ANDREW THEO LEVIN

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EDUCATION

1980-84: B.A. in Economics and Mathematics, Yale University (graduated summa cum laude). *1984-89:* Ph.D. in Economics, Stanford University (Alfred P. Sloan Dissertation Fellow).

EMPLOYMENT

2015-present: Professor of Economics, Dartmouth College.

2012-2015: International Monetary Fund (research fellow 2013-14; adviser 2014-15).

1992-2012: Federal Reserve Board (economist 1992-2004; section chief, 2005-2007; oversight officer 2008-2010; special advisor to the Board on monetary policy strategy & communication 2010-2012).

1989-92: Assistant Professor of Economics, University of California, San Diego.

PROFESSIONAL AFFILIATIONS

Member, Shadow Open Market Committee (*March 2019 to present*).
Visiting Scholar, International Monetary Fund (*July 2015 - present*).
Scientific Adviser, Norges Bank (*September 2018 to August 2021*).
Research Associate, National Bureau for Economic Research, Cambridge, MA.
Research Fellow, Centre for Economic Policy Research, London.

PREVIOUS PROFESSIONAL AFFILIATIONS

- 2019-20: Scientific Adviser for E-Krona Project, Sveriges Riksbank
- 2016-17: External Advisor, Bank of Korea
- 2015-17: Visiting Scholar, Bank of Canada
- 2012-13: Visiting Scholar, International Monetary Fund.
- 2007-11: Co-Editor, International Journal of Central Banking
- 2007-08: Committee Member, External Review of Research Activities, Bank of Canada
- 2003-05: External Consultant, Inflation Persistence Network, European Central Bank

JOURNAL ARTICLES

- "Assessing the Age Specificity of Infection Fatality Rates for COVID-19: Systematic Review, Meta-Analysis, and Policy Implications" (with W. Hanage, N. Owusu-Boaitey, S. Walsh, K. Cochran, and G. Meyerowitz-Katz). Forthcoming. *European Journal of Epidemiology*.
- "Pitfalls of Make-Up Strategies for Mitigating the Effective Lower Bound" (with A. Sinha). 2020. *Cato Journal*.
- "The Rationale for Issuing E-Krona in the Digital Era" (with H. Armelius, G. Guibourg, and G. Soderberg). 2020. *Sveriges Riksbank Economic Review*, 2:7-18.
- "U.S. Digital Cash: Principles & Practical Steps" (with M. Bordo). 2019. Cato Journal.
- "Policy Credibility and Alternative Approaches to Disinflation" (with M. Bordo, C. Erceg, and R. Michaels). 2017. *Research in Economics*, 71:422-440.
- "Cyclical Changes in Firm Volatility" (with E. DeVeirman). 2017. Journal of Money, Credit and Banking.
- "The Design and Communication of Systematic Monetary Policy Strategies." 2014. Journal of Economic Dynamics and Control, 49:52-69.
- "Labor Force Participation and Monetary Policy in the Wake of the Great Recession" (with C. Erceg). 2014. *Journal of Money, Credit and Banking*, 46:3-49.
- "When Did Firms Become More Different? Time-Varying Firm-Specific Volatility in Japan" (with E. De Veirman). 2012. *Journal of the Japanese and International Economies*, 26:578-601.
- "Are Long-Run Inflation Expectations More Firmly Anchored in the Euro Area than in the United States?" (with M. Beechey and B. Johannssen). 2011. *American Economic Journal: Macroeconomics*, 3:104-129.
- "Bifurcation in Perturbation Analysis: Calvo Pricing Examples" (with J. Kim and T. Yun). 2011. *Computational Economics*, 37:221-236.
- "Does Inflation Targeting Anchor Long-Run Inflation Expectations? Evidence from Long-Term Bond Yields in the U.S., U.K., and Sweden" (with R. Gurkaynak and E. Swanson). 2010. *Journal of the European Economic Association*, 8:1208-1242.
- "Limitations on the Effectiveness of Forward Guidance at the Zero Lower Bound" (with D. López-Salido, E. Nelson, and T. Yun). 2010. *International Journal of Central Banking*, 6:143-189.
- "Macroeconometric Equivalence, Microeconomic Dissonance, and the Design of Monetary Policy" (with D. López-Salido, E. Nelson, and T. Yun). 2008. *Journal of Monetary Economics*, 55:S48-S62.

Journal Articles (contd.)

- "Identifying Nominal and Real Rigidities in Aggregate Price-Setting Behavior" (with G. Coenen and K. Christoffel). 2007. *Journal of Monetary Economics*, 54:2439-2466.
- "Reconsidering the Natural Rate Hypothesis in a New Keynesian Framework" (with T. Yun). 2007. *Journal of Monetary Economics*, 54:1344-1365.
- "Optimal Monetary Policy with Durable Consumption Goods" (with C.J. Erceg). 2006. *Journal of Monetary Economics*, 53:1341-1359.
- "Inflation Targeting And The Anchoring Of Inflation Expectations In The Western Hemisphere" (with R. Gürkaynak, A. Marder, and E. Swanson). 2006. *Journal Economía Chilena*, 9:19-52.
- "Sectoral and Aggregate Inflation Dynamics in the Euro Area" (with F. Altissimo, L. Bilke, T. Mathä, B. Mojon). 2006. *Journal of the European Economic Association*, 4:585-593.
- "New Evidence on Inflation Persistence and Price Stickiness in the Euro Area: Implications for Macro Modelling" (with I. Angeloni, L. Aucremanne, M. Ehrmann, J. Gali, and F. Smets). 2006. *Journal of the European Economic Association*, 4:562-574.
- "Data Uncertainty and the Role of Money as an Information Variable for Monetary Policy" (with G. Coenen and V. Wieland). 2005. *European Economic Review* 49:975-1006.
- "The Macroeconomic Effects of Inflation Targeting" (with F. Natalucci and J. Piger). 2004. *Federal Reserve Bank of St. Louis Economic Review*, 86:51-80.
- "Robust Monetary Policy Rules with Competing Reference Models" (with J. Williams). 2003. *Journal of Monetary Economics*, 50:945-975.
- "Patience, Persistence, and Welfare Costs of Incomplete Markets in Open Economies" (with J. Kim and S.H. Kim). 2003. *Journal of International Economics*, 61:385-396.
- "Performance of Forecast-Based Monetary Policy Rules under Model Uncertainty" (with V. Wieland and J. Williams). 2003. *American Economic Review*, 93:622-645.
- "Imperfect Credibility and Inflation Persistence" (with C. Erceg). 2003. Journal of Monetary Economics, 50:915-944.
- "Recent Improvements in US Macroeconomic Stability: Good Policy, Good Practices, or Good Luck?" (with S. Ahmed and B. Wilson). 2004. *Review of Economics and Statistics*, 86:824-832.
- "Unit Roots in Panel Data: Asymptotic and Finite-Sample Properties" (with C. Lin and C. Chu). 2002. *Journal of Econometrics*, 108:1-24.
- "What Determines Support for Affirmative Action?" (with M. Iyigun). 2002. Southern Economic Journal, 69:612-627.

Journal Articles (contd.)

- "Optimal Monetary Policy with Staggered Wage and Price Setting" (with C.J. Erceg and D.W. Henderson). 2000. *Journal of Monetary Economics*, 46:281-313.
- "The Evolution of Macro Models at the Federal Reserve Board" (with F. Brayton, R. Tryon, and J. Williams). 1997. *Carnegie-Rochester Conference Series on Public Policy*, 42:115-167.
- "Complementarities between Exports and Human Capital in Economic Development: Evidence from the Semi-Industrialized Countries" (with L.K. Raut). 1997. *Economic Development and Cultural Change*, 46:155-74.
- "Evaluating International Economic Policy with the Federal Reserve's Global Model" (with J. Rogers and R. Tryon). 1997. *Federal Reserve Bulletin*, 83:797-817.

OTHER PUBLICATIONS

- "Limitations on the Effectiveness of Monetary Policy Forward Guidance in the Context of the COVID-19 Pandemic" (with A. Sinha). 2020. National Bureau of Economic Research Working Paper 27748.
- "Assessing the Age Specificity of Infection Fatality Rates for COVID-19: Systematic Review, Meta-Analysis, and Policy Implications" (with W. Hanage, N. Owusu-Boaitey, S. Walsh, K. Cochran, and G. Meyerowitz-Katz). 2020. National Bureau of Economic Research Working Paper 27597.
- "Do Monetary Policy Frameworks Matter in Low-Income Countries?" (with A. Carare, C. de Resende, and C. Zhang). 2020. International Monetary Fund Working Paper 20-139.
- "Incorporating Scenario Analysis into the Federal Reserve's Policy Strategy and Communications" (with M. Bordo and M. Levy). 2020. National Bureau of Economic Research Working Paper 27369.
- "Comment: The Case for Negative Interest Rates." Forthcoming. In: J. Cochrane and J. Taylor, eds., *Strategies for Monetary Policy*. Hoover Press.
- "Hope for the Best, Prepare for the Worst: The Federal Reserve's Monetary Toolbox for Mitigating Severe Adverse Shocks." Manuscript, Dartmouth College.
- "Digital Cash: Principles & Practical Steps" (with M. Bordo). 2019. National Bureau of Economic Research Working Paper 25455.
- "Central Bank Digital Cash: Principles & Practical Steps." 2018. In: E. Gnan and D. Masciandaro (eds.), *Do We Need Central Bank Digital Currency? Economics, Technology and Institutions*. Vienna, Austria: SUERF. pp.132-151.

Other Publications (contd.)

- "Robust Design Principles for Monetary Policy Committees." 2019. In: J. Simon (ed.), *RBA Annual Conference Volume*. Sydney, Australia: Reserve Bank of Australia. pp.233-251.
- "Central Bank Digital Currency and the Future of Monetary Policy" (with M. Bordo). 2017. National Bureau of Economic Research Working Paper 23711.
- "Comment: Goals vs. Rules as Central Bank Performance Measures." 2017. In: J. Cochrane and J. Taylor, eds., *Central Bank Governance and Oversight Reform*. Hoover Press.
- "Making the Federal Reserve Fully Public: Why and How" (with J. Haedtler and V. Wilson). 2016. Economic Policy Institute, Washington, DC.
- "Labor Market Slack and Monetary Policy" (with D. Blanchflower). 2015. National Bureau of Economic Research Working Paper 21094.
- "Evolving Monetary Policy Frameworks in Low-Income and Other Developing Countries" (with A. Berg, R. Anand, R. Bi, B. Baltabaev, S. Jahan, D. King, S. Kothari, B. Laurens, T. Mancini, N. Maehle, M. Opoku-Afari, C. Patillo, R. Portillo, A. Remo, G. Shabsigh, F. Unsal, and D. Vavra). 2015. *International Monetary Fund Policy Paper*.
- "Monetary Policy in Selected Sub-Saharan African Currency Unions." 2015. In: "Evolving Monetary Policy Frameworks in Low-Income and Other Developing Countries: Background Paper—Country Experiences," *International Monetary Fund Policy Paper*, pp.69-72.
- "Establishing and Maintaining a Firm Nominal Anchor." 2014. International Journal of Central Banking, 10:405-412.
- "Comment: Chronic Deflation in Japan." 2014. Asian Economic Policy Review, 9:42-43.
- "Falling Behind the Curve: A Positive Analysis of Stop-Start Monetary Policies and the Great Inflation" (with J. Taylor). 2013. In: M. Bordo and A. Orphanides, eds., *The Great Inflation: The Rebirth of Modern Central Banking*. University of Chicago Press.
- "Comment: Monetary Policy in Europe vs the United States; What Explains the Difference?" 2009. In: J. Gali and M. Gertler, eds., *International Dimensions of Monetary Policy*. University of Chicago Press.
- "Comment: Optimal monetary policy under uncertainty--a Markov jump-linear-quadratic approach." 2008. Federal Reserve Bank of St. Louis Economic Review, pp.301-306.
- "Comment: Measuring the Macroeconomic Risks Posed by Asset Price Booms." 2008. In: J. Campbell, ed., *Asset Prices and Monetary Policy*. University of Chicago Press.
- "Frictions in the Markets for Corporate Debt and Credit Derivatives" (with R. Perli and E. Zakrajšek). 2007. In: *Proceedings of the Fourth Central Bank Conference on Risk Management and Systemic Risk.* Frankfurt: European Central Bank.

Other Publications (contd.)

- "Micro Evidence on Price-Setting Behavior: Policy Lessons and Directions for Ongoing Research" (with V. Gaspar, F. Martins, and F. Smets). 2007. In: S. Fabiani, C. Loupias, F. Martins, R. Sabbatini, eds., *Pricing Decisions in the Euro Area: How Firms Set Prices and Why*. Oxford University Press.
- "Monetary Policy under Uncertainty in Micro-Founded Macroeconometric Models" (with A. Onatski, N. Williams, and J. Williams). 2006. In: Gertler, M., Rogoff, K., eds., *NBER Macroeconomics Annual 2005*. MIT Press.
- "Macroeconomic Stability and Poverty Reduction" (with S. Smith). 2005. In: Dean, J., Schaffner, J., Smith, S., eds., *Attacking Poverty in the Developing World*. World Vision Press.
- "Comment: Parameter Misspecification with Optimal Targeting Rules and Endogenous Objectives." 2005. *Journal of Monetary Economics* 52, 1016-1021.
- "Comment: Monetary Policy Rules in the Open Economy." 2002. Journal of Monetary Economics, 49, pp.1017-1023.
- "The Robustness of Simple Monetary Policy Rules under Model Uncertainty" (with V. Wieland and J. Williams). 1999. In: Taylor, J., ed., *Monetary Policy Rules*. U. Chicago Press.
- "Comment: Wage dispersion and country price levels." 1999. In: A. Heston and R. Lipsey, eds., *Income and Wealth: International and Interarea Comparisons of Income, Output and Prices*. University of Chicago Press.
- "A Practitioner's Guide to Robust Covariance Matrix Estimation Procedures" (with W. Den Haan). 1997. In: G. Maddala and C. Rao, eds., *Handbook of Statistics* 15. Elsevier Press.
- "A Comparison of Alternative Monetary Policy Rules in the Federal Reserve's Multi-Country Model." 1996. In: *The Determination of Long-Term Interest Rates and Exchange Rates and the Role of Expectations*, Bank for International Settlements.
- "Review: *Estimation and Inference in Econometrics* by R. Davidson and J. MacKinnon." 1994. *Journal of the American Statistical Association*, 89:1143-44.

RECENT PRESENTATIONS

- October 2020: Video Presentation on "Assessing the Age Specificity of Infection Fatality Rates for COVID-19", National Bureau for Economic Research, Cambridge, MA.
- September 2020: Presentation on "Strengthening the Federal Reserve's Governance", Shadow Open Market Committee online meeting.
- June 2020: Presentation on "Incorporating Scenario Analysis into the Federal Reserve's Policy Strategy & Communications", Shadow Open Market Committee online conference.
- March 2020: Presentation on "Hope for the Best, Prepare for the Worst: The Federal Reserve's Monetary Toolbox for Mitigating Severe Adverse Shocks," Shadow Open Market Committee meeting, Manhattan Institute, New York, NY.
- January 2020: Presentation on "The Rationale for Issuing E-Krona in the Digital Era", Sveriges Riksbank seminar, Stockholm, Sweden.
- November 2019: Presentation on "Imperfect Credibility of Forward Guidance Strategies for Mitigating the Effective Lower Bound," Credibility Conference, Laboratory for Aggregate Economics & Finance, Santa Barbara, CA.
- November 2019: Presentation on "Pitfalls of Make-Up Strategies for Mitigating the Effective Lower Bound," Cato Monetary Policy Conference, Washington, DC.
- October 2019: Presentation on "Digital Cash: Principles & Practical Steps", Bank of Canada/Sveriges Riksbank Conference on Central Bank Digital Currency, Ottawa, Canada.
- October 2019: Discussant, ECB Monetary Policy Conference, Frankfurt, Germany.
- September 2019: Presentation on "Assessing the Federal Reserve's Toolbox for Providing Monetary Stimulus at the Effective Lower Bound," Shadow Open Market Committee meeting, Manhattan Institute, New York, NY.
- July 2019: Seminars on "Design Principles for Monetary Policy Committees" and "Central Bank Digital Cash", Bank of England, London.
- *July 2019*: Seminar on *"Central Bank Digital Cash"*, Monetary & Capital Markets Department, International Monetary Fund, Washington DC.
- June 2019: Presentation on "U.S. Digital Cash: Principles & Practical Steps", Shadow Open Market Committee Conference, Chapman University, Orange, CA.
- May 2019: Session Chair, Asian Monetary Policy Forum, Singapore.
- May 2019: Remarks on narrow banking, American Enterprise Institute forum, Washington DC.
- May 2019: Discussant, Hoover Institution Monetary Policy Conference, Stanford, CA.
- *January 2019*: Remarks on *"Improving Federal Reserve Transparency and Accountability"* Institute for Human Studies workshop, Atlanta, GA.
- December 2018: Remarks on digital cash, Sveriges Riksbank public forum, Stockholm, Sweden.
- December 2018: Presentation on "Central Bank Digital Cash: Principles & Practical Steps" Sveriges Riksbank policy seminar.
- *November 2018*: Presentation on "*U.S. Digital Cash: Principles & Practical Steps*", Cato Institute monetary policy conference, Washington DC.
- *November 2018*: Seminar on *"Monetary Policy and Labor Markets"*, International Monetary Fund, Washington DC.

<u>Recent Presentations</u> (contd.)

- *October 2018*: Discussant, Notre Dame University memorial research conference in honor of Charles Carlstrom and Timothy Fuerst, South Bend, IN.
- September 2018: Presentation on "Transparency in Central Bank Financial Statements", European Central Bank conference on Central Bank Accounting, Frankfurt, Germany.
- August 2018: Presentation on "Central Bank Digital Cash", Executive Meeting of East Asian Central Bank Governors and Heads of Supervisory Authorities, Manila, Philippines.
- August 2018: Lecture on "Central Bank Digital Currency", Bangko Sentral ng Pilipinas, Manila, Philippines.
- August 2018: Presentation on "*Central Bank Digital Currency and the Future of Monetary Policy*", Federal Reserve Bank of St. Louis conference, St. Louis, MO.
- July 2018: Presentation on "Monetary Policy Frameworks: Lessons from the U.S. Experience", IMF central banking forum, Singapore.
- July 2018: Seminars on "Robust Design Principles for Monetary Policy Committees" and "Central Bank Digital Currency", Reserve Bank of New Zealand, Wellington, New Zealand.
- *June 2018*: Presentation on "*Central Bank Digital Currency and the Future of Monetary Policy*", SUERF research conference, Milan, Italy.
- June 2018: Presentations on "Current Issues in Monetary Policy for Developing Countries" and "Current Issues in Monetary Policy for Advanced Economies", International Monetary Fund policy seminar, Washington DC.
- *May 2018*: Presentation on "*Central Bank Digital Currency and the Future of Monetary Policy*" Bank of Japan annual research conference, Tokyo, Japan.
- April 2018: Presentation on "Robust Design Principles for Monetary Policy Committees", Reserve Bank of Australia annual research conference, Sydney, Australia.
- *March 2018*: Remarks on "U.S. *Monetary Policy: Outlook, Risks, and Challenges*", Brookings Institution global economy conference, Washington, DC.
- March 2018: Presentation on "Central Bank Digital Currency and the Future of Monetary Policy", Shadow Open Market Committee meeting, New York, NY.
- *January 2018*: Discussant, panel on monetary policy and financial stability, American Economic Association annual meetings, Philadelphia, PA.
- December 2017: Seminar on "Central Bank Digital Currency and the Future of Monetary Policy", International Monetary Fund, Washington, DC.
- *November 2017*: Testimony on *"Federal Reserve Reform Legislation"*, Monetary Policy Subcommittee, U.S. House of Representatives, Washington, DC.
- October 2017: Presentation on "Central Bank Digital Currency and the Future of Monetary Policy", Bank for International Settlements payments conference, Tokyo, Japan.
- October 2017: Public lecture on "Central Bank Digital Currency and the Future of Monetary Policy", University of Tokyo, Japan.
- September 2017: Presentation on "*Re-examining the Conduct of Monetary Policy*", Bank of Canada Framework Renewal Conference, Ottawa, Canada.

<u>Recent Presentations</u> (contd.)

- September 2017: Seminar on "Central Bank Digital Currency and the Future of Monetary Policy", Sveriges Riksbank, Stockholm, Sweden.
- July 2017: Lecture on "Central Bank Digital Currency and the Future of Monetary Policy" Fondo Latinamericano de Reservas conference, Cartagena, Colombia.
- May 2017: Presentation on "Central Bank Digital Currency and the Future of Monetary Policy", Hoover Institute monetary policy conference, Stanford, CA.
- *March 2017:* Remarks on monetary policy, Conference of State Bank Supervisors meeting, Washington DC.
- March 2017: Seminars on "Robust Design Principles for Monetary Policy Committees" and "Sovereign Digital Currencies and the Future of Monetary Policy", Bank of Canada, Ottawa.
- October 2016: Lecture on "Robust Design Principles for Monetary Policy Committees", Korean Economic Association annual meeting, Seoul, Korea.
- October 2016: Seminar on "Robust Design Principles for Monetary Policy Committees", Bank of Korea, Seoul.