

RODNEY J. GARRATT
Department of Economics
University of California, Santa Barbara
Santa Barbara, CA 93106
Email: garratt@ucsb.edu

EDUCATION AND EMPLOYMENT

Ph.D. (Economics) Cornell University, 1991
M.A. (Economics) Cornell University, 1990
Honours B.A. (Economics and History) University of Waterloo, 1986

Permanent Positions

Professor, Department of Economics, University of California, Santa Barbara, September 2015 to present
Vice President, Money and Payment Studies Function, Federal Reserve Bank of New York, 2013-2015
Professor, Department of Economics, University of California, Santa Barbara, July 2003 to 2013; Vice Chair, 2008, 2010-13
Associate Professor, Department of Economics, University of California, Santa Barbara, July 1997 to June 2003; Graduate Advisor, 1998-2001
Assistant Professor, Department of Economics, University of California, Santa Barbara, July 1991 to July 1997

Affiliations and External Committees

Academic Advisor for the Center for Latin American Monetary Studies (CEMLA) Research Project on Central Bank Digital Currencies.
CBDC Engagement Forum – CBDC working group initiated by the Bank of England and Her Majesty’s Treasury
Luohan Academy Fellow, 2021- present.
Research Associate, CEPR Research and Policy Network on Fintech and Digital Currencies, 2021-present.
Dean’s Investment Group Advisory Board, 2021- present
World Economic Forum Working Group on Interoperability, 2021- present
World Economic Forum, Digital Payments Advisory Committee, 2021-present
Member, CPMI Expert Group on RTGS Liquidity Analysis, 2018-present
Chair, Knowledge Standards Advisory Board (Committee of payments industry professionals formed by the payments associations from five countries to develop knowledge standards for an International Payments Certification), 2019
Member, CPMI Working Group on Retail Payments, 2015

Visiting Positions

Technical Advisor, Bank for International Settlements, 2017, 2019, 2021
Visiting Scholar in the Monetary and Capital Markets Department (off-site), International Monetary Fund, 2020-21.
Research Associate, Federal Reserve Bank of Cleveland, 2018, 2019, 2020, 2021
Occasional Visitor Program, Federal Reserve Bank of New York, 2007, 2010, 2018

One Bank Visitor Programme, Bank of England, 2018
Research Advisor, Bank of Canada, September 1, 2018 to July 31, 2019
Visiting Scholar, Bank of Canada, 2010, 2017, 2018, 2020, 2021, 2022
John Weatherall Visiting Fellow, Queen's University, 2016
Visiting Scholar, De Nederlandsche Bank, 2011, 2012,
Research Advisor, Bank of England, September 1, 2009 to August 31, 2010
Visiting Professor, UCLA and CASSEL Experimental Laboratory, Winter and Spring 2003
Visiting Professor, Department of Economics, University of Arizona, Spring 2000

PUBLICATIONS

Journal Articles

“An Application of Shapley Value Cost Allocation to Liquidity Savings Mechanisms,” *Journal of Money, Credit and Banking*, forthcoming.

“Dinero Electrónico: The Rise and Fall of Ecuador’s Central Bank Digital Currency,” with A. Arauz and D. F. Ramos F., *Latin American Journal of Central Banking*, forthcoming.

“Privacy as a Public Good: A Case for Electronic Cash” with M. van Oordt, *Journal of Political Economy*, July 2021, 129(7), 2157-2180.

“Entrepreneurial Incentives and the Role of Initial Coin Offerings,” with M. van Oordt, *Journal of Economic Dynamics and Control*, forthcoming.

“Auctions with Speculators: An Experimental Study,” with S. Georganas, *Games and Economic Behavior*, July 2021, 128, 256-270.

“The Economics of Distributed Ledger Technology for Securities Settlement,” with E. Benos and P. Gurrola-Perez, *The Ledger*, 4, 2019.

“Let Me, or Let George? Motives of Competing Altruists,” with T. Bergstrom and G. Leo, *Games and Economic Behavior*, November 2019, 118, 269-283.

“Nonlinear Pricing and the Market for Settling Payments,” with A. Copeland, *Journal of Money, Credit and Banking*, February 2019 51(1), 195-226.

“Bitcoin 1, Bitcoin 2,...: An Experiment in Privately Issued Outside Monies,” with N. Wallace, *Economic Inquiry*, July 2018, 56(3), 1887-1897.

“Centralized Netting in Financial Networks,” with P. Zimmerman, *Journal of Banking & Finance*, December 2017.

“Central Bank Cryptocurrencies” with M. Bech, *BIS Quarterly Review*, September 2017; Also published in Spanish as “Criptomonedas de Bancos Centrales,” Boletín, cemla, octubre-diciembre de 2017, pp. 181-201.

“Project Jasper: Are Distributed Wholesale Payment Systems Feasible Yet?” with J. Chapman, S. Hendry, A. McCormack, and W. McMahon, *Financial System Review*, June 2017.

“Missing Links: A Global Study on Uncovering Financial Network Structure from Partial Data,” with K. Anand, I. van Lelyveld, Á. Banai, S. Friedrich, G. Halaj, B. Howell, I. Hansen, S. Martínez Jaramillo, H. Lee, J. L. Molina-Borboa, S. Nobili, S. Rajan, D. Salakhova, T. C. Silva, L. Silvestri and S. R. Stancato de Souza, *Journal of Financial Stability*, April 2017, 35, 107-119.

“Using Shapley’s Asymmetric Power Index to Measure Banks’ Contributions to Systemic Risk” with L. Webber and M. Willison, *Journal of Network Theory in Finance*, June 2016, 2(2), 35-55.

“Identification of Over and Under Provision of Liquidity in Real-Time Payment Systems,” with E. Dendee and P. Zimmerman, *Journal of Financial Market Infrastructures*, December 2015, 4(2), 1-19.

“Saving Lives with Stem Cell Transplants,” with T. Bergstrom and D. Sheehan-Connor, *Journal of Risk and Uncertainty*, August 2015, 51(1), 23-51.

“Mapping Change in the Interbank Money Market, with M. Bech, C. Bergstrom and M. Rosvall, *Physica A: Statistical Mechanics and its Applications*, April 2015, 424, 44-51.

“The Great Entanglement: The Contagious Capacity of the International Banking Network Just Before the 2008 Crisis,” with L. Mahadeva and K. Svirydenska, *Journal of Banking & Finance*, December 2014, 49, 367–385.

“The Role of Counterparty Risk in CHAPS Following the Collapse of Lehman Brothers,” with E. Benos and P. Zimmerman, *International Journal of Central Banking*, December 2014, 10(4), 143-171.

“Choosing Partners: A Classroom Experiment,” with C. Bergstrom and T. Bergstrom, *Journal of Economic Education*. January 2013, 44(1), 47-57.

“The State Street Mile: Age and Gender Differences in Competition-Aversion in the Field,” with Catherine Weinberger and Nick Johnson, *Economic Inquiry*, January 2013, 51(1), 806-815.

“Illiquidity in the Interbank Payment System Following Wide-Scale Disruptions,” with M. Bech, *Journal of Money, Credit & Banking*. August 2012, 44(5), 903-929.

“Stem Cell Matching for Patients of Mixed Race,” with T. Bergstrom and D. Sheehan-Connor, *The B.E. Journal of Economic Analysis & Policy: Contributions*, July 2012, 12(1), Art. 30, 1-25.

“Behavior in Second Price Auctions by Highly Experienced eBay Buyers and Sellers,” with J. Wooders and M. Walker, *Experimental Economics*, March 2012, 15(1), 44-57.

“Efficiency of Second Price Auctions: A New Look at Old Data,” with J. Wooders, *Review of Industrial Organization*, July 2010, 37, 43-50.

- “Which Bank is the “Central” Bank?” with M. Bech and J. Chapman, *Journal of Monetary Economics*, April 2010, 57(3), 352-363.
- “One Chance in a Million: Altruism and the Bone Marrow Registry,” with T. Bergstrom and D. Sheehan-Connor, *American Economic Review*, September 2009, 99(4), 1309-34.
- “Collusion via Resale,” with T. Tröger and C. Zheng, *Econometrica*, July 2009, 77(4), 1095-1136.
- “Bank Runs as Coordination Failures: An Experimental Study,” with T. Keister, *Journal of Economic Behavior & Organization*, August 2009, 71(2), 300-317.
- “Speculation in Standard Auctions with Resale,” with T. Tröger, *Econometrica*, May 2006, 74(3), 753-769. See also “Supplement to Speculation in Standard Auctions with Resale,” which is published on the *Econometrica* web site.
- “Potential Maximization and Coalition Government Formation,” with J. Parco, C.-Z. Qin, and A. Rapoport, *International Game Theory Review*, December 2005, 7(4), 407-429.
- “A Tale of Two Cities and a Giffen Good,” *Canadian Journal of Economics*, February 2005, 38(1), 49-56.
- “Comparing Sunspot Equilibrium and Lottery Equilibrium Allocations: The Finite Case,” with T. Keister and K. Shell, *International Economic Review*, May 2004, 45(2), 351-386.
- “On Potential Maximization as a Refinement of Nash Equilibrium,” with C.-Z. Qin, *Economics Bulletin*, 2003, 3 (12), 1-11.
- “On Cooperation Structures Resulting from Simultaneous Proposals,” with C.-Z. Qin, *Economics Bulletin*, 2003, 3 (5), 1-8.
- “Equity Risk, Conversion Risk, and the Demand for Insurance,” with J. M. Marshall, *Journal of Risk and Insurance*, September 2003, 70(3), 439-460.
- “The Intraday Liquidity Management Game,” with M. Bech, *Journal of Economic Theory*, April 2003, 109, 198-219.
- “A Characterization of Robust Sunspot Equilibria,” with T. Keister, *Journal of Economic Theory*, November 2002, 107, 136-144.
- “Equilibrium Prices when the Sunspot Variable is Continuous,” with T. Keister, C.-Z. Qin and K. Shell, *Journal of Economic Theory*, November 2002, 107, 11-38.
- “Exclusions and the Demand for Insurance,” with J. M. Marshall, *Geneva Papers on Risk and Insurance Theory*, 2001, 25, 131-139.
- “A Free Entry and Exit Experiment,” *Journal of Economic Education*, January 2000, 31(3), 237-243.

“On Market Games When Agents Cannot be Two Places at Once,” with C.-Z. Qin, *Games and Economic Behavior*, May 2000, 31(2), 165-173.

“On Bargaining for an Indivisible Good,” *Games and Economic Behavior*, 1999, vol. 26, 186-192.

“On a Market for Coalitions with Indivisible Agents and Lotteries,” with C.-Z. Qin, *Journal of Economic Theory*, November 1997, 77(1), 81-101.

“Indivisibilities, Inferior Goods and Giffen Goods,” *Canadian Journal of Economics*, February 1997, vol. 30, no.1, 246-251.

“Insurable Interest, Options to Convert and Demand for Upper Limits in Optimum Property Insurance,” with J. M. Marshall, *Journal of Risk and Insurance*, June 1996, vol. 63, no. 2, 185-206. (Finalist for Robert C. Witt Research Award for the best *JRI* Feature Article)

“Cores and Competitive Equilibria in an Exchange Model with Indivisibilities and Lotteries,” with C.-Z. Qin, *Journal of Economic Theory*, February 1996, 68(2), 531-543.

“Optimum College Admissions, Taxes, and Tuitions When Completion is Uncertain,” with J. M. Marshall, *Education Economics*, December 1995, 3(3), 219-234.

“Decentralizing Lottery Allocations in Markets with Indivisible Commodities,” *Economic Theory*, 1995, vol. 5, 295-313.

“Income Redistributions Without Catastrophes,” with A. Goenka, *Journal of Economic Dynamics and Control*, Jan/Feb 1995, 19(1&2), 441-455.

“Concavifiability and The Marginal Rate of Substitution,” with C.-Z. Qin, *Journal of Mathematical Economics*, 1994, 23, 395-397.

“Public Finance of Private Goods: The Case of College Education,” with J. M. Marshall, *Journal of Political Economy*, 1994, 102(3), 566-582.

“The Connectedness of the Set of Equilibrium Money Prices Depends on the Choice of the Numeraire,” *Journal of Economic Theory*, 1992, 56(1), 206-217.

Book Chapters

“Methods for Evaluating Liquidity Provision in Real-Time Gross Settlement Payment Systems,” with E. Denbee and P. Zimmerman, in *Diagnostics for the Financial Markets – Computational Studies of Payment System, Simulator Seminar Proceedings 2009–2011*, Chapter 3, Matti Hellqvist and Tatu Laine, Eds) Scientific Monographs E:45, 2012.

“Lotteries and the Law of Demand,” in *New Insights into the Theory of Giffen Goods*, (W. Heijman and P. von Mouche, Eds.), Lecture Notes in Economics and Mathematical Systems 655, Springer-Verlag Berlin Heidelberg 2012.

“Supplemental Health Insurance,” with J. M. Marshall, in *Essays in Law and Economics: Financial Markets and Insurance*, (D. Heremans, P. Van Cayseele and R. Van den Bergh, Eds.), MAKLU Publishers, Antwerpen-Appeldoorn, 1996.

Book Review

“Fabian Schär and Aleksander Berentsen: Bitcoin, Blockchain, and Cryptoassets: A Comprehensive Introduction” Springer Nature: Business Economics, 2021.

Central Bank Committee Reports

“Investigating the impact of global stable coins” report by the Financial Stability Board Working Group on Stable coins, October 2019 (significant contributor).

“Project Jasper: A Canadian Experiment with Distributed Ledger Technology for Domestic Interbank Payments Settlement,” September 29, 2017 (technical white paper written by contributors from the Bank of Canada, Payments Canada and R3).

“Central bank digital currencies,” report submitted by working groups of the CPMI and Markets Committee, Bank for International Settlements, March 2018 (significant contributor).

“Digital currencies,” with fellow members of the CPMI working group on retail payments, Bank for International Settlements, November 2015.

Industry Reports

“A Proposal for a Decentralized Liquidity Savings Mechanism with Side Payments,” with A. Furgal, Z. Guo, and D. Hudson, *R3 Reports*, June 2018.

“CAD-coin versus Fedcoin,” *R3 Reports*, November 2016.

UNPUBLISHED WORKING PAPERS

“On Interest-Bearing Central Bank Digital Currencies with Heterogeneous Banks,” with Haoxiang Zhu, 2020.

“Monetizing Privacy with Central Bank Digital Currencies,” with M. Lee, 2021.

“Estimating Policy Functions in Payments Systems using Deep Reinforcement Learning,” with P. S. Castro, A. Desai, H. Du and F. Rivadeneyra, Bank of Canada Staff Working Paper, forthcoming. (**Best Paper Award, NeurIPS 2020**)

“Why Fixed Costs Matter for Proof-of-Work Based Cryptocurrencies,” with M. van Oordt, Bank of Canada Staff Working Paper. (**Best Cryptoeconomics Paper, The Third Toronto Fintech Conference, 2020**)

“Efficient Bilateral Trade,” with M. Pycia, 2020.

“Who Sees the Trades: The Effect of Information Structure on Liquidity in Inter-dealer Markets,” with M. Lee, A. Martin and R. Townsend, Federal Reserve Bank of New York Staff Report no. 892, July 2019.

“The Bank of Canada’s Exposure to Default Risk in Canada’s Large Value Transfer System,” with J. Chapman and N. Zhang, Bank of Canada Staff Working Paper Staff Working Paper, forthcoming.

“Auctions with Exogenous Default,” with T. Tröger, 2016.

“Segregated Balance Accounts” with A. Martin, J. McAndrews and E. Nosal, Federal Reserve Bank of New York Staff Report no. 730, May 2015.

“Does eBay’s Second Chance Offer Policy Benefit Sellers?” with T. Tröger, 2014.

“Ideal Bootstrapping and Exact Recombination: Applications to Auction Experiments,” with C. Bergstrom and T. Bergstrom, 2009.

“Property Insurance with Conversion Options: Upper Limits and Deductibles,” with J. M. Marshall, 1999.

“Health Care Contracts and Exclusions,” with J. M. Marshall, 1997.

“Further Evidence of the Necessity of Sunspots,” with K. Shell, UCSB Working Paper in Economics #6-93.

BLOG POSTS AND ARTICLES

“Monetizing Privacy with Central Bank Digital Currencies,” with M. Lee, Liberty Street Economics, November 23, 2020.

“COVID-19 and the Search for Digital Alternatives to Cash,” with M. Lee and A. Plesset, Liberty Street Economics, September 28, 2020.

“Token-or Account-Based? A Digital Currency Can Be Both,” with M. Lee, B. Malone and A. Martin, Liberty Street Economics, August 12, 2020.

“The International Sharing of Stem Cells,” Coalition Theory Network, From Theory to Application Series, Issue number13.2016.

“A Distributed Version of Repugnance as a Constraint on Markets,” Liberty Street Economics, September 1, 2015.

“Entry and Exit Leads to Zero Profit for Bitcoin Miners,” with R. Hayes, Liberty Street Economics, August 28, 2015.

“Bitcoin: How Likely Is a 51 Percent Attack?” with R. Hayes, Liberty Street Economics, November 24, 2014.

“Turnover in Fedwire Funds Has Dropped Considerably since the Crisis, but It’s Okay,” with A. Martin and J. McAndrews, Liberty Street Economics, August 25, 2014.

GRANTS AND AWARDS

Best Paper Award, NeurIPS 2020: virtual workshop on ML for Economic Policy.

Best Cryptoeconomics Paper, The Third Toronto Fintech Conference, 2020

BIS Research Fellowship, Bank for International Settlements, 2019

Economics & Social Research Council (ESRC), The Role of Speculators in Standard Auctions, September 2011-November 2012, co-PI, \$48,600

NSF - SES-0851357, Bone Marrow Registries and Donor Motives, August 2009-July 2012, co-PI, \$400,000

ISBER Social Science Research Grant, 2006-2007

UC MEXUS-CONACYT Collaborative Research Grant, 2002-2003

Academic Senate Faculty Research Grant, UCSB, 1991-99, 2002, 2006

Instructional Improvement Program, Mini-grant, UCSB, 1993

International Foundation for Research in Experimental Economics (IFREE) Fellowship, 1999.

Regents' Junior Faculty Fellowship, 1992

STUDENTS

Ph.D. Students

Chair, Nir Chemaya, 2021-

Member, Ganghua Mei, 2018-19

Member, Gregory Leo, 2015, Vanderbilt University

External review committee (University of Groningen), Ronald Heijmans, 2012

External review committee (Aalto University), Kimmo Soramäki, 2012

Member, Shane Bradely Parendo, 2011, Tiffin University

Chair, Matthew Daniel Lang, 2010, Xavier University (currently UC Riverside)

Member, Xiaojuan (Grace) Hu, 2008

Chair, Paul Leon Niemann, 2006

Member, Ekaterina Sergeevna Chernobai, 2005, Cal Poly Pomona

Member, Apollo Dionysos Lupescu, 2004, Dimensional Fund Advisors

Member, Morten Linnemann Bech, 2002, Federal Reserve Bank of New York (currently Bank for International Settlements)

Chair, Jin-Su Park, 2002, Bank of Korea

Member, Brian John Duncan, 1998, University of Colorado Denver

M.A. Student

Daniel Längle (supervised Master’s thesis during exchange visit from ETH Zürich, 2012)

PROFESSIONAL ACTIVITY

Editorial

Associate Editor, *Digital Finance*, 2018-present

Editorial Board, *The Journal of Network Theory in Finance*, 2014-present
Editorial Board, *The Journal of Financial Market Infrastructures*, 2012-present
Associate Editor, *Journal of Public Economic Theory*, 2006-2018
Associate Editor, *Economics Bulletin*, 2003-2010

Conference Organizer\Program Committee

Program Committee, Second Conference on the Interconnectedness of Financial Systems, Federal Reserve Board, December 2-3, 2021.

Program Committee, Tokenomics2021, Toulouse, France, November 18-19.

Program Committee, Enhancing Digital and Global Infrastructures in Cross-border Payments, Bank of Italy, September 27-28, 2021.

Program Committee, Second FRB Conference on the Interconnectedness of Financial Systems, December 2-3, 2021

Program Committee, EMLA-Banco de la República Conference on Payments and Financial Market Infrastructures in Emerging Economies, 2021

Program Committee, ESCB Day Ahead Conference, De Nederlandsche Bank, August 28, 2020

Program Committee, Federal Reserve Bank of Cleveland and the Office for Financial Research “2019 Financial Stability Conference,” November 21-22, Cleveland.

Program Committee, Conference on the Economics of Central Bank Digital Currency – by the Bank of Canada and Sveriges Riksbank, Oct 17-18, 2019, Bank of Canada.

Program Committee, 5th Joint Bank of Canada and Payments Canada Workshop on Innovations in Payment Systems: FinTech and Central Bank Digital Currencies, Bank of Canada, Sept 20-21, 2018.

Program Committee, Banco de México, the University of Zurich, the Bank of Canada and the Journal of Financial Stability Second Conference on Network Models and Stress Testing for Financial Stability, Mexico City, September 26 – 27, 2017.

Co-organizer, Bank of Canada/Payments Canada Workshop on the Modelling and Simulation of Payments and Other Financial Market Infrastructures, October 27-28, 2016.

Program Committee & Discussant, Banco de México, CEMLA, the University of Zurich, the IMF, and the *Journal of Financial Stability* conference “Network models, stress testing and other tools for financial stability monitoring and macroprudential policy design and implementation” November 11-12, 2015.

Program Committee, PET 10, Istanbul, Turkey.

Program Committee, PET 09, Galway, Ireland.

Co-Organizer, Payments and Networks, December 12-13, 2008, UCSB.

Co-Organizer, 10th Annual Southwest Economic Theory Conference, March 1-2, 2008, UCSB.

Organizer, Auctions with Resale, April 20-21, 2007.

Panelist\Discussant

Discussant, When Banks Meet the Official Sector, American Finance Association session at the ASSA winter meetings, January 7, 2022.

Firestarter (Discussion leader), WEF-IDB Digital Payments in LAC workshop, November 16, 2021

Panelist, IBD LAB Forum, Massifying Digital Payments in Latin American and Caribbean Countries, October 27, 2021

Panelist, Emerging Risks, Digital technologies and Climate change, Meeting of Heads of Operational Risk in Central Banking, CEMLA, Mexico City, September 28, 2021

Session Chair, Enhancing Digital and Global Infrastructures in Cross-border Payments, Bank of Italy, September 27-28, 2021

Discussant, Bank of Canada: The Economics of Central Bank of Digital Currency, Canadian Economics Association Annual Meeting, June 3, 2021

Discussant, SNB-CIF Conference on Cryptoassets and Financial Innovation May 20, 2021.

Moderator, CBDCs: Opportunities, Challenges and Design, Sapienza DLT Banking Virtual Conference, December 17, 2020.

Panelist, Central Bank Digital Currency (CBDC) Roundtable, Farrer & Co, in collaboration with University College London and University of Cambridge and the Cambridge Blockchain Hub, November 12, 2020.

Panelist, "The New Digitalization of International Finance and the Future of the International Monetary System," Dialogue of Continents 2020, The New Age of Imagination, Reinventing Bretton Woods Committee, November 5, 2020.

Panelist, "Decentralized Finance and Central Bank Digital Currencies," Lehigh Quant Conference, September 25, 2020.

Panelist, "Digital Currencies" Toulouse, France, December 9, 2019

Panelist, "Institutionalizing Digital Currency" Santa Barbara Blockchain Society, UCSB, November 23, 2019

Moderator and Discussant, “Emerging Technologies,” 2019 Financial Stability Conference: Financial Stability: Risks, Resilience, and Policy, Federal Reserve Bank of Cleveland, November 21, 2019.

Panelist, “Private Digital Currencies or Central Bank Digital Currencies?” Third Annual Fintech Conference, Federal Reserve Bank of Philadelphia, November 15, 2019.

Discussant, Bank for International Settlements conference on “Fintech and Digital Currencies,” September 27, 2019.

Panelist, Bank for International Settlements Advisory Panel on “Macroeconomic and Financial Stability Implications for Financial Innovation,” September 26, 2019.

Panelist, Bank for International Settlements Advisory Panel on “Financial Innovation and Digitisation: Implications for Central Banks and Regulators,” September 25, 2019.

Discussant, “NBER conference on Blockchain,” MIT, 2019.

Panelist, “Is There a Future for Digital Fiat Currency?” Ninth Annual Financial Services Symposium, April 4, 2019, Scalia Law School, George Mason University.

Discussant, FRB Conference on the Interconnectedness of Financial Systems, March 7-8, 2019, Board of Governors, Washington, DC.

Panelist, “Interconnectedness and Networks,” OFR-Cleveland Fed Conference on Financial Stability, Markets and Spillovers, November 29, 2018, Washington DC.

Panelist, “A central banking view of CBDC,” 5th Joint Bank of Canada and Payments Canada Workshop on Innovations in Payment Systems: FinTech and Central Bank Digital Currencies, September 20, 2018, Bank of Canada

Hearing on “The Future of Money: Digital Currency,” Gave testimony to the Subcommittee on Monetary Policy and Trade Committee on Financial Services, United States House of Representatives, July 18, 2018.

Panelist, “Cryptocurrencies and Global Monetary Policy” Business of Blockchain, MIT Media Lab, Cambridge, MA.

Panelist, “Banking Bitcoin and Other Crypto Assets,” Blockchain Unbound, San Juan, Puerto Rico, March 15, 2018.

Panelist, “Distributed ledger technology – possible use cases in clearing and settlement,” Financial Market Infrastructure Conference II: New Thinking in a New Era, An Interdisciplinary Conference for Policy-Makers, Practitioners and Academics, Amsterdam, June 7, 2017.

Discussant, Deutsche Bundesbank International Conference on Payments and Settlement

9-10 November 2016.

Discussant, Monetary Implementation in the Long Run Conference, Federal Reserve Bank of Minneapolis, October 18-19, 2016.

Panelist, Round Table Discussion on "Business and Regulation of P2P Financial Markets" at the 2nd International Workshop on P2P Financial Systems 2016, University College London, UK.

Discussant, Charles Kahn Festschrift Conference, Banff, Alberta, Canada, June 2016.

Discussant, 2015 Bank of Canada Conference on "Electronic Money and Payments" November 19, 2015.

Panelist, New York State Bar Association: Global Law Week 2015, Hot Topics in Virtual Currencies: Policy, Regulatory, and Business Issues, FRBNY, May 15, 2015.

Discussant, NET Institute Conference on Network Economics, Session on Crowdfunding, eBooks, and Bitcoin Stern School of Business of NYU, April 17, 2015.

Panelist, TAG FinTech GA 2015 Symposium, Bitcoin: Revolutionary Monetary Shift or a Cautionary Footnote for the History Books, February 19, 2015.

Discussant, ASSA session on Moral Values and Economic Behavior, Jan 4, 2015.

Panelist, Money Marketeers of New York University, Panel Discussion on Alternative Currencies & Payment Systems, December 8, 2014.

Session Chair, SING10, July 8, 2014.

Moderator, "Credit Card Markets," Economics of Payments VII, Federal Reserve Bank of Boston, April 4, 2014.

Discussant, Bank of Canada Annual Conference on Financial Intermediation and Vulnerabilities, October 3, 2012.

Discussant, Bank of Canada Annual Conference on New Developments in Payments and Settlement, November 18, 2011.

Discussant, Workshop on Financial Intermediation and Market Dynamics: The Role of Margin Requirements, Bank of Canada, November 3, 2011.

Discussant, Bank of Canada Session on Financial Stability Issues, 45 Annual Meeting of the Canadian Economic Association, June 3, 2011.

Panelist, Foresight Networked Governance in the Global Financial Markets Project – Scoping Workshop, Government Office for Science, UK, June 30, 2010.

Discussant, Workshop on Interconnectedness of Financial Institutions, Deutsche Bundesbank and Center for Financial Studies, Frankfurt, May 26, 2010.

Moderator, CFAP Conference on Networks, University of Cambridge, March 26-27, 2010.

Discussant, Session on Dynamic Models in Industrial Organization, Winter Meeting of the Econometric Society, January 5, 2007.

Session Chair, “Defaults,” Winter Meeting of the Econometric Society, January 5, 2007.

Discussant, Modern Financial Institutions, Financial Markets, and Systemic Risk Conference, Session on “Models of Financial System Risk,” Federal Reserve Bank of Atlanta, April 17, 2006.

Session Chair, Communication and Incentives, University of California, Santa Barbara, February 3, 2006.

Session Chair, “Multiple equilibria in the lab,” World Congress of the Econometric Society, London, England, 2005.

Discussant, Experimental and Behavioral Economics Workshop, Session on Markets, Calgary, Alberta Canada, October 2, 2004.

Discussant, “Learning to ‘Play Nash’,” Annual Meeting of the Canadian Economics Association, Session on May 27, 2005.

Discussant, Session on Monetary Policy, Extrinsic Uncertainty Conference at New York University, May 7, 2000.

Discussant, Economic Science Association, North American Regional Meeting, October 1998.

Discussant, Meetings of the Canadian Economic Association, 1996.

Discussant, Session on Volatility, Winter Meeting of the Econometric Society, 1994.

Chair and Discussant, Session on Nonlinearities in Finance, Winter Meeting of the Econometric Society, 1994.

Presentations and Invited Lecture Series

“Optimal Risk Sharing via Stablecoins” Central Bank Research Association session at the ASSA winter meetings, January 9, 2022.

“Central Bank Digital Currencies” CEMLA-R3 Research Project Launch on Central Bank Digital Currencies, **Keynote**, December 16, 2021.

“Monetizing Privacy with Central Bank Digital Currencies,” Bank of Lithuania, May 7, 2021; CEMLA and Banco de la República Columbia Regional Conference on Payments and Market Infrastructures, **Keynote**, June 16, 2021; WEAI Virtual 96th Annual Meeting, June 30, 2021; Reserve Bank of Australia, November 2, 2021; Federal Reserve Bank of Cleveland, November

4, 2021; Federal Reserve Bank of Atlanta, November 15, 2021; Chinese Economic Association in North America & American Economic Association) session at the ASSA winter meetings, January 7, 2022.

“On Interest-Bearing Central Bank Digital Currencies,” Bank of Canada, January 18, 2021; WFE's Clearing & Derivatives Conference, **Keynote**, April 16, 2021; Canadian Economics Association Annual Meeting, June 3, 2021; University of Pennsylvania/Federal Reserve Bank of Philadelphia Workshop on the Economics of Digital Currencies, Sept 2, 2021; CB&DC seminar, September 24, 2021.

“Estimating Policy Functions in Payment Systems using Reinforcement Learning,” NeurIPS 2020: virtual workshop on ML for Economic Policy, December 11, 2020; AEA Poster Session, January 7, 2022.

“Why Fixed Costs Matter for Proof-of-Work Based Cryptocurrencies,” Ecole Polytechnique CREST Virtual Finance Theory Seminar Series, June 3, 2020; Crypto Economics Security Conference (CESC) 2020, July 9; Joint-School Online Digital-Economy Seminar: Renmin University, Hong Kong Baptist University, and National Taiwan University, July 23, 2020; CBER Webinar on Crypto and Blockchain, France, September 3, 2020; Federal Reserve Bank of Cleveland, October 1, 2020; UC Irvine, November 18, 2020; Stanford University Investment Club, January 25, 2021.

“Privacy as a Public Good: A Case for Electronic Cash,” TSE Sustainable Finance Inaugural Conference, Toulouse, France, December 8, 2019; ASSA Winter Meetings, San Diego, January 3, 2020.

“The Role of Trust in Publicly and Privately Issued Outside Monies,” CryptoEconomics Security Conference 2019, San Francisco Blockchain Week, October 28.

“Trust,” Payments Canada Summit 2019, Toronto, **Keynote**.

“The Role of Entrepreneurial Incentives in Initial Coin Offerings,” Purdue, April 11, 2019; University of Indiana, April 12, 2019; Tokenomics 2019, Paris; GDRR Program Blockchain Workshop, SAMSI, Durham NC, October 7, 2019; Center for Financial Mathematics and Actuarial Research, UCSB, February 10, 2020.

“The ‘Money Flower’ and the Fall of Cash,” Blockchain Unbound, Tokyo, Japan, **Keynote**, October 15, 2018.

“An Application of Shapley Value Cost Allocation to Liquidity Savings Mechanisms,” Bank of England. November 12, 2018; Bank of Canada, Ottawa, March 5, 2019; BIS mini-conference: Liquidity usage in large-value payment systems, Basel, Switzerland, September 8, 2020.

“Endogenous Liquidity and Inter-Dealer Trading in Over-The-Counter Markets” Federal Reserve Bank of Cleveland. September 26, 2018.

“Taxonomy of Money and Central Bank Digital Currencies,” CMF Technical Workshop, Central Bank Digital Currency: Progress and Challenges, Inter-American Development Bank, Washington, D.C., September 18, 2018.

“Paying for Payments,” Bank of Finland 16th Simulator Seminar, **Keynote**, August 2018.

“Will Cryptocurrencies Disintermediate Banks,” G20 Global Financial Stability Conference, Seoul Korea, June 14, 2018.

“Money in the Digital Landscape,” Decoding Digital Currency, Federal Reserve Bank of San Francisco, May 15, 2018.

“What do Central Banks Think of Cryptocurrencies?” Blockchain at UCSB, **Public Lecture**, May 2, 2018.

“Cryptocurrencies and Global Monetary Policy,” Business of Blockchain, MIT Media Lab, Cambridge, MA, April 23, 2018.

“Who sees the Trades: The Effect of Information Structure on Liquidity in Inter-dealer Markets” Division of Reserve Bank Operations and Payment Systems, Board of Governors, Washington, DC, March 26, 2018; Bank of Canada, Ottawa, ON, March 29, 2018; 9th Shanghai Microeconomics Workshop, Shanghai, China June 15, 2018; November 14, Bank of England.

“Cash, Cryptocurrencies and Digital Payments, Blockchain Unbound, San Juan, Puerto Rico, March 15, 2018; Board of Governors of the Federal Reserve System, Washington, DC, March 27, 2018; Redburn – The 2018 Banks Conference, Claridge’s, Brook Street, London, May 23, 2018; Twelfth Annual Risk Management Conference, **Plenary**, National University of Singapore and Risk Management Institute, Singapore, July 26, 2018.

“Decentralized Liquidity Savings Mechanisms,” Bank of Canada and Payments Canada Payments Research Symposium, Ottawa, October 11, 2017.

“Designing a Liquidity Savings Mechanism,” Bank of Canada, August 3, 2017.

“From Bitcoin to Central Bank Digital Currencies,” GRIT talk, UCSB, July 17, 2017.

“Bitcoin 1, Bitcoin 2,...: An experiment in privately issued outside monies,” Deutsche Bundesbank Spring Conference 2017: Frontiers in Central Banking, Frankfurt, Germany, June 13, 2017; Bank of Canada, August 2, 2017.

“Project Jasper Phase II: Distributed Ledger for Central Banking,” Payments Canada Summit, Toronto, Canada, May 25, 2017.

“What are Central Bank Digital Currencies and What are They Good For?” Global Interdependence Center (GIC)’s Payment Systems in the Internet Age, San Diego, CA, February 6; CPMI Fintech Series, Bank for International Settlements, May 4, 2017; R3 Regulator & Central Bank Conference, New York, New York, May 24, 2017.

“The Economics of Distributed Ledger Technology for Securities Settlement,” Financial Stability Board FinTech Issues Group Roundtable with Academics, Ottawa, Canada, March 22, 2017.

“Policy After the Financial Crash,” **Public Lecture** at SBCC hosted by The Economic Club of Santa Barbara, November 2016.

“Project Jasper -The Perspective From Central Banks, System Operators, and Commercial Banks,” Payments Canada, Ottawa, October 28, 2016.

“Centralized Netting in Financial Networks,” **Keynote**, Bank of Canada/Payments Canada Workshop on the Modelling and Simulation of Payments and Other Financial System Infrastructures, Oct 27, 2016; Monetary and Economic Development Seminar, Bank for International Settlements, May 19, 2017.

“Mini-Course on Auctions” Queen’s University,” September 12-16, 2016.

“Let Me, or Let George? Motives of Competing Altruists” Bay Area Behavioral and Experimental Economics Workshop, Haas School of Business, University of California Berkeley, May 7, 2016.

“Segregated Balance Accounts” Cornell/PSU Macro Workshop, Ithaca, NY, Sept 27, 2015; Bayreuth University, Germany, December 10, 2015, **Public Lecture**; Workshop in Honor of Jamie McAndrews, Federal Reserve Bank of New York, June 2016.

“Auctions with Speculators: An Experimental Study,” ESA World Meetings, Sydney, Australia, July 24, 2015.

“Does a Central Clearing Reduce Counterparty Risk in Realistic Financial Networks?” Seminar on Network Analysis and Financial Stability Issues, CEMLA, Mexico City, Mexico, December 10, 2014; IBEAF, ASSA, Boston, January 3, 2015; Reserve Bank of Australia, July 21, Sydney, Australia; CPMD Market Design Workshop, Sydney, Australia, July 22, 2015.

“Are Virtual Currencies for Real,” **Keynote**, Wisconsin School of Business 6th Annual Conference on Money, Banking and Asset Markets, December 13, 2014.

“Mapping Change in Complex Financial Networks,” **Keynote**, Inaugural Conference of the Journal of Network Theory in Finance, Cambridge University, September 23, 2014.

“Are Virtual Currencies for Real,” **Keynote**, The Future of Payments Conference, Queen’s University and the Bank of Canada, September 5, 2014.

“Efficient Bilateral Trade,” SING10, Poland, July 8, 2014; Bank of England, United Kingdom, Sept 25, 2014; Rutgers University, November 19, 2014; Amherst College, December 4, 2014;

University of Maryland, March 31, 2015; Bayreuth University, Germany, December 11, 2015; Queen's University, September 12, 2016; Ryerson University, Toronto, December 4, 2018.

"Mapping Change in the Federal Funds Market," SPR Seminar, International Monetary Fund, Washington D.C., November 21, 2013.

"The Trillion Dollar Game," **Keynote**, 2012 China International Conference on Game Theory and Applications, QingDao University, China, August 29, 2012.

"eBay's Second Chance Offer," Southwest Economic Theory Conference, San Diego, February 24, 2012; University of Western Ontario, London, ON, Canada, April 23, 2012.

"Using Shapley's Asymmetric Power Index to Measure Banks' Contributions to Systemic Risk," Federal Reserve Bank of New York, January 20, 2012.

"Ideal Bootstrapping and Exact Recombination: Applications to Auction Experiments," North American Economic ESA Conference in Tucson, AZ, November 12, 2010.

"Liquidity Provision and Free Riding in CHAPS," 8th Simulator Conference, Bank of Finland, Helsinki, August 26, 2010.

"Stem Cell Matching for Persons of Mixed Race" PET10, Istanbul, Turkey, June 27, 2010; ASSA Winter Meetings, January 8, 2011.

"Bank Behavior and Risks in CHAPS Following the Collapse of Lehman Brothers," Federal Reserve Bank of New York, April 2, 2010; De Nederlandsche Bank, Amsterdam, June 29, 2010; National Bank of Serbia, Belgrade, August 16, 2010.

"Tracking Systemic Risk in the International Banking Network," University of Missouri, March 1, 2010; Said Business School, University of Oxford, UK, June 15, 2010; FS Seminar Bank of England July 2010; The Center for Research in Financial Mathematics and Statistics at UCSB, May 23, 2011; Bank of Canada workshop on Financial Institutions and Markets: Theory and Data, June 1, 2011; 45 Annual Meeting of the Canadian Economic Association, June 3, 2011.

"Applying Google's PageRank Algorithm to Payment Systems," University of Bangor, Wales, April 4, 2010.

"Which Bank is the Central Bank?" University of Bonn, Germany, November 30, 2009; National University of Ireland, Galway, October 22, 2009; LAEF Conference on Payments and Networks, December 12, 2008; California Polytechnic State University, December 4, 2008; Bank of Canada, November 7, 2007; Federal Reserve Bank of New York, July 25, 2007.

"International Sharing of Stem Cells," Association for Public Economic Theory 10th Annual Conference, Galway, Ireland, June 20, 2009.

“Illiquidity in the Interbank Payment System Following Wide-Scale Disruptions,” Bank of England, April 30, 2009; Iowa State University, December 4, 2006; Conference on Coalitions and Networks, Concordia University, May, 2006.

“One Chance in a Million: Altruism and the Bone Marrow Registry,” University of Colorado at Boulder, February 2, 2009; University of Arizona, January 30, 2008; IV Asian General Equilibrium Theory Workshop, National University of Singapore, August 18, 2007; University of Guelph, April 27, 2007.

“Collusion via Resale,” Third World Congress of the Game Theory Society, Evanston, IL, July 16, 2008; University of California, Los Angeles, April 17, 2008; Conference on Auctions and Procurements, CAPCP, Penn State University, April 5, 2008; First Singapore Economic Theory Workshop, National University of Singapore, August 17, 2007.

“Asymmetric Equilibria of English and Second-Price Auctions with Resale,” Ohio State University, October 6, 2006; Canadian Economic Theory Conference, University of Toronto, May 14, 2006; University of Southern California, April 24, 2006.

“Bank Runs: An Experimental Study,” Winter Meetings of the Econometric Society, Chicago, January 5, 2007; University of Colorado, Denver, November 3, 2006; University of Arizona, March 3, 2006, Georgia State University, April 19, 2006; World Congress of the Econometric Society, London, England, August 23, 2005; South West Economic Theory Conference, University of California, Riverside, March 12, 2005; Experimental and Behavioral Economics Workshop, Calgary, Alberta Canada, October 2, 2004.

“Speculation in Standard Auctions with Resale,” University of Toronto, November 23, 2004; University of Arizona, December 6, 2004; California Institute of Technology, November 17, 2004.

“On Potential Maximization as a Refinement of Nash Equilibrium,” 4th International Public Economic Theory Conference, Duke University, June 14, 2003.

“The Intraday Liquidity Management Game,” Conference in Honor of Karl Shell, Cornell University, May 9, 2003.

“Speculation in Second-Price Auctions with Resale,” University Pompeu Fabra, January 28, 2004; Latin American Meetings of the Econometric Society, Panama City, August 30, 2003; Federal Reserve Bank of New York, May 8, 2003; UCLA, February 19, 2003.

“Experienced Bidders in Online Second-Price Auctions” Annual Meeting of the Canadian Economics Association, May 27, 2005; Winter Meetings of the Econometric Society, Washington, DC, January 5, 2003; South West Economics Theory Conference, San Diego, CA, March 3, 2002; University of Oregon, January 25, 2002.

“A Characterization of Robust Sunspot Equilibria,” Cornell/Penn State Macro Workshop, Cornell University, November 11, 2000.

“On Cooperation Structures Resulting from Simultaneous Proposals in Three-Player Games,” 12th International Conference on Game Theory, Stony Brook, July 18, 2001; 2001 Summer Meetings of the Econometric Society, June 23.

“Potential Maximization and Coalition Government Formation,” 9th Coalition Theory Workshop, UAB, Barcelona, Spain, January 31, 2004; Hong Kong University of Science and Technology, May 10, 2002; PET 2000, the Second International Conference of the Association for Public Economic Theory, The University of Warwick, England, July 22, 2000; University of North Carolina, April 10, 2000; 2nd Annual Southern California Theory Workshop, March 4, 2000; University of Arizona, February 9, 2000.

“Exclusions and the Demand for Insurance,” ITAM, Mexico City, May 8, 1999.

“Equity Risk, Conversion Risk, and the Demand for Insurance,” University of Arizona, August 28, 2000; University of Miami, January 22, 1999.

“A Free Entry and Exit Experiment,” Economic Science Association, North American Regional Meeting, October 18, 1998.

“On Market Games When Agents Cannot be Two Places at Once,” University of Miami, October 23, 1998; Ninth Stony Brook Summer Festival in Game Theory, July 23, 1998; Workshop in Economic Theory, Instituto Veneto Di Scienze, Lettere Ed Arti, Venice, Italy, May 29, 1998; University of Arizona, April 8, 1998; UCSD, April 1, 1998; Mathematics Department, UCLA, November 24, 1997.

“On Bargaining for an Indivisible Good,” Third International Meeting of the Society for Social Choice and Welfare, University of Maastricht, The Netherlands, June 24, 1996; Meetings of the Canadian Economic Association, Brock University, St. Catherines, Ontario, Canada, May 31, 1996.

“Thinking about Medicare,” Chancellor’s Council, April, 1995.

“On a Market for Coalitions with Indivisible Agents and Lotteries,” The Seventh International Conference on Game Theory, Stony Brook, July 16, 1996; Game Theory and Economics (The N.N. Vorob’ev memorial conference), St. Petersburg, Russia, June 29, 1996; International Workshop on Cooperative Games, Universiteit Twente, Enschede, The Netherlands, June 19, 1996; Workshop on New Directions in the Theory of Markets and Games, The Fields Institute for Research in Mathematical Sciences, Toronto, Ontario, Canada, October 20, 1995; Department of Economics, Guelph University, July 13, 1995; Economic Theory Workshop, Cornell University, July 12, 1995.

“Indivisibilities, Gambles and Giffen Goods,” Econometric Society Winter Meetings, January 7, 1995

“Indivisibility and the Law of Demand,” 1994 Western Economic Association Meeting, Vancouver B.C. Canada, July 1994.

“Cores and Competitive Equilibria with Indivisibilities and Lotteries,” Econometric Society Summer Meetings, Quebec City, Canada, June 27, 1994; Department of Economics, University of California at Los Angeles, November 15, 1993; Joint meeting of Economic Theory Workshop, Macroeconomics Workshop and Economics 631, Cornell University, September 20, 1993.

“Who Should Go to College and How Much Should They Pay?” Econometric Society Winter Meetings, January 3, 1994; Western Economics Association International Annual Conference, June 23, 1993.

“Public Finance of Private Goods: The Case of Higher Education,” Econometric Society Winter Meetings, January 5, 1993; University of Arizona, October 23, 1992; University of California, San Diego, October 9, 1992; Summer Seminar in Macroeconomics and Monetary Economics, Cornell University, August 5, 1992.

University Service

Committee on Academic Personnel, 2017-18, 2019-21

Central Recruitment Fellowship Committee, 2006-07

Campus Graduate Fellowship Committee, 2000, 2002

Chair, Fiscal Integrity Subcommittee (NCAA Athletics Certification), 1998-99

Member, Faculty Legislature, 1997-98

Member, Intercollegiate Athletic Review Committee, 1997-98

Member, Instructional Development Committee, 1996-97

Department Liaison, United Way, 1993

Member, Intercollegiate Athletic Policy Board, 1992-94, 1996

Consulting

IMF 2020-21; Bank of Canada 2017, 2018, 2019, 2020, 2021; Onai 2018, Chimes 2017; Blockchain Industries Inc. 2018; Payments Canada 2016, 2017; R3 2016, 2017; Institute for Justice 2010.

Referee

NSF, American Economic Review, Econometrica, Review of Economic Studies, Journal of Political Economy, International Economic Review, Journal of Economic Theory, Theoretical Economics, Journal of Monetary Economics, Journal of Money Credit and Banking, Games and Economic Behavior, Journal of Banking & Finance, International Journal of Central Banking, Journal of Financial Market Infrastructures, European Economic Review, American Economic Journal: Microeconomics, RAND, Economic Theory, American Political Science Review, Review of Economic Dynamics, Canadian Journal of Economics, Journal of Economic Dynamics and Control, Economic Inquiry, Journal of Economic Education, Resource and Energy Economics, Journal of Public Economic Theory, Journal of Public Economics, Economics Bulletin, Review of Industrial Organization, Mathematical Population Studies, Economics Letters, European Journal of Finance, Journal of Financial Intermediation.