

Daniel E. Sichel

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Education

Ph.D., Economics, Princeton University, 1988.

M.P.P., Public Policy, University of Michigan, 1983.

B.A., Economics, University of Michigan, 1983.

Professional Experience

Wellesley College, Stanford Calderwood Professor of Economics, 2022 - present.

Wellesley College, Professor of Economics, 2012-2022.

Wellesley College, Distinguished Visiting Lecturer, Fall 2011.

Federal Reserve Bank of Boston, Visiting Scholar, 2016-2017.

Federal Reserve Board, Division of Research and Statistics:

- Senior Associate Director, 2011-2012
- Other positions, 1996-2011
- Assistant to the Chair of the Air Transportation Stabilization Board, 2001-2005

U.S. Treasury Dept., Deputy Assistant Secretary for Macroeconomics, 1995-1996.

Brookings Institution, Research Associate, 1993-1995.

Federal Reserve Board, Economist, 1988-1993.

Affiliations

National Bureau of Economic Research, Research Associate, 2013 – present.

American Economic Association Committee on Economic Statistics, member, 2022 - present.

Journal of Economic Perspectives Advisory Board, 2020 – 2022.

Conference on Research in Income and Wealth, Executive Committee member, 2010 - present.

Review of Income and Wealth, member of Editorial Board, 2020-present

International Productivity Monitor, International Advisory Board member, 2004 – present.

American Economic Association, member.

Government Panels

National Academy of Sciences, Engineering, and Medicine (Committee on National Statistics), Panel on “Improving the Cost-of-Living Indexes and Consumer Inflation Statistics in the Digital Age,” Chair, May 2020-present.

Bureau of Economic Analysis Advisory Committee, Member 2015-2020, Chair 2020-2023.

Town of Sherborn (Massachusetts) Advisory Committee, Member, 2021-present, Chair 2022-present.

Publications: Articles

[“The Price of Nails Since 1695: A Window into Economic Change.”](#) *Journal of Economic Perspectives*, January 2022, [Online Appendix](#).

[“Measuring Infrastructure in BEA’s National Economic Accounts,”](#) (with Jennifer Bennett, Robert Kornfeld, and David Wasshausen), *Economic Analysis and Infrastructure Investment*, ed. by Edward Glaeser and James Poterba, National Bureau of Economic Research and University of Chicago Press, 2021.

[“The Rise of Cloud Computing: Minding Your Ps, Qs, and Ks”](#) (with David Byrne and Carol Corrado), in *Measuring and Accounting for Innovation in the 21st Century*, National Bureau of Research and University of Chicago Press, ed by Carol Corrado, Jonathan Haskel, Javier Miranda, and Daniel Sichel, 2021.

[“Editors’ Introduction to Measuring and Accounting for Innovation in the 21st Century,”](#) (with Carol Corrado, Jonathan Haskel, and Javier Miranda), National Bureau of Economic Research and University of Chicago Press, 2021.

[“Household Innovation and R&D: Bigger Than You Think”](#) (with Eric von Hippel), *Review of Income and Wealth*, Series 67, Number 3, September 2021, p. 639-658.

[“Getting Smart About Phones: New Price Indexes and the Allocation of Spending Between Devices and Service Plans in Personal Consumption Expenditures”](#) (with Ana Aizcorbe and David Byrne), in *Measuring Economic Growth and Productivity*, edited by Barbara Fraumeni, Carol Corrado, Mun Ho, Hak Pyo, and Bart van Ark, Fall 2019.

“Productivity Measurement: Racing to Keep Up,” *Annual Review of Economics*, Volume 11, p. 591-614, 2019.

[“How Fast are Semiconductor Prices Falling?”](#) (with David Byrne and Stephen Oliner), *Review of Income and Wealth*, Vol. 64, Issue 3, p. 679-702, September 2018.

“Improving GDP: Demolishing, Repointing or Extending?” (with Carol Corrado, Kevin Fox, Peter Goodridge, Jonathan Haskel, Cecilia Jona-Lasinio, and Stian Westlake), *Global Perspectives*, No. 2, December 2017. Long version available at: http://global-perspectives.org.uk/wp-content/uploads/2017/10/CFGHJSW_Indigo_Prize_submission_15Sep17_submitted.pdf.

[“The Case for an American Productivity Revival,”](#) (with Lee Branstetter) Peterson Institute for International Economics Policy Brief, No. 17-26, June 2017.

[“The Equilibrium Real Policy Rate Through the Lens of Standard Growth Models,”](#) (with J. Christina Wang), *Current Policy Perspectives*, Federal Reserve Bank of Boston, No. 1706, November 2017.

“Prices of High-Tech Products, Mismeasurement, and the Pace of Innovation,” (with David Byrne and Stephen Oliner), *Business Economics* 52: 103-113, June 2017.

[“Time-to-Plan Lags for Commercial Construction Projects,”](#) (with Jonathan Millar and Stephen Oliner), *Regional Science and Urban Economics*, July 2016.

[“Is the Information Technology Revolution Over?”](#) (with David Byrne and Stephen Oliner), *International Productivity Monitor*, Number 25, Spring 2013.

“The Evolution of Household Income Volatility,” (with Karen Dynan and Douglas Elmendorf), *The B.E. Journal of Economic Analysis & Policy*, Volume 12, Issue 2 (Advances), Article 3, December 2012.

[“Intangible Capital and Economic Growth,”](#) (with Carol Corrado and Charles Hulten), *Review of Income and Wealth*, Series 55, No. 3, September 2009.

“Shifting Trends in Semiconductor Prices and the Pace of Technological Progress,” (with Ana Aizcorbe and Stephen Oliner), *Business Economics*, July 2008.

[“Explaining a Productive Decade,”](#) (with Stephen Oliner and Kevin Stiroh), *Brookings Papers on Economic Activity*, 2007:1. Reprinted in *Journal of Policy Modeling*.

“Can Financial Innovation Help to Explain the Reduced Volatility of Economic Activity,” (with Karen Dynan and Douglas Elmendorf), *Journal of Monetary Economics*, January 2006.

["Measuring Capital and Technology: An Expanded Framework,"](#) (with Carol Corrado and Charles Hulten), in *Measuring Capital in the New Economy*, edited by Carol Corrado, John Haltiwanger, and Daniel Sichel, NBER and University of Chicago press, 2005.

["How Fast do Personal Computers Depreciate? Concepts and New Estimates,"](#) (with Mark Doms, Wendy Dunn, and Stephen Oliner), in *Tax Policy and the Economy*, edited by James Poterba, NBER, 2004.

["Productivity Growth, Information Technology, and Monetary Policy,"](#) (with David Bowman, Brian Madigan, Andrea de Michelis, Stephen Oliner, and David Reifschneider), *Economie Internationale*, Vol. 98, p. 89-95, 2004.

["Information Technology and Productivity: Where Are We Now and Where Are We Going?"](#) (with Stephen Oliner), Federal Reserve Bank of Atlanta *Economic Review*, vol. 87, Summer 2002.

["The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?"](#) (with Stephen Oliner), *The Journal of Economic Perspectives*, Fall 2000.

"Computers and Aggregate Growth: An Update," *Business Economics*, April 1999.

"The Productivity Slowdown: Is Mismeasurement the Culprit?" *Review of Economics and Statistics*, August 1997.

"The Lucas Critique Revisited: Assessing the Stability of Empirical Euler Equations for Investment," (with Stephen Oliner and Glenn Rudebusch), *Journal of Econometrics*, January 1996.

"Is the Shift Toward Employment in Services Stabilizing?" (with David Lebow), in *The Service Productivity and Quality Challenge*, edited by P. Harker, Kluwer Academic Publishers, 1995.

"New and Old Models of Business Investment: A Comparison of Forecasting Performance," (with Stephen Oliner and Glenn Rudebusch), *Journal of Money, Credit, and Banking*, August 1995.

["Computers and Output Growth Revisited: How Big is the Puzzle?"](#) (with Stephen Oliner), *Brookings Papers on Economic Activity*, 1994.

"Inventories and the Three Phases of the Business Cycle," *Journal of Business and Economic Statistics*, July 1994.

"Business Cycle Asymmetry: A Deeper Look," *Economic Inquiry*, April 1993.

["Further Evidence on Business Cycle Duration Dependence,"](#) (with Francis Diebold and Glenn Rudebusch), in *New Research on Business Cycles, Indicators, and Forecasting*, edited by James Stock and Mark Watson, NBER and University of Chicago, 1993.

"Cyclical Patterns in the Variance of Economic Activity," (with Mark French), *Journal of Economic and Business Statistics*, January 1993.

"Business Cycle Duration Dependence: A Parametric Approach," *Review of Economics and Statistics*, May 1991.

"The Demand for Money," (with Stephen Goldfeld), in *Handbook of Monetary Economics*, edited by Benjamin Friedman and Frank Hahn, North-Holland, 1990.

"Are Business Cycles Asymmetric: A Correction," *Journal of Political Economy* 97, 1989.

"Money Demand: The Effects of Inflation and Alternative Adjustment Mechanisms," (with Stephen Goldfeld), *Review of Economics and Statistics*, 1987.

"On the Mis-use of Forecast Errors to Distinguish Between Level and First Difference Specifications," (with Stephen Goldfeld), *Economics Letters* 23, 1987.

Policy-Related Analysis, Web Articles, Podcasts, and Video

["Inflation, the Fed's Response, and the Challenges Ahead,"](#) *EconoFact Chats* podcast, February 5, 2023.

["What Different Measures of Inflation Tell Us"](#) EconoFact, August 3, 2022.

Political Economy Podcast with James Pethokoukis (April 2022), ["Nails as a Window into Economic Change."](#)

Bloomberg's Odd Lots Podcast (February 2022), ["This is What Happened to the Price of Nails Over the Last 330 Years."](#)

The Indicator from Planet Money Podcast (January 2022), ["What nails can tell us about the economy."](#)

["Recovering from the COVID-19 Economic Crisis,"](#) *EconoFact Chats* podcast, June 11, 2020.

["How do Economic Crises End,"](#) EconoFact, March 23, 2020.

["The US economy produced about \\$21.7 trillion in goods and services in 2019 – but what does GDP really mean?"](#) *The Conversation*, January 30, 2020. Abridged version reprinted in the *Boston Globe*, February 9, 2020.

["Why is Inflation So Low,"](#) EconoFact, October 8, 2019. [Video](#) on December 18, 2019.

["Measuring How Well the Economy is Doing"](#) (Video), EconoFact, September 30, 2019.

"Waiting on a Productivity Revival," December 20, 2018, MacroPolicyPerspectives, Policy Commentary.

["No Free Lunches: The Hard Arithmetic of Economics,"](#) EconoFact, September 28, 2018. [Video](#) on November 18, 2019.

[“Higher Gasoline Taxes and Infrastructure: An Idea Whose Time has Come?”](#) EconoFact, April 7, 2018.

[“Own-Account IT Equipment Investment,”](#) (with David Byrne and Carol Corrado), FEDS Notes, Board of Governors of the Federal Reserve System, October 2017.

[“The Productivity Slowdown is Even More Puzzling than You Think,”](#) (with David Byrne), VOXEU, August 22, 2017.

[“Has the Day of the Congressional Budget Office Come and Gone?”](#) EconoFact, June 12, 2017.

[“The Productivity Slowdown is Even More Puzzling than You Think ”](#) EconoFact, May 17, 2017.

[“Are Economic Statistics Fake News?”](#) EconoFact, April 2, 2017.

[“Can the U.S. Economy Sustain 3½ to 4 Percent Economic Growthb,”](#) EconoFact, January 25, 2017.

Publications: Books

[Modernizing the Consumer Price Index for the 21st Century](#), Report of National Academies of Sciences, Engineering, and Medicine, edited by Daniel Sichel and Christopher Mackie, 2022, National Academies Press, <https://doi.org/10.17226/26485>.

Measuring and Accounting for Innovation in the Twenty-First Century, edited with Carol Corrado, Jonathan Haskel, and Javier Miranda, National Bureau of Economic Research and University of Chicago Press, 2021. <https://www.nber.org/books-and-chapters/measuring-and-accounting-innovation-twenty-first-century>

Measuring Capital in the New Economy, edited with Carol Corrado and John Haltiwanger, University of Chicago Press and the NBER, 2005. <https://www.nber.org/books-and-chapters/measuring-capital-new-economy>

The Computer Revolution: An Economic Perspective, Brookings, 1997.

Publications: Comments and Reviews

“Beyond GDP: Why and How?” *Survey of Current Business*, June 2020, available at: <https://apps.bea.gov/scb/2020/06-june/0620-beyond-gdp-sichel.htm>

“U Can’t Touch This: The Intangible Revolution,” Review of *Capitalism Without Capital* by Jonathan Haskel and Stian Westlake, *Business Economics*, Volume 53, No. 4, October 2018.

[“Two Books for the Price of One,”](#) Review article on *The Rise and Fall of American Growth* by Robert J. Gordon, *International Productivity Monitor*, Fall 2016.

Review of *Price Index and Hedonic Techniques* by Ana M. Aizcorbe, *Journal of Economic Literature*, December 2015.

[“Priorities and Directions for Future Productivity Research: Health Care, Intangible Capital, and High Tech,”](#) *International Productivity Monitor*, Number 27, Fall 2014.

“The Federal Reserve System,” article for the *Oxford Companion to Comparative Politics*, ed. by Joel Krieger, 2012.

“Intangible Capital,” entry for the *New Palgrave Dictionary of Economics*, Second Edition, edited by Steven Durlauf and Lawrence Blume, Palgrave MacMillan, 2008.

[“Accounting for Growth from A to Z: Review article on Information Technology and the American Growth Resurgence](#) by Dale Jorgenson, Mun Ho, and Kevin Stiroh, review in *International Productivity Monitor*, Number 12, Spring 2006.

Comment on “Where Did the Productivity Growth Go? Inflation Dynamics and the Distribution of Income,” by Ian Dew-Becker and Robert Gordon, *Brookings Papers on Economic Activity*, vol. 2 (2005).

Comment on “What Happened to the Great U.S. Job Machine? The Role of Trade and Offshoring,” by Martin Baily and Robert Lawrence, *Brookings Papers on Economic Activity*, vol. 2 (2004).

Comment on “Exploding Productivity Growth: Context, Causes, and Implications,” by Robert Gordon, *Brookings Papers on Economic Activity*, vol. 2 (2003).

"Comment on 'Productivity Growth and the New Economy' by William Nordhaus," *Brookings Papers on Economic Activity*, vol. 2 (2002).

Comment on "Raising the Speed Limit: U.S. Economic Growth in the Information Age," by Dale Jorgenson and Kevin Stiroh, *Brookings Papers on Economic Activity*, 2000:1.

Comment on "Nonlinear Models of Economic Fluctuations," by Simon Potter, *Macroeconometrics: Developments, Tensions and Prospects*, ed. by Kevin Hoover, Kluwer, 1996.

Comment on "Tax Incentives and Equipment Investment," by Peter Clark, *BPEA*, 1993.

Woodworking

[“Stickley Inspired Table,”](#) Featured Piece of the Month, posted on the website of the Eastern Massachusetts Guild of Woodworkers, February 2023.

[“Federal-ish Mahogany Dining Table,”](#) Featured Piece of the Month, posted on website of the Eastern Massachusetts Guild of Woodworkers, October 2020.

Work in Progress and Unpublished Articles

“Intangibles: How Far We Have Come and the Road Ahead” (November 2023), Article version of November 2021 keynote address at IARIW-ESCoE conference.

“A New Look at Prices of Personal Computers: Desktops, Laptops, and Tablets,” (with David Byrne and Stephen Oliner), mimeo, January 2017.

[“A Primer on the Macroeconomics Implications of Population Aging,”](#) (with Louise Sheiner and Larry Slifman), Finance and Economics Discussion Series, Federal Reserve Board, 2007-1.

[“Financial Innovation and the Great Moderation: What Do the Household Data Say?”](#) (with Karen Dynan and Douglas Elmendorf), prepared for the San Francisco Federal Reserve conference on Financial Innovations and the Real Economy, 2006.

Presentations, Seminars, and Discussions (selected)

Federal Reserve Board 100th Anniversary of the Division of Research and Statistics Conference (November 2023), discussion of “100 Years of Economic Measurement in the Division of Research and Statistics: Beyond the Streetlight.”

Chicago Federal Reserve Bank (November 2022), “The Price of Nails since 1695: A Window into Economic Change.”

Chicago Federal Reserve Bank (November 2022), Report on *Modernizing the Consumer Price Index for the 21st Century*.

NBER Summer Institute (July 2022). Discussed paper by Argente, Hsieh, and Lee on “Measuring the Gains from Creative Destruction.”

Federal Economic Statistics Advisory Committee (May 2022), Presentation on CNSTAT *Modernizing the CPI* report.

ASSA Meetings (January 2022), Discussion of “The Contribution of Reallocation to U.S. GDP Growth: Measurement Using Tiered Aggregation” by Mun Ho and Jon Samuels.

Keynote address, “Intangibles: How Far We Have Come and the Road Ahead,” Intangibles Conference sponsored by the International Association for Research in Income and Wealth and the Economic Statistics Centre of Excellence (November 2022), London, United Kingdom.

North Hill (September 2021), “Inflation, Economic Policy, and the Economy.”

36th General Conference of the International Association for Research in Income and Wealth (August 2021), “Household Innovation and R&D Bigger Than You Think.”

NBER Development of the American Economy Summer Institute (July 2021), “The Price of Nails since 1695: What Can We Learn from Prices of a Simple Manufactured Product?”

KLEMS 6th World Conference (March 2021, Zoom), “Household Innovation and R&D: Bigger Than You Think.”

NBER Productivity Lunch (March 2020), “Household Innovation and R&D: Bigger Than You Think.”

ASSA Meetings (January 2020), “Beyond GDP: Why and How?” panel discussion, January 3.

ASSA Meetings (January 2020), Discussion of “The Circular Relationship Between Productivity Growth and Real Interest Rates,” by Bergeaud, Clette, and Lecat, January 5, 2020.

NBER Economics of Infrastructure Conference, “Measuring Infrastructure in BEA’s National Economic Accounts,” November 2019 (paper with Bennett, Kornfeld, and Wasshausen).

Wellesley College, (May 2018, May and October 2019), “Technological Disruption and the Future of Work.”

Meetings of the Society of Economics of the Household, Lisbon, Portugal (May 2019, “Household Innovation, R&D, and New Measures of Intangible Household Capital,” (paper with von Hippel).

National Bank of Poland, Keynote address at 8th Annual Conference (October 2018), “Productivity: Where Have We Been? Where Are We Going?”

World KLEMS conference (June 2018), “The Rise of Cloud Computing: Minding Your P’s and Q’s (and K’s),” (paper with Byrne and Corrado).

Congressional Budget Office (May 2018), “The Productivity Slowdown is Even Worse than You Think.”

Eastern Economic Association Annual Meeting (March 2018), “The Case for a More Optimistic Productivity Future.”

Wellesley College Albright Institute, invited talk on “Technological Disruption and the Future of Work,” (January 2018).

Macroeconomic Advisers’ 27th Annual Washington Policy Seminar (September 2017), “The Case for a More Optimistic Productivity Future.”

Centre for Applied Macroeconomic Analysis at Australian National University and Australia Department of Treasury conference on Structural Changes in the Global Economy: Trends, Puzzles, and Implications (August 2017), “The Case for a More Optimistic Productivity Future.”

NBER Summer Institute (July 2017). Discussed paper by Guvenen, Matalonie, Rassier, and Ruhl on “Offshore Profit Shifting and Domestic Productivity Measurement.”

Harvard University (April 2017), “The Price of Nails since 1695: Even Simple Products Experienced Large Price Declines Over the Centuries.”

NBER/CRIW Conference Measuring and Accounting for Innovation in the 21st Century (March 2017), “The Rise of Cloud Computing: Minding Your P’s and Q’s.”

Banque de France (January 2017), “Prices of High-Tech Products, Mismeasurement and the Pace of Innovation.”

ASSA Meetings (January 2017), “A New Look at Prices of Personal Computers: Desktops, Laptops, and Tablets,” (paper with Byrne and Oliner).

ASSA Meetings (January 2017). Discussed paper by Jon Samuels and Rachel Soloveichik on Intangibles, export and import prices, and productivity growth.

National Association of Business Economists (September 2016), “The Productivity Slowdown, Tech Prices, Innovation, and Future Prospects.”

NBER Summer Institute (July 2016), “A New Look at Prices of Personal Computers, Tablets, and Cell Phones,” (paper with Byrne and Oliner).

National Science Foundation and National Academies of Sciences, Engineering, and Medicine, Workshop (May 2016), “Productivity and Innovation: Recent Puzzles.”

ASSA Meetings (January 2016). Discussed paper by Cette, Lopez, and Mairesse on product and labor market regulations and productivity.

NBER Summer Institute (July 2015). Discussed paper by Koh, Santaaulalia-Llopis, and Zheng on labor share decline and intellectual property products.

ASSA Meetings (January 2015). Discussed paper by Corrado, Haskel, and Jona-Lasinio on Challenges in Measuring Private and Public Intangibles.

ASSA Meetings (January 2015). Discussed paper by Johnson, Pence, and Vine on Auto Sales and Credit Supply.

NBER Productivity Seminar (March 2014). Presented “What is Happening to Semiconductor Prices?” (paper with Byrne and Oliner)

International Association for Research in Income and Wealth (Sydney, Australia, Nov 2013). Presented “The GPT Behind IT: What is Happening to Semiconductor Prices?” (paper with Byrne and Oliner)

International Association for Research in Income and Wealth (Sydney, Australia, Nov 2013). Discussed paper on development of data on intangible capital by country and industry by Niebel, O’Mahoney, and Saam.

International Association for Research in Income and Wealth (Sydney, Australia, Nov 2013). Participated in panel discussion on Future Challenges for Economic Measurement.

Economic Measurement Group Workshop (Sydney, Australia, Nov. 2013). Presented “Is the Information Technology Revolution Over?” (paper with Byrne and Oliner)

NBER Summer Institute (July 2013). Presented “Is the Information Technology Revolution Over?” (paper with Byrne and Oliner).

Industry Canada (June 2013). Presented “Is the Information Technology Revolution Over?” (paper with Byrne and Oliner)

Canadian Economics Association Meeting (June 2013), Discussed paper by Sharpe et al on Canada-US ICT investment per worker gap and participated in panel discussion on measurement of MFP in Canada.

ASSA Meetings (January 2013). Co-presented “Is the Information Technology Revolution Over?” (with Byrne and Oliner).

NBER Productivity Program (September 2011) and NBER Summer Institute (July 2011). Presented paper on prices and productivity in manufacture of nails and screws from 1700 to the present.

NBER Productivity Program (December 2010). Discussed paper on the distribution of the size of price changes by Cavallo and Rigobon.

NBER/CRIW conference (November 2010). Discussed two papers on measuring the financial sector and gauging the impact of the financial crisis on the macroeconomy.

NBER Summer Institute (July 2010). Discussed paper on measuring R&D by Corrado and Haskel.

Statistics Canada (February 2009). Gave two talks in Experts’ Seminar Series: “Intangible Capital and Economic Growth” (paper with Corrado and Hulten) and “The Evolution of Household Income Volatility” (paper with Dynan and Elmendorf).

San Francisco Federal Reserve Conference (November 2008). Co-presented “Explaining a Productive Decade,” (paper with Oliner and Stiroh).

NBER Summer Institute (July 2008). Discussed two papers: Broadband’s Impact on GDP by Greenstein and McDevitt and Welfare Gain from Personal Computers by Greenwood and Kopecky.

ASSA Meetings (January 2008). Discussed paper on semiconductors by Pillai.

NBER Productivity Program (March 2007). Presented “Explaining a Productive Decade” (paper with Oliner and Stiroh).

ASSA Meetings (January 2007). Co-organized session on Financial Innovation and the Great Moderation.

TEKES (Finnish funding agency for Technology and Innovation), Helsinki, Finland (December 2006). Gave two talks on productivity and intangibles.

San Francisco Federal Reserve Conference (November 2006). Co-presented talk on Financial Innovation and the Great Moderation (with Dynan and Elmendorf).

NBER Summer Institute (July 2006). Co-presented “Shifting Trends in Semiconductor Prices and the Pace of Technological Progress” (with Aizcorbe and Oliner).

NBER/CRIW (April 2006). Discussed paper on international technology spillovers by McNeil.

“NBER Summer Institute (July 2005). Discussed paper on role of ICT in Australia’s economic growth by Diewert and Lawrence.

Carnegie-Rochester Policy Conference (April 2005). Co-presented “Can Financial Innovation Help to Explain the Reduced Volatility of Economic Activity” (with Dynan and Elmendorf).

ASSA Meetings (January 2005). Co-presented “Shifting Trends in Semiconductor Prices and the Pace of Technological Progress” (with Aizcorbe and Oliner).

ASSA Meetings (January 2004). Discussed Flamm paper on semiconductor prices.

NBER Summer Institute (July 2004). Co-presented “The Contribution of Intangible Investments to Economic Growth: A Sources of Growth Analysis” (with Corrado and Hulten).

NBER Summer Institute (July 2004). Discussed paper by Meyer and Harper on Bureau of Labor Statistics estimates of multifactor productivity.

NBER Tax Policy and the Economy Conference (November 2003). Co-presented “How Fast Do Personal Computers Depreciate?” (with Doms, Dunn, and Oliner).

NBER/CRIW conference on Hard-to-Measure Goods and Services (September 2003). Discussed two paper: Geske, Ramey, and Shapiro on depreciation of PCs and Harper on technology and vintage aggregation.

NBER Summer Institute (July 2003). Co-presented “Trends in Semiconductor Prices: Breaks and Explanations,” (with Aizcorbe and Oliner). Also discussed paper by Teague and To on hedonic regressions and the CPI.

NBER Summer Institute (July 2001). Discussed Triplett and Moch paper on hedonic price indexes for computers.

Other presentations (selected)

Town of Sherborn Council on Aging (October 2023 on Municipal Budgeting and November 2023 on Nails paper), Wellesley College (February 2023), Wellesley College (June 2022), Brookings Institution (May 2022 on CNSTAT report), Wellesley College (March 2022), Wellesley College (February 2022), University of Virginia (June 2020, Zoom), Wellesley College (April 2020, Zoom), (Eastern Economics Association (March 2017), Brandeis University (October 2017), Bureau of Economic Analysis (July 2017), Federal Reserve Bank of Boston (May 2017 and February 2017), Federal Reserve Bank of Philadelphia (December 2016), University of Michigan (November 2016), Bureau of Economic Analysis (November 2016), University of Massachusetts Amherst (April 2016), Federal Reserve Bank of Cleveland (June 2015), Bureau of Economic Analysis Advisory Committee (May 2015), ISI Evercore (January 2015), Middlesex Savings Bank (October 2014), Clark University (October 2014), Wellesley College (March 2014), Boston Federal Reserve Bank (November 2013), IBM (March 2013), Amherst College (December 2011), Wellesley College (December 2011), Boston College (October 2011), Brandeis (September 2011), Wellesley College (February 2011), APPAM Conference (November 2009), Measurement Congress (May 2008), Johns Hopkins (February 2008), Senator Jeff Bingaman (February 2007), Chicago Federal Reserve Bank (February 2007), National Science Foundation (October 2006), Joint Economic Committee (August 2006), San Francisco Federal Reserve Bank (March 2006), Intel Corporation (March 2006), George Washington University (February 2006), Meeting of top Finnish CEOs at FRB (November 2005), National Economists Club (September 2005), University

of Michigan (November 2004), Embassy of the United Kingdom (April 2004), Congressional Budget Office (November 2003), Econometric Society (January 2003).

Grants and Contract Work

Bureau of Economic Analysis, in collaboration with 451 Research, “Using 451 Research Cloud Price Indexes for U.S. National Economic Accounts,” September 2019, paper written under contract.

Bureau of Economic Analysis, U.S. Department of Commerce, for price measurement research on personal computers, 2016, \$51,200.

Bureau of Economic Analysis and National Telecommunications and Information Administration, U.S. Department of Commerce, for price measurement research on cloud services, 2016-17, \$25,600.

Refereeing

Quarterly Journal of Economics, American Economic Review, Review of Income and Wealth, International Productivity Monitor, American Economic Journal Macro, Review of Economics and Statistics, Journal of Economic Literature, Journal of Political Economy, International Economic Review, Canadian Journal of Economics, Scandinavian Journal of Economics, Economic Letters, Explorations in Economic History, Management Science, Journal of Productivity Analysis, National Tax Journal, Review of Labour Economics and Industrial Relations, B.E. Journal of Economic Analysis and Policy, Oxford Economic Papers, Oxford Bulletin of Economics and Statistics, Information Economics and Policy, Industrial and Corporate Change, National Science Foundation, Congressional Budget Office, Australia Department of Industry and Science, University of Chicago Press, Princeton University Press

Awards and Honors

Indigo Prize, 2017. Economics prize for best essay proposing improved ways to measure economic activity in the 21st century. Won joint first place for essay co-authored with Carol Corrado, Kevin Fox, Jonathan Haskel, Peter Goodridge, Cecilia Jona-Lasinio, and Stian Westlake. Winning teams shared £125,000 prize.

Abramson Award, 2017. For best article published in *Business Economics* over the year (“Prices of High-Tech Products, Mismeasurement, and the Pace of Innovation,” with David Byrne and Stephen Oliner).

Kendrick Prize, 2010. In recognition of major contributions by articles published in *The Review of Income and Wealth*. (“Intangible Capital and Economic Growth”)

Abramson Scroll, 2008. Awarded by the National Association for Business Economics for outstanding articles published in *Business Economics*. (“Shifting Trends in Semiconductor Prices and the Pace of Technological Progress” with Ana Aizcorbe and Stephen Oliner).

Federal Reserve Board, Special Achievement Award, 2002.

Phi Beta Kappa, University of Michigan.

Truman Scholar from Michigan, 1981.