-Specific Capital and the New-Keynesian Phillips Curve".]
- "Principles and Public Policy Decisions: The Case of Monetary Policy," February 2008. [Seminar paper, Yale Legal and Economic Organization Seminar.]
- "Inattention as a Source of Randomized Discrete Adjustment," April 2008.
- "Optimal Target Criteria for Multi-Dimensional Policy Problems," February 2010. (With M.P. Giannoni.)
- "Inattentive Valuation and Reference-Dependent Choice," December 2011, revised May 2012.
- "Fedspeak: Does It Matter How Central Bankers Explain Themselves?" University Lecture, Columbia University, April 2013.
- "The Limits of Monetary Policy," speech at conference on "The New Bank of Israel," Bank of Israel, June 2013.
- "An Optimizing Neuroeconomic Model of Discrete Choice," NBER Working Paper no. 19897, February 2014. Revised as "Optimal Evidence Accumulation and Stochastic Choice," August 2016.
- "Utility-Weighted Sampling and Salience Theory," October 2017.

- "Real Effects of Interest-Rate Policy and Central-Bank Asset Purchases with Endogenous Collateral Constraints," February 2018. (With A. Araujo and S. Schommer.)
- "Rational Inattention with Sequential Information Sampling," June 2016. (With B. Hébert.)
  Revised draft circulated as NBER Working Paper no. 23787, September 2017. Revised as "Information Costs and Sequential Information Sampling," NBER Working Paper no. 25316, November 2018. [Some material from this further revised as "Neighborhood-Based Information Costs," *AER*, 2021.]
- "Adjustment Dynamics During a Strategic Estimation Task," August 2019. (With M.W. Khaw and L.L. Stevens.)
- "Adaptive Efficient Coding: A Variational Autoencoder Approach," posted on *bioRXiv* on May 31, 2020. (With G. Aridor and F. Grechi.)
- "Optimally Imprecise Memory and Biased Forecasts," NBER Working Paper no. 28075, November 2020. (With R. Azeredo da Silveira and Y. Sung.) Also circulated as CEPR Discussion paper no. 15459, and CESifo Working Paper no. 8709.
- "The Sequential Effects of Base-Rate Neglect on Belief Updating and Real-World Beliefs," July 2021. (With B. Ashinoff, J. Buck, and G. Horga.) Revised draft posted on *PsyArXiv*, February 17, 2022. [https://psyarxiv.com/8ey75/]
- "Imprecise Probabilistic Inference from Sequential Data," February 2021. (With A. Prat-Carrabin.) Revision posted on *PsyArXiv*, March 10, 2022. [https://psyarxiv.com/xn5mk]
- "Dynamic Information Choice with Biased Information Sources," April 2022. (With S. Ravaioli and J.P. Gottlieb.)
- "Efficient Scalar Variability in Human Numerosity Estimation," July 2021. (With J. Heng and R. Polania.) Revised as "Temporal Efficiency in Human Numerosity Estimation," May 2022.
- "Manifold Geometry Predicts the Characteristics of Working Memory Errors," July 2020. (With X.-X. Wei.) Revised as "Geometry of the Encoding Manifold Explains the Puzzling Error Distributions in Behavioral Tasks," November 2021. Further revised as "Representational Geometry Explains Puzzling Error Distributions in Behavioral Tasks," July 2022.
- "Predicting Risk Attitudes from the Precision of Neural Magnitude Representations," April 2021. (With M.B. Garcia, G. de Hollander, M. Grueschow, R. Polania, and C.C. Ruff.) Revised as "Individual Risk Attitudes Arise from Noise in Neurocognitive Magnitude Representations," posted on *bioRXiv*, August 22, 2022.
- "Cognitive Imprecision and Stake-Dependent Risk Attitudes," NBER Working Paper no. 30417, September 2022. (With M.W. Khaw and Z. Li.) Also circulated as CESifo Working Paper no. 9923.
- "Rational Inattention in Continuous Time," November 2018. (With B. Hébert.) Revised as "Rational Inattention when Decisions Take Time," NBER Working Paper no. 26415, October 2019. Revised July 2021, April 2022, October 2022.

#### **Invited Lectures**

- Invited Session, "Endogenous Fluctuations," Sixth World Congress, Econometric Society, Barcelona, August 1990.
- Keynote Address, "Money Prices in the Theory of Value: A Post-Monetarist View," Annual Meeting, Society for Economic Dynamics and Control, Mexico City, June 1996.
- Money, Macroeconomics and Finance Lecture, "Optimal Monetary Policy Inertia," Annual Meeting, Money, Macroeconomics and Finance Research Group, London,

- September 1998.
- Public Lecture, "Revolution and Evolution in Twentieth-Century Macroeconomics," Conference on 'Frontiers of the Mind in the Twenty-First Century,' Library of Congress, Washington, June 1999.
- Plenary Lecture, "Interest-Rate Rules for Monetary Policy," Latin American Meeting of the Econometric Society, Cancun, Mexico, August 1999.
- Money, Credit and Banking Lecture, "Fiscal Requirements for Price Stability," Ohio State University, May 2000.
- Public Lecture, "Information Technology and the Future of Monetary Policy," Victoria University of Wellington, New Zealand, June 2000.
- Jacob Marschak Lecture, "Optimal Interest-Rate Rules," Far Eastern Meeting of the Econometric Society, Kobe, Japan, July 2001.
- Public Lecture, "Economic Models and the Conduct of Monetary Policy," Federal Reserve Bank of Philadelphia, May 2002.
- Keynote Address, "Optimal Control and the Conduct of Monetary Policy," Conference on China and the World Economy, City University of Hong Kong, June 2002.
- Public Lecture, "Monetary Policy in the Information Economy," Hong Kong University, June 2002.
- Rogers Clark Lecture in Macroeconomics, "Inflation Targeting and Optimal Monetary Policy," North Carolina State University, March 2004.
- Plenary Lecture, "Linear-Quadratic Approximation of Optimal Policy Problems," 10<sup>th</sup> Annual Conference on Computing in Economics and Finance, Amsterdam, July 2004.
- Plenary Lecture, "Optimal Inflation Targeting under Fiscal Stress," XXXII Encontro Nacional de Economia [ANPEC/ Society of Brazilian Economists], Joao Pessoa, Brazil, December 2004.
- Public Lecture, "Central-Bank Communication and Macroeconomic Stability," Nobel Laureates' Beijing Forum 2005, Beijing, China, May 2005.
- Public Lecture, "The New Neoclassical Synthesis and the Role of Monetary Policy," Capital University of Economics and Business, Beijing, China, June 2005.
- Plenary Lecture, "Optimal Inflation Targeting under Fiscal Stress," CSEF-IGIER Symposium on Economics and Institutions, Capri, Italy, June 2005.
- Public Lecture, "Inflation Targeting and Optimal Monetary Policy," University of Oslo, June 2006.
- W.A. Mackintosh Lecture, "How Important is Money in the Conduct of Monetary Policy?" Queen's University, Canada, October 2006.
- Keynote Address, "Inflation Targeting During Credit Market Turmoil," Eleventh Annual Conference on Inflation Targeting, Banco Central do Brasil, Rio de Janeiro, May 2009.
- Keynote Address, "Inflation Targeting and Financial Stability," High-Level Seminar on Inflation Targeting in Open Economies, Czech National Bank, September 2010.
- Keynote Address, "Inflation Targeting and Financial Stability," Conference on The Future of Monetary Policy, Einaudi Institute for Economics and Finance, Rome, September 2010.
- Invited Lecture, "Monetary Policy and Financial Stability," Winter Meeting of Econometric Society, Denver, January 2011.
- Public Lecture, "Quantitative Easing and Credit Easing: When Are 'Unconventional' Policies Needed?" Duisenberg School of Finance, Amsterdam, January 2011.
- Keynote Address, "Robustness of Policy Analysis to Departures from Model-Consistent Expectations," Conference on Expectations in Dynamic Macroeconomic Models, Centre

- for Dynamic Macroeconomic Analysis, University of St. Andrews, August-September 2011.
- Keynote Address, "Perceptual Distortions, Valuation and Choice," Conference on Expectations in Dynamic Macroeconomic Models, Federal Reserve Bank of St. Louis, August 2012.
- University Lecture, "Fedspeak: Does It Matter How Central Bankers Explain Themselves?" Columbia University, April 2013.
- Keynote Address, "Efficient Perceptual Coding and Reference-Dependent Choice," Fourth LeeX International Conference on Theoretical and Experimental Macroeconomics, Barcelona GSE Summer Forum, June 2013.
- Eytan Berglas Lecture, "What Can Economics Learn from the Study of the Brain?" Tel Aviv University, May 2014.
- Kavli Foundation Social and Decision Science Workshop, "Psychophysical Aspects of Choice Behavior," Annual Meeting, Society for Neuroeconomics, Miami, September 2014.
- Keynote Lecture, "What Can Economics Learn from the Study of the Brain?" Annual Meeting, Latin American and Caribbean Economic Association, Sao Paulo, November 2014.
- AFA Lecture, "Cognitive Limitations and the Perception of Risk," American Finance Association Annual Meeting, Boston, January 2015.
- PER Distinguished Lecture, "Inattentive Choice," Department of Economics, Columbia University, October 2015.
- Keynote Lecture, "What Can Economics Learn from the Study of the Brain?" CESifo Area Meeting on Behavioral Economics, Munich, October 2015.
- Keynote Lecture, "Are Low Interest Rates Inflationary? A Paradox of Perfect Foresight Analysis," Quantitative Macroeconomics Workshop, Reserve Bank of Australia, December 2015.
- KAEA-Maekyung Forum Lecture, "Are Low Interest Rates Inflationary? A Paradox of Perfect Foresight Analysis," Korean-American Economic Association, ASSA Meetings, San Francisco, January 2016.
- Plenary Lecture, "Rational Inattention and Sequential Information Sampling," 16<sup>th</sup> SAET Conference on Current Trends in Economics, IMPA, Rio de Janeiro, July 2016.
- John Kuszczak Memorial Lecture, "Multi-Dimensional Monetary Policy," Annual Research Conference, Bank of Canada, Ottawa, November 2016.
- Distinguished Lecture Series, "Inattentive Choice," Department of Economics, Brown University, November 2016.
- Distinguished Lecture Series, "Attentional and Perceptual Foundations of Economic Behavior," University of Zurich, May 2017.
- Keynote Address, "Forward Guidance when Planning Horizons are Finite," EABCN Meeting on Recent Developments in Monetary Policy Research, Banque de France, June 2017.
- Keynote Lecture, "Risk Attitude as a Perceptual Bias," 10<sup>th</sup> Maastricht Behavioral and Experimental Economics Symposium, June 2017.
- Plenary Lecture, "Monetary Policy Analysis when Planning Horizons are Finite," 23d International Conference on Computing in Economics and Finance, Fordham University, June 2017.
- Keynote Lecture, "Monetary Policy Analysis when Planning Horizons are Finite," Conference on Applications of Behavioral Macroeconomics, Bank of England, July 2017.
- Keynote Lecture, "Monetary Policy Analysis when Planning Horizons are Finite," Conference on Expectations in Dynamic Macroeconomic Models, University of Birmingham, August 2018.

- Keynote Address, "Policy Options at the Zero Lower Bound when Foresight is Limited," Banque de France/TSE Prize Ceremony, Paris, March 2019.
- Keynote Lecture, "Optimally Imprecise Memory and Biased Forecasts," Workshop on Methods and Applications for Dynamic Stochastic General Equilibrium Models, Federal Reserve Bank of Philadelphia, October 2019.
- Jean Monnet Lecture, "Effective Demand Failures and the Limits of Monetary Stabilization Policy in a Pandemic," Annual Research Conference, European Central Bank [held online], September 2020.
- Marlene Porsche Memorial Lecture, "Noisy Probabilistic Inference from Sequential Data," University of Zurich [held online], December 2020.
- Martha and Jonathan Cohen Distinguished Lecture, "Cognitive Imprecision and Choice Under Risk," University of Pennsylvania [held online], April 2021.
- Keynote Lecture, "Monetary-Fiscal Interactions when Foresight is Limited," Conference on New Avenues for Monetary Policy, Bank of Finland and CEPR [held online], September 2021.
- Keynote Lecture, "Early vs. Late Noise in Decision Processes: The Case of Choice Under Risk," Workshop on Choice-Process Data, Economic Science Association, Tucson, Arizona, October 2021.
- Plenary Lecture Series, "Imprecise Cognition and Economic Behavior," 2021 Delhi Winter School, Delhi School of Economics and Econometric Society [online], December 2021.

#### **Profiles and Interviews**

- "Talking with Michael Woodford," in Michael Parkin, *Economics*, Addison-Wesley, 6<sup>th</sup> edition, 2002.
- "Interview with Michael Woodford," Study Center Gerzensee Newsletter, January 2005, pp. 1-3.
- "Research Summary: Rules for Monetary Policy," NBER Reporter, Spring 2006.
- Bennett T. McCallum, "Michael Woodford's Contributions to Monetary Economics," in V. Wieland, ed., *The Science and Practice of Monetary Policy Today*, Center for Financial Studies, Frankfurt, Springer-Verlag, 2010.
- "Academic Sways Central Bankers," Wall Street Journal, August 30, 2012.
- Rich Miller, "Woodford's Theories Rooted in Japan Slump Embraced by Bernanke," *Bloomberg Markets*, October 2013, pp. 62-68.
- "Michael Woodford" [interview by David Andolfatto], Federal Reserve Bank of St. Louis, Connecting Policy with Frontier Research, October 10-11, 2013, pp. 34-37.
- "Interview with Michael Woodford," *Top of Mind*, Goldman Sachs Economics, Commodities and Strategy Research, October 31, 2013, pp. 4-5.
- Douglas Clement, "Interview with Michael Woodford," *The Region,* Federal Reserve Bank of Minneapolis, volume 28, number 3, September 2014, pp. 14-27.
- "What Can Neuroscience Contribute to Economics?" *Columbia Economics*, Spring 2018, pp. 10-11.
- "Why Do People Overreact to Economic News?" VideoVox profile, published March 1, 2019. [https://www.youtube.com/watch?v=oCe nS VJo0&feature=youtu.be]
- "Michael Woodford: 'Les banques centrales ne sont pas toutes puissantes,' "Le Monde, March 15, 2019.
- "A Neuroscientist and an Economist Explore How Our Brains Seek Out Information," Zuckerman Institute profile, published online April 16, 2019.

- [https://zuckermaninstitute.columbia.edu/neuroscientist-and-economist-explore-how-our-brains-seek-out-information]
- "The University of Chicago Policy Forum: Michael Woodford," HCEconomics profile, published online August 20, 2019.
  - [https://www.youtube.com/watch?v=e59jzBPckoY&feature=youtu.be]
- "Attentional and Perceptual Foundations of Economic Behavior," *Spark* [NOMIS Foundation], issue 4, December 2019, pp. 34-41.
- "Michael Woodford," in Robert M. Solow, ed., Economists, Yale University Press, 2020.
- "Interview with Dr. Michael Woodford: A Neuroscientific Take on Economic Decisions," *Brain Banter* podcast, posted March 2, 2022.

[https://open.spotify.com/episode/3eZw44rhnzRtFcAQiouLMo?si=7a2bbce669494007]

#### Conferences

Program committees [since 1995]:

Conference on the Transformation of Academic Disciplines, American Academy of Arts and Sciences, Pasadena, March 1995.

Conference on General Equilibrium Theory, NBER, Chicago, April 1995.

North American Summer Meeting, Econometric Society, Iowa City, June 1996. (Chair of Walras-Bowley Lecture committee.)

Conference on Economic Fluctuations and Growth, NBER, Chicago, October 1996.

Conference on Recent Developments in Macroeconomics, I: Federal Reserve Bank of New York, February 1997.

Conference on Recent Developments in Macroeconomics, II: Federal Reserve Bank of San Francisco, March 1997.

North American Winter Meeting, Econometric Society, Chicago, January 1998. (Chair of program committee.)

New York Area Macroeconomics Workshop, New York University, October 1998.

Conference on Economic Fluctuations and Growth, NBER, Cambridge, July 2000.

Festschrift Conference in Honor of Edmund S. Phelps, Columbia University, October 2001.

Conference on Inflation Targeting, NBER, Miami, January 2003.

Monetary Economics Program Meeting, NBER, Cambridge, April 2003.

Annual Meeting, American Economics Association, San Diego, January 2004.

Conference on Economic Fluctuations and Growth, NBER, Cambridge, July 2005.

Conference on Quantitative Analysis of Stabilization Policy, Columbia University, September 2005.

NBER Macroeconomics Annual Conference, Cambridge, April 2006, April 2007, April 2008, April 2009, April 2010, April 2011, April 2012, April 2013, April 2014.

Monetary Economics Program Meeting, NBER, Cambridge, November 2008.

Conference on Financial Markets and Macroeconomic Stability, European Central Bank, December 2008.

Conference 'Key Developments in Monetary Economics, Part I,' Federal Reserve Board, October 2009.

Conference 'Key Developments in Monetary Economics, Part II,' European Central Bank, October 2009.

Conference on Financial Frictions and Macroeconomic Modeling, Columbia University, February 2010.

Conference on Heterogeneous Expectations and Economic Stability, Columbia University, February 2011.

Annual Meeting, American Economic Association, Chicago, January 2012.

Conference on Finance and Expectational Coordination, New York University, February 2013.

Conference on Experiments in Macroeconomics and Financial Economics, Columbia University, March 2013.

Monetary Economics Program Meeting, NBER, Cambridge, November 2013.

Annual Meeting, American Economic Association, Philadelphia, January 2014.

Second New York Conference, International Network on Expectational Coordination, New York University, February 2014.

Workshop on Perception and Choice, Columbia University, May 2015.

Working Group on Behavioral Macroeconomics, NBER Summer Institute, Cambridge, July 2015, July 2016, July 2017, July 2018, July 2019, July 2020, July 2021, July 2022.

Conference on Monetary Policy Through Asset Markets, Central Bank of Chile, November 2015.

Workshop on the Representation of Value and Economic Choice, Columbia University, May 2016.

Workshop on Information Processing and Behavioral Variability, Columbia University, May 2017.

Inaugural Symposium: Attentional and Perceptual Foundations of Economic Behavior, Rye Brook, NY, October 2017.

Conference in Memory of Kenneth J. Arrow, Columbia University, December 2017.

Sloan-Nomis Workshop on Attention and Choice, New York University, February 2018.

Second Sloan-Nomis Workshop on Attention and Choice, Vitznau, Switzerland, July 2018.

Sloan-Nomis Workshop on Cognitive Foundations of Economic Behavior, NYU, February 2019.

Workshop on Efficient Coding and Resource-Constrained Cognition, Columbia University, May 2019.

Annual Meeting, Central Bank Research Association, New York, July 2019.

Sloan-Nomis Workshop on Cognitive Foundations of Economic Behavior, Vitznau, Switzerland, July 2019.

Conference on Expectations in Macroeconomic and Financial Models, Becker-Friedman Institute, University of Chicago, June 2020. [Moved online.]

Sloan-Nomis Workshop on Attention and Applied Economics, September 2020. [Online.]

NBER Behavioral Macroeconomics Research Boot Camp for Graduate Students, UC Berkeley, May 2022.

# Conference presentations [since 2005]:

Conference on Monetary Theory, University of Western Ontario, March 2005.

Nobel Laureates' Beijing Forum 2005, Beijing, May/June 2005.

Seminar on Globalization: Economic and Financial Development, First Light Academy, Shanghai, June 2005.

Conference on Inflation Targeting: Implementation, Communication and Effectiveness, Sveriges Riksbank, Stockholm, June 2005.

CSEF-IGIER Symposium on Economics and Institutions, Capri, Italy, June 2005.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, Cambridge, July 2005.

Annual Meeting, European Economics Association, Amsterdam, August 2005.

Symposium on "The Greenspan Era: Lessons for the Future," Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 2005.

Annual Conference, Central Bank of Chile, October 2005.

New York Area Workshop on Monetary Policy, November 2005.

Oslo Workshop on Monetary Policy, University of Oslo, June 2006.

Conference on Monetary Policy under Uncertainty, University of Oslo, June 2006.

Conference on China and the World Economy, NBER and CCER, Beijing, June-July 2006.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, Cambridge, July 2006.

Eighth Toulouse Seminar on Macroeconomics, Toulouse, September 2006.

Fourth ECB Central Banking Conference, "Money and Monetary Policy in the Twenty-First Century," Frankfurt, November 2006.

International Research Forum on Monetary Policy, ECB and Federal Reserve Board, Washington, December 2006.

Annual Meeting, American Economics Association, Chicago, January 2007.

Conference in Honor of Ernst Baltensperger, University of Bern, June 2007.

Conference on International Aspects of Monetary Policy, NBER, Girona, Spain, June 2007.

Conference on John Taylor's Contributions to Monetary Theory and Policy, Federal Reserve Bank of Dallas, October 2007.

Conference on Business Cycles, International Transmission, and Macroeconomic Policies, HEC, Montreal, October 2007.

Annual Meeting, American Economics Association, New Orleans, January 2008.

Monetary Economics Program Meeting, NBER, Chicago, April 2008.

New York Area Workshop on Monetary Policy, May 2008.

Conference on Recognizing and Coping with Macroeconomic Model Uncertainty in Designing Monetary Policy, Bank of Korea, May 2008.

Annual Conference, Bank of Japan, May 2008.

Federal Reserve System Central Banking Seminar, Federal Reserve Bank of New York, June 2008.

Conference on DSGE Models in the Policy Environment, Banca d'Italia, June 2008.

Seventh BIS Annual Conference, "Whither Monetary Policy?" Lucerne, Switzerland, June 2008.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, Cambridge, July 2008.

Economic Fluctuations and Growth Program Meeting, NBER, Chicago, October 2008.

Conference on Monetary Policy and Financial Frictions, FRB Minneapolis and Bank of Canada, Minneapolis, October 2008.

New York Area Workshop on Monetary Policy, Federal Reserve Bank of New York, November 2008.

Conference on Monetary Policy under Imperfect Information, Swiss National Bank, Gerzensee, December 2008.

Conference on Financial Markets and Macroeconomic Stability, European Central Bank, December 2008.

Annual Meeting, Allied Social Science Associations, San Francisco, January 2009.

IMF Research Department Macro Modeling Workshop, Washington, January 2009.

Eleventh Annual Conference on Inflation Targeting, Banco Central do Brasil, Rio de Janeiro, May 2009.

Chief Economists' Workshop, Center for Central Banking Studies, Bank of England, London, May 2009.

Conference on Financial Markets and Monetary Policy, Federal Reserve Board, June 2009.

Conference on Expectations and Coordination, Paris School of Economics, Paris, June 2009.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, July 2009.

Working Group on Pricing Dynamics, NBER Summer Institute, July 2009.

Conference on the Dynamics of Prices and Wages, Central Bank of Chile, August 2009.

Conference 'Key Developments in Monetary Economics, Part I,' Federal Reserve Board, October 2009.

Annual Policy Conference, 'Debt, Financial Markets, and Monetary Policy,' Federal Reserve Bank of St. Louis, October 2009.

- New York Area Workshop on Monetary Policy, Federal Reserve Bank of New York, November 2009.
- Annual Meeting, Allied Social Science Associations, Atlanta, January 2010.
- Conference on New Approaches to Fiscal Policy, Federal Reserve Bank of Atlanta, January 2010.
- Conference on Financial Market Imperfections and Macroeconomics, Federal Reserve Bank of San Francisco, March 2010.
- International Research Forum on Monetary Policy, ECB and Federal Reserve Board, Washington, March 2010.
- Carnegie-Rochester Conference Series on Public Policy, University of Rochester, April 2010.
- High-Level Seminar on Inflation Targeting in Open Economies, Czech National Bank, September 2010.
- Conference, 'The Future of Monetary Policy,' Einaudi Institute for Economics and Finance, Rome, September-October 2010.
- Conference on Microfoundations for Modern Macroeconomics, Center on Capitalism and Society, Columbia University, November 2010.
- Annual Meeting, Allied Social Science Associations, Denver, January 2011.
- Seventh Annual Cowles Conference on General Equilibrium and its Applications, Cowles Foundation, Yale University, April-May 2011.
- Conference on Theoretical Questions After the Economic Crisis, Central Bank of Chile, May 2011.
- Conference, "The 75<sup>th</sup> Anniversary of the *General Theory*," Cambridge University, June 2011.
- Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, July 2011.
- Finance and Macroeconomics Workshop, NBER Summer Institute, July 2011.
- Conference on Expectations in Dynamic Macroeconomic Models, Centre for Dynamic Macroeconomic Analysis, University of St. Andrews, August-September 2011.
- Carnegie-Rochester-NYU Conference Series on Public Policy, Carnegie-Mellon University, November 2011.
- Thirteenth Annual Neemrana Conference, NBER-ICRIER-NCAER, New Delhi, December 2011.
- Annual Meeting, Allied Social Science Associations, Chicago, January 2012.
- Conference on Rational Inattention and Related Theories, CERGE-EI, Prague, June 2012.
- Conference on Behavioral Decision Theory, CREI, Barcelona, June 2012.
- 7<sup>th</sup> Conference on Monetary Economics, Bank of Portugal, Porto, June 2012.
- Meeting, International Network on Expectational Coordination, College de France, Paris, June 2012.
- Conference on Expectations in Dynamic Macroeconomic Models, Federal Reserve Bank of St. Louis, August 2012.
- Symposium on "The Changing Policy Landscape," Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August-September 2012.
- Annual Meeting, Allied Social Science Associations, San Diego, January 2013.
- Conference on Finance and Expectational Coordination, New York University, February 2013.
- Conference "Rethinking Macro Policy II," International Monetary Fund, April 2013.
- INET Working Group on Macroeconomic Externalities, Columbia University, April 2013.
- Conference in Honor of Peter Howitt, Brown University, May 2013.
- Conference on "Two Decades of Inflation Targeting: Main Lessons and Remaining Challenges," Sveriges Riksbank, June 2013.

Fourth LeeX International Conference on Theoretical and Experimental Macroeconomics, Barcelona GSE Summer Forum, June 2013.

Conference on "The New Bank of Israel," Bank of Israel, Jerusalem, June 2013.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, July 2013.

Working Group on Dynamic Equilibrium Models, NBER Summer Institute, July 2013.

Conference on "Bubbles", Sveriges Riksbank, Stockholm, September 2013.

Annual Fall Conference, Federal Reserve Bank of St. Louis, October 2013.

Conference on "Lessons from the Financial Crisis for Monetary Policy, NBER, Boston, October 2013.

Annual Meeting, Allied Social Science Associations, Philadelphia, January 2014.

Second New York Conference, International Network on Expectational Coordination, New York University, February 2014.

Workshop on Perception and Choice, Yale University, March 2014.

Conference on Domestic and International Dimensions of Unconventional Monetary Policy, FRB New York and Hong Kong Monetary Authority, Hong Kong, March 2014.

Conference on "Neuroeconomics: Recent Advances and Future Directions," Ettore Majorana Center, Erice, Italy, June 2014.

Annual Meeting, Society for Neuroeconomics, Miami, September 2014.

Conference on Frontiers of Macroeconomics, Federal Reserve Bank of Chicago, October 2014.

Symposium on "Monetary Policy: A New Normal?" Federal Reserve Bank of San Francisco, November 2014.

Annual Meeting of LACEA/Latin American Meeting of the Econometric Society, Sao Paulo, November 2014.

Annual Meeting, Allied Social Science Associations, Boston, January 2015.

Second Conference on Reinforcement Learning and Decision Making, University of Alberta, June 2015.

Conference on "Deflation: Causes, Consequences and Policies," Sveriges Riksbank, June 2015.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, July 2015.

Eleventh World Congress, Econometric Society, Montreal, August 2015.

CESifo Area Conference on Behavioral Economics, Munich, October 2015.

Workshop on Behavioral Macroeconomics, Tinbergen Institute, Amsterdam, October 2015.

Monetary Economics Program Meeting, NBER, Cambridge, November 2015.

Conference on "Monetary Policy Through Asset Markets," Central Bank of Chile, November 2015.

Quantitative Macroeconomics Workshop, Reserve Bank of Australia, December 2015.

Annual Meeting, Allied Social Science Associations, San Francisco, January 2016.

Conference on "Rethinking the Central Bank Mandate," Sveriges Riksbank, June 2016.

Conference on "Information Choice: Perception and Design," Yale University, June 2016.

16<sup>th</sup> SAET Conference on Current Trends in Economics, IMPA, Rio de Janeiro, July 2016.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, July 2016.

Annual Meeting, Society for Neuroeconomics, Berlin, August 2016. [Four presentations in poster sessions.]

Neuroeconomics Satellite Conference, University of Zurich, August 2016.

Conference in Honor of Bob King, Swiss National Bank, Gerzensee, October 2016.

Conference on "Unconventional Monetary Policies: A Small Open Economy Perspective," Bank of Canada, November 2016.

Annual Meeting, Allied Social Science Associations, Chicago, January 2017.

Cognitive and Systems Neuroscience Meeting [CoSyNe 2017], Salt Lake City, February 2017.

Conference on Recent Developments in Monetary Policy Research, Euro Area Business Cycle Network, Paris, May 2017.

10<sup>th</sup> Maastricht Behavioral and Experimental Economics Symposium [M-BEES 2017], June 2017.

23d International Conference on Computing in Economics and Finance, Fordham University, June 2017.

Conference on "Applications of Behavioral Macroeconomics," Bank of England, July 2017.

15<sup>th</sup> Annual Conference, Center on Capitalism and Society, Columbia University, October 2017.

Annual Meeting, Allied Social Science Associations, Philadelphia, January 2018.

Workshop on Attention and Choice, New York University, February 2018.

Annual Conference on Macroeconomics, NBER, Cambridge, April 2018.

BRAIN Conference on Computational Neuroscience of Prediction, Rungstedgaard, Denmark, April 2018.

Conference on Neuroeconomics and the Evolution of Economic Behavior, Simon Fraser University, May 2018.

Behavioral Economics Annual Meeting, Yale University, May 2018.

Nobel Symposium on Money and Banking, Stockholm, May 2018.

Cowles Foundation Summer Macroeconomics Conference, Yale University, June 2018.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, July 2018.

Conference on Expectations in Dynamic Macroeconomic Models, University of Birmingham, August 2018.

Annual Meeting, Society for Neuroeconomics, Philadelphia, October 2018. [Two poster presentations.]

Annual Meeting, Allied Social Science Associations, Atlanta, January 2019.

Banque de France/TSE Prize Symposium, Banque de France, Paris, March 2019.

Workshop on Memory, Beliefs and the Foundations of Choice, Harvard Business School, April 2019.

15th Annual Conference on General Equilibrium and its Applications, Yale University, April 2019

Workshop on Attention and Choice, Vitznau, Switzerland, July 2019.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute, July 2019.

Workshop on Methods and Applications for DSGE Models, Federal Reserve Bank of Philadelphia, October 2019.

Behavioral Macroeconomics Bootcamp, NBER [moved online], March 2020.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute [moved online], July 2020.

Annual Research Conference, European Central Bank [moved online], September 2020.

Annual Meeting, Society for Neuroeconomics [moved online], October 2020.

Annual Symposium on Neuroeconomics, University of Zurich [online], December 2020.

Annual Meeting, Allied Social Science Associations [online], January 2021.

Carnegie-Rochester-NYU Conference Series on Public Policy [online], April 2021.

Working Group on Impulses and Propagation Mechanisms, NBER Summer Institute [online], July 2021.

Conference on "New Avenues for Monetary Policy," Bank of Finland and CEPR [online], September 2021.

Workshop on Choice-Process Data, Economic Science Association, Tucson, Arizona, October 2021.

2021 Delhi Winter School, Delhi School of Economics and the Econometric Society [online], December 2021.

Advances in Neural Information Processing Systems [NeurIPS 2021], New Orleans [and online], December 2021.

Annual Meeting, Allied Social Science Associations [online], January 2022.

NBER Behavioral Macroeconomics Bootcamp, UC Berkeley, May 2022.

Annual Meeting, Vision Sciences Society, St. Pete Beach, Florida, May 2022. [Poster session.] Yale Summer School on Behavioral Finance, Yale University, June 2022.

Annual Conference, Cognitive Sciences Society [CogSci 2022], Toronto, Canada, July 2022. [Poster session.]

Conference on Cognitive Computational Neuroscience [CCN 2022], San Francisco, August 2022. [Poster session.]

Annual Meeting, Society for Neuroeconomics [SNE 2022], Arlington, Virginia, Sept.-Oct. 2022. [Two posters presented.]

16<sup>th</sup> Annual Conference on Applications of General Equilibrium Theory, Cowles Foundation, Yale University, October 2022.

Conference in Honor of Mark Gertler, New York University, October 2022.

3d Workshop on Mental Effort, Brown University, November 2022. [Poster session.]

Invited Speaker, Workshop on Information-Theoretic Principles in Cognitive Systems, Advances in Neural Information Processing Systems [NeurIPS 2022], New Orleans, November-December 2022.

# Conference discussant or panelist [since 2005]:

Macroeconomics Annual Conference, NBER, Cambridge, April 2005.

New York Area Workshop on Monetary Policy, Federal Reserve Bank of New York, May 2005.

Conference on Quantitative Evidence on Price Determination, Federal Reserve Board, September 2005.

Conference on Inflation Targeting: Problems and Opportunities, Consulate of Canada (New York), February 2006.

Conference on Asset Prices and Monetary Policy, NBER, Chatham, MA, May 2006.

New York Area Workshop on Monetary Policy, Federal Reserve Bank of New York, May 2006.

Economic Fluctuations and Growth Program Meeting, NBER, New York, September 2006.

International Seminar on Macroeconomics, NBER, Istanbul, June 2007.

Symposium on the Theory and Practice of Monetary Policy Today, Center for Financial Studies, University of Frankfurt, October 2007.

Meetings of the Allied Social Science Associations, New Orleans, January 2008.

Conference on Monetary Policy and Asset Markets, Federal Reserve Bank of San Francisco, February 2008.

Brookings Papers on Economic Activity, Washington, September 2008.

Conference on the Great Inflation, NBER, Woodstock, Vermont, September 2008.

Brookings Panel on Economic Activity, Washington, September 2009.

Economic Fluctuations and Growth Program Meeting, NBER, New York, October 2009.

Bank of Canada Economic Conference, November 2009.

NBER Macroeconomics Annual Conference, Cambridge, April 2010.

Conference on Global Dimensions of the Financial Crisis, Federal Reserve Bank of New York, June 2010.

New York Area Workshop on Monetary Policy, Federal Reserve Bank of New York, November 2010.

NBER Monetary Economics Program Meeting, New York, March 2012.

Brookings Papers on Economic Activity, Washington, March 2012.

Conference in Honor of Thomas Sargent and Christopher Sims, Federal Reserve Bank of Minneapolis, May 2012.

Finance and Macroeconomics Workshop, NBER Summer Institute, July 2012.

Conference in Honor of Christopher Sims, Princeton University, October 2012.

Annual Meeting, Allied Social Science Associations, Philadelphia, January 2014.

Second New York Conference, International Network on Expectational Coordination, New York University, February 2014.

Conference on Safe Assets, Columbia University, February 2015.

Finance and Macroeconomics Workshop, NBER Summer Institute, July 2015.

Annual Meeting, Allied Social Science Associations, San Francisco, January 2016.

Workshop on the Representation of Value and Economic Choice, Columbia University, May 2016.

Working Group on Behavioral Macroeconomics, NBER Summer Institute, Cambridge, MA, July 2016.

Annual Meeting, Allied Social Science Associations, Chicago, January 2017.

Sixth BIS Research Network Meeting, Bank for International Settlements, Basel, September 2017.

Inaugural Symposium: Attentional and Perceptual Foundations of Economic Behavior, Rye Brook, NY, October 2017.

Conference on Credit Market Frictions, Business Cycles and Monetary Policy, University of Notre Dame, October 2018.

Behavioral Finance Working Group Meeting, NBER, Cambridge, November 2018.

University of Chicago Policy Forum: "Assessing the Contributions of Behavioral Economics to Economic Science," Becker-Friedman Institute, April 2019.

Money, Macroeconomics and Financial Frictions Meeting, NBER Summer Institute, July 2019.

Symposium on "Navigating the Decade Ahead: Implications for Monetary Policy," Federal Reserve Bank of Kansas City, August 2020. [Online.]

Sloan-NOMIS Workshop on Attention and Applied Economics, September 2020. [Online.]

Working Group on Behavioral Macroeconomics, NBER Summer Institute, July 2021. [Online.]

Annual Economic Conference, "The Future of Money and Payments: Implications for Central Banking," Bank of Canada, November 2021. [Online.]

Symposium on "Heterogeneity in Macro: Implications for Policy," Federal Reserve Bank of New York, November 2021. [Online.]

Working Group on Behavioral Macroeconomics, NBER Summer Institute, Cambridge, July 2022

Conference on Macroeconomics and Monetary Policy: Celebrating the Contributions of Charles Evans, Federal Reserve Bank of Chicago, November 2022.

Panel Discussion, "The Bandwagon Revisited," Workshop on Information-Theoretic Principles in Cognitive Systems, Advances in Neural Information Processing Systems [NeurIPS 2022], New Orleans, November-December 2022.