FEDERAL RESERVE BANK
PHILADELPHIA
Consumer Finance Institute

The Fourth Workshop on

Payments, Lending, and Innovations in Consumer Finance

October 26–27, 2022

Welcome

The Federal Reserve Bank of Philadelphia, the Consumer Finance Institute (CFI), and the Supervisory Research and Policy Forum (SURF) have co-organized **The Fourth Workshop on Payments, Lending, and Innovations in Consumer Finance**.

This year's workshop focuses on three important topics that are likely to shape the consumer finance industry over the next few years:

- financial innovation and payments,
- the current state of consumer credit with a focus on revolving credit, and
- the implications of adopting machine learning and artificial intelligence (ML/AI) innovations in consumer finance.

Financial Innovations and Payments

The secular decline in the use of cash has accelerated recently, as well as an innovation of digital payments, currency, and assets. These innovations present challenges and opportunities in the payment services and digital asset ecosystem in the U.S. and internationally. Although responsible developments in these areas have the potential to benefit consumers, progress requires engagement by businesses, governments, and consumers. Discussions will include innovations in digital payments and consumer adoption, use of new payment products, emerging policy and regulatory considerations, and the role of payments innovations in expanding the access and ease of use among consumers.

Consumer Finance and Revolving Credit

The pace of innovation in consumer finance has stepped up in recent years, especially in unsecured consumer credit. Competition between new entrants and incumbent firms has increased access and financing options for consumers. In addition, some of the changes in consumer behavior arising during the pandemic may have persistent effects.

Industry ML/AI Adoption

Recent advances in machine learning and artificial intelligence (ML/AI) are transforming traditional lending functions throughout the consumer life cycle. The pace of innovation and the adoption of ML/AI technologies is generating new challenges and raising new questions about their use and impact. In particular, using ML in credit risk modeling has raised issues of fairness and equity across society. Discussions will highlight issues in consumer lending and fairness and will address how ML/AI can be leveraged to improve model predictive accuracy and achieve more equitable financial outcomes.

Agenda

Wednesday, October 26

8:30 a.m.–8:45 a.m. **Morning Login: Module on Consumer Finance Lending**

8:45 a.m.–9:00 a.m. **Welcome Remarks, Introduction to the Workshop**
Robert Hunt, Senior Vice President and Associate Director, Consumer Finance Institute,
Federal Reserve Bank of Philadelphia

9:00 a.m.–9:45 a.m. **Keynote Address: Understanding Shifts in Consumer Credit Behavior and What
It Means for the Economy in 2023**
Silvio Tavares, President and CEO, VantageScore

9:45 a.m.–9:50 a.m. **Break**

9:50 a.m.–11:20 a.m. **Frontiers of Research in Consumer Finance**
Chair: Michaela Pagel, Roderick H. Cushman Associate Professor, Columbia Business
School

**Buy Now, Pay Later Credit: User Characteristics and Their Effects on
Spending Patterns**
Emily Williams, Assistant Professor, Harvard Business School

Who Pays for Your Rewards? Redistribution in the Credit Card Market
Andrea Filippo Presbitero, Senior Economist, International Monetary Fund

Do Savings Messages Increase Borrowing?
Paolina Medina, Assistant Professor of Finance, Mays Business School,
Texas A&M University

11:20 a.m.–11:30 a.m. **Break**

11:30 a.m.–12:20 p.m. **Panel: Recent Developments in Consumer Credit**
Chair: Neil Bhutta, Special Advisor, Consumer Finance Institute
Moshe Orenbuch, Managing Director, Specialty Finance, Credit Suisse
John Cabell, Managing Director, J.D. Power
Anna Zhou, U.S. Economist, Bank of America Institute
David Fieldhouse, Director of Predictive Credit Analytics, Moody's Analytics

12:20 p.m.–1:10 p.m. **Lunch**

Agenda

1:10 p.m.–1:50 p.m.   **Keynote Address: CBDCs and the Future Monetary System**
Hyun Song Shin, Economic Adviser and Head of Research, Bank for International Settlements (BIS)

1:50 p.m.–1:55 p.m.   **Break**

1:55 p.m.–2:55 p.m.   **The Future of Money and Real-Time Payments (RTP): Part I**

Project Nexus: BIS' Blueprint for Real-Time, Cross-Border Payments
Andrew McCormack, Head of BIS Innovation Hub Singapore Centre, BIS

E-krona, the Riksbank's Journey Toward a Retail Central Bank Digital Currency
Johan Schmalholz, Payment Infrastructure Advisor, Swedish Riksbank

2:55 p.m.–3:05 p.m.   **Break**

3:05 p.m.–4:05 p.m.   **The Future of Money and Real-Time Payments: Part II**

Introduction of FedNow: Interbank Settlement Service for Instant Payments
Daniel Baum, Senior Vice President and Head of Payments Product Management, Federal Reserve Financial Services — FedNow Service

The RTP Network: The Evolution from Domestic Real-Time Transactions to Immediate Cross-Border Payments (IXB), The Clearing House's Cross-Border Payments Pilot Program
Rusiru Gunasena, Senior Vice President of Real-Time Payments Product Management and Strategy, The Clearing House

4:05 p.m.–4:10 p.m.   **Break**

4:10 p.m.–5:10 p.m.   **Panel: The Future of Real-Time Payments**
Chair: Julia Cheney, Vice President, Federal Reserve Bank of Philadelphia
Jesse McWaters, Senior Vice President Regulatory Advocacy, Mastercard
Jonathan Olin, Chief Regulatory Counsel, Capital One
Lauren Saunders, Associate Director, National Consumer Law Center
Rusiru Gunasena, Senior Vice President of Real-Time Payments Product Management and Strategy, The Clearing House

5:10 p.m.–5:15 p.m.   **Break**

5:15 p.m.–5:40 p.m.   **End-of-Day Keynote Address: Delivering on the Promise of Inclusive Growth in a Dynamic and Digital World**
Shamina Singh, Founder and President, Mastercard Center for Inclusive Growth

5:40 p.m.–7:15 p.m.   **End-of-Day 1 Reception and Remarks**
Larry Cordell, Senior Vice President and Director of the RADAR Group, Federal Reserve Bank of Philadelphia

Agenda

Thursday, October 27

8:25 a.m.–8:30 a.m.   Morning Login: Module on ML/AI Innovations in Consumer Finance

8:30 a.m.–9:00 a.m.   **Keynote Address: Is It Time to Start Using Race and Gender in Underwriting?**
Kareem Saleh, Founder and CEO, FairPlay AI

9:00 a.m.–9:05 a.m.   **Break**

9:05 a.m.–10:05 a.m.   **ML/AI in Consumer Finance: Part I**

One Threshold Doesn't Fit All: Tailoring Consumer Default Predictions for Low- and Moderate-Income Areas
Vitaly Meursault, Machine Learning Economist, Federal Reserve Bank of Philadelphia

Measuring Fairness in Mortgage Applications
Minchul Shin, Economic Advisor and Machine Learning Economist, Federal Reserve Bank of Philadelphia

10:05 a.m.–10:15 a.m.   **Break**

10:15 a.m.–11:15 a.m.   **ML/AI in Consumer Finance: Part II**

Do We Need to Sacrifice Accuracy in Order to Be Fair?
Rayid Ghani, Distinguished Career Professor, Heinz College of Information Systems and Public Policy, Carnegie Mellon University

Do Deepfakes Discriminate? And Other Questions from the Model Audit Trenches
Patrick Hall, Principal Scientist, BNH.AI

11:15 a.m.–11:20 a.m.   **Break**

11:20 a.m.–12:10 p.m.   **Panel Discussion: Emerging ML/AI Topics in Consumer Credit**
Chair: Patrick Hall, Principal Scientist, BNH.AI
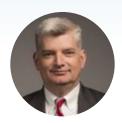Carol Evans, Deputy Fair Lending Director, Office of Fair Lending and Equal Opportunity, Consumer Financial Protection Bureau
John Morgan, Managing Vice President, Capital One
P-R Stark, Director of Machine Learning Research, FinRegLab
Kareem Saleh, Founder and CEO, FairPlay AI

12:10 p.m.–12:15 p.m.   **Closing Remarks**

Biographies

Daniel Baum

Senior Vice President
Head of Payments Product Management
Federal Reserve Financial Services – FedNow Service

Daniel Bam is a senior vice president and head of payments product management for the FedNow Service in the Federal Reserve System. In this role, he reviews the definition of initial release and future roadmap service features. Baum previously was vice president in the Retail Payments Office of the Federal Reserve System, with responsibility for check and automated clearing house product development and pricing. He has an M.B.A. from Johns Hopkins University, a bachelor's degree in economics from the University of Maryland, and attended banking school at Vanderbilt University.

Neil Bhutta

Special Advisor
Consumer Finance Institute
Federal Reserve Bank of Philadelphia

Neil Bhutta is a special advisor in the Consumer Finance Institute at the Federal Reserve Bank of Philadelphia. He joined the Bank in 2022. Previously, he was at the Board of Governors of the Federal Reserve in the Division of Research and Statistics. At the Board, his research and policy work were focused in consumer and real estate finance, including interagency rulemakings related to consumer financial protection and fair lending, production of the Board's Survey of Consumer Finances, and contributions to the Federal Reserve's regular assessment of financial stability. Bhutta's current research centers on financial literacy and household financial decisions, as well as racial disparities in household wealth and credit access. His research has been published in leading academic journals and in Federal Reserve publications.

Biographies

Siddhartha Biswas

Financial Economist
Federal Reserve Bank of Philadelphia

Siddhartha (Sid) Biswas joined the RADAR Unit at the Federal Reserve Bank of Philadelphia in 2021 and has been actively involved in its climate risk working group. He leads the group's policy work, where the goal is to understand, quantify, and communicate the physical climate risk associated with retail loans for lenders and borrowers. He also conducts research on topics in applied microeconomics, labor, education, and consumer finance, with a particular focus on the impact of student loans on higher education markets and students' lives after college. Biswas has a Ph.D. in economics from the University of North Carolina at Chapel Hill and a B.A. in economics and a B.S. in mathematics from the University of Chicago.

John Cabell

Managing Director
Payments Intelligence
J.D. Power

John Cabell is the managing director of Payments Intelligence at J.D. Power. He leads strategic thinking and study execution for U.S. and Canadian payment studies, including credit card, small business, and merchant satisfaction. His thought leadership has helped transform credit card; debit; buy now, pay later; and digital solutions. Cabell has more than 20 years of practice in customer experience in the banking, payments, and mortgage industries. He studied French language and economy at the Institut d'Etudes Françaises d'Avignon and earned the Certificat de Français Professionel from the Chambre de Commerce and d'Industrie de Paris. He has a master's degree in technology from William & Mary – Raymond A. Mason School of Business and a bachelor's degree in economics and French from the Virginia Military Institute.

Biographies

José Canals-Cerdá

Senior Special Advisor
Federal Reserve Bank of Philadelphia

José Canals-Cerdá is a senior special advisor in the Supervision, Regulation, and Credit Department at the Federal Reserve Bank of Philadelphia. After he joined the Bank in 2006, his unit set a goal to become the primary center of excellence on the analysis of consumer credit risk at the Federal Reserve System level. To meet this goal, he researches financial econometrics, credit risk management, supervision and regulation, and advances in quantitative methods in big data. His work reaches far beyond Philadelphia. He has led quantitative benchmark studies and contributed his expertise to a diverse array of System projects by developing systems, models, and databases. Specifically, he was the principal developer of the System methodology for stress testing of credit card portfolios, where he led a group of fellow Ph.D. economists and analysts. Most recently, he collaborated with the Supervisory Research and Policy Forum and the Consumer Finance Institute to organize a biennial workshop on credit cards and payments. Previously, he was a faculty member in the Economics Department of the University of Colorado at Boulder. Canals-Cerdá has a Ph.D. in economics from the University of Virginia and a bachelor's degree in mathematics from the University of Valencia, Spain.

Julia Cheney

Assistant Director
Consumer Finance Institute and Vice President
Federal Reserve Bank of Philadelphia

Julia Cheney is assistant director of the Consumer Finance Institute (CFI) and a vice president at the Federal Reserve Bank of Philadelphia. She contributes more than two decades of subject matter expertise in consumer credit and payments, along with leadership in payments policy research, team building, performance optimization, and strategic planning and execution. She is responsible for advancing the strategic direction of CFI to be a leading resource for innovative and rigorous research in consumer finance. Cheney's research interests include payment fraud, payment system risk, payment and credit innovations, and issues related to access to affordable consumer credit and payments. Within the Federal Reserve System, she has contributed to several high-profile initiatives, including the Federal Reserve's Strategies for Improving the U.S. Payment System, the Payment Fraud Landscape Study, and the Triennial Payments Study and, specifically, its collection of fraud data. Cheney also made important contributions to regulatory policy decisions while on assignment to the Board of Governors. Before joining the Philadelphia Fed in 2003, she spent several years in international market and business development while working for FleetBoston Financial Corp. and its credit card division's predecessor, Advanta Corporation. She has a master's degree in international business studies from the University of South Carolina and a bachelor's degree in economics from Dickinson College.

Biographies

Chung Cho

Supervising Examiner
Federal Reserve Bank of Philadelphia

Chung Cho is a supervising examiner in the Supervision, Regulation, and Credit Department at the Federal Reserve Bank of Philadelphia. Since joining the Bank, he has been a member of the dedicated supervisory team for Large and Foreign Banking Organizations in the Third District, with primary responsibilities over credit risk. He received his commissioned examiner credentials in 2021 and is currently involved in the System Fintech Supervision Program (SFSP) as a member of the artificial intelligence and machine learning working group. Previously, Cho was a consultant with KPMG after starting his career as a community bank examiner at the Office of the Comptroller of the Currency. He has a B.A. in economics from the University of Michigan, has an FRM certification, and is a CFA charterholder.

Souphala Chomsisengphet

Director of Retail Credit Risk Analysis Division
Supervision Risk & Analysis
Office of the Comptroller of the Currency

Souphala Chomsisengphet is an economist and director of the Retail Credit Risk Analysis Division in the Supervision Risk & Analysis Unit at the Office of the Comptroller of the Currency (OCC). In this role, she leads a team of financial economists supporting direct bank supervision in evaluating quantitative models used to identify credit risks for retail portfolios and providing quantitative research and analysis to support policy work or other indirect supervisory activities. She is also an advisor on issues related to model risk management and banking policy. Chomsisengphet's research interests are primarily in household finance, real estate finance, banking and financial institutions, and applied microeconomics.

Biographies

Michael Clippinger

Senior Financial Analyst
Federal Deposit Insurance Corporation

Michael Clippinger is a senior financial analyst at the Federal Deposit Insurance Corporation, primarily focused on developing analytic solutions to enhance institution retail credit monitoring and other supervisory processes. He has nearly 30 years of experience in banking and capital markets, with deep industry expertise across a number of asset classes, including credit cards, commercial loans, and residential mortgages. Previously, he was a director at PwC, providing complex financial asset valuation and advisory services to banks and other financial institutions. Clippinger also has extensive experience structuring and managing securitization transactions backed by credit cards, student loans, subprime mortgages, and equipment leases, as well as asset-backed security collateralized debt obligations.

Larry Cordell

Director
RADAR Group and Senior Vice President
Federal Reserve Bank of Philadelphia

Larry Cordell is senior vice president of the Risk Assessment, Data Analysis, and Research (RADAR) Group at the Federal Reserve Bank of Philadelphia, comprising four groups involving consumer risk modeling, fixed income analytics, financial monitoring, and big data on consumer finance. Previously, he was a special advisor in several Federal Reserve System initiatives during the financial crisis, including the examination team that evaluated the capital adequacy of Fannie Mae and Freddie Mac; the Supervisory Capital Assessment Program; and the 2010–2022 Dodd–Frank Act Stress Tests. Cordell has also been an adjunct professor in Penn State University's Masters of Finance Program, teaching a course on Fixed Income Securities. Before joining the Bank, he was chief economist at Radian Group. Prior to that, he spent 11 years at Freddie Mac, where he was among the economists who developed Loan Prospector®, the first commercially available automated underwriting scoring model for the U.S. mortgage market. He has published widely in areas of fixed income research, real estate economics, and banking and finance. He has a Ph.D. in economics from the University of North Carolina at Chapel Hill and a B.A. from St. Louis University.

Biographies

Carol Evans

Deputy Director
Office of Fair Lending and Equal Opportunity
Consumer Financial Protection Bureau

Carol Evans is a deputy director in the Consumer Financial Protection Bureau's (CFPB) Office of Fair Lending and Equal Opportunity. She focuses on algorithmic bias, innovation, and research and has authored publications about the implications of fintech trends for consumer protection, equity, and financial inclusion. She joined the CFPB in 2021 and had previously worked at the Federal Reserve Board, providing strategic direction and legal expertise to the Federal Reserve's consumer protection activities, including efforts to promote socially beneficial innovation. Evans has degrees (magna cum laude) from Harvard Law School and Smith College.

David Fieldhouse

Director of Predictive Credit Analytics
Moody's Analytics

David Fieldhouse is the director of predictive credit analytics at Moody's Analytics. He and his team of analysts specialize in producing econometric based loss-forecasting, benchmarking. and stress testing models to meet our client's unique strategic planning, risk management, and accounting needs. He is a CECL subject matter expert with a focus on credit cards. He also produces white papers on consumer credit issues and speaks regularly at Moody's Analytics and industry events, webinars, and client engagements. Fieldhouse has a Ph.D. in economics from the University of Western Ontario, Canada.

Scott Fulford

Senior Economist
Consumer Financial Protection Bureau

Scott Fulford is a senior economist at the Consumer Financial Protection Bureau (CFPB), where he leads the team that develops and analyzes the Making Ends Meet survey. Before joining the CFPB, he was an assistant professor of economics and international studies at Boston College. He has done extensive research on credit cards, remittances, and payments; banking; how economies grow and develop in the long term; and the effects of migration. He is the author of the book *The Pandemic Paradox: How the COVID Crisis Made Americans More Financially Secure,* coming in 2023 from Princeton University Press.

Biographies

Rayid Ghani

Professor
Machine Learning and Public Policy
Carnegie Mellon University

Rayid Ghani, a professor in machine learning and public policy at Carnegie Mellon University, focuses on developing and using artificial intelligence/machine learning/data science to help tackle large public policy and societal challenges in a fair and equitable manner. Ghani's work includes governments and nonprofits in policy areas such as health, criminal justice, education, public safety, economic development, and urban infrastructure. Before joining Carnegie Mellon University, he was the founding director of the Center for Data Science & Public Policy, a research associate professor in computer science, and a senior fellow at the Harris School of Public Policy at the University of Chicago. Previously, he was the chief scientist of the Obama 2012 Election Campaign.

Rusiru Gunasena

Senior Vice President
RTP® Product and Strategy
The Clearing House

Rusiru Gunasena, senior vice president, leads the product management and strategy team for The Clearing House's RTP® network. In this role, he oversees the ongoing growth of the RTP network, a modern platform for real-time payments that connects banks, credit unions, and fintech customers to move money with immediate payment confirmation. Gunasena is a payments and fintech leader with more than 20 years of experience across multiple industries. He is a strong advocate for digital payment innovation and continues to influence the U.S. payment ecosystem by participating in various industry work groups, and committees. He has experience as an entrepreneur and a diverse leader in start-up ventures and Fortune 100 companies worldwide across multiple industries. Previously, he was the managing director of JHA PayCenter, responsible for leading Jack Henry's Faster Payments strategy and building a central payment hub for fintechs and financial institutions. Gunasena has an M.B.A. from the University of Louisville, with an entrepreneurship concentration, and a bachelor's degree in accounting and finance from the University of Essex in the United Kingdom, where he was an honors recipient.

Biographies

Patrick Hall

Principal Scientist
BNH.AI

Patrick Hall is principal scientist at BNH.AI, a boutique law firm focusing on model audit and artificial intelligence (AI) risk management matters. He researches Trustworthy AI in support of the NIST AI Risk Management Framework and is visiting faculty member in the Department of Decision Sciences at the George Washington School of Business, teaching classes on data ethics and machine learning. Prior to cofounding BNH, Hall led H2O.ai's efforts in responsible artificial intelligence and worked as a senior machine learning scientist at the SAS Institute.

Matthew Hammond

Senior Complex Financial Institution Specialist
Federal Deposit Insurance Corporation

Matthew Hammond is a senior complex financial institution specialist at the Federal Deposit Insurance Corporation (FDIC), primarily focused on data analytics covering multiple risk stripes including retail credit. In his current role, he monitors and analyzes retail credit risk horizontally for bank holding companies over $100 billion in assets. His more than 15 years of banking industry experience includes more than 12 years of supervisory experience with the FDIC. He has served in various regulatory capacities, overseeing credit risk at large financial institutions with significant retail portfolios. Hammond has an M.B.A. from the University of Brigham Young and a B.A. in finance from the University of Utah.

Robert (Bob) M. Hunt

Associate Director
Consumer Finance Institute and Senior Vice President
Federal Reserve Bank of Philadelphia

Robert (Bob) M. Hunt is associate director of the Consumer Finance Institute (CFI) and senior vice president at the Federal Reserve Bank of Philadelphia. He is responsible for coordinating the Bank-wide portfolio of research and programming on consumer credit and payments, as well as identifying priorities for investment in next-generation, policy-relevant research on those topics. He is also active in numerous System-wide groups related to payments research and policy. Hunt also conducts research on consumer payments,

consumer finance, and the economics of innovation. His work includes studies of payment cards, adoption of new payment technologies, antitrust issues in consumer payment networks, identity theft, regulation of credit cards, mortgage default, consumer credit reporting, credit counseling organizations, and the collections industry. He has also published papers on topics in economic geography and intellectual property. He joined the Bank in 1998 as an economist in the Research Department. Previously, he worked for the U.S. Congressional Budget Office. He began his career as an industry risk analyst for Bank One, Indianapolis. Hunt has a Ph.D. in economics from the University of Pennsylvania and a bachelor's degree in political science and economics from Butler University.

Steven Jones

Director
Supervision Risk Management
Office of the Comptroller of the Currency

Steven Jones is the director for Supervision Risk Management (SRM) at the Office of the Comptroller of the Currency (OCC). In this role, Jones supervises the team responsible for planning and managing activities supporting the OCC's National Risk Committee and National Risk Steering Committee. Before being named director for SRM in November 2021, Jones was the director for Retail Credit Risk for five years after a 30-year career in the field, examining the full spectrum of financial institutions, including community banks, midsize banks, and large banks.

Stephen A. Karolyi

Senior Economic Advisor
Office of the Comptroller of the Currency

Stephen A. Karolyi is senior advisor to the senior deputy comptroller of the Supervision Risk and Analysis Department in the Office of the Comptroller of the Currency (OCC). His primary responsibility is to manage research working groups of economists in support of agencywide initiatives. Karolyi's current research interests are in financial intermediation and corporate finance. Previously, he taught undergraduate and graduate courses in finance, accounting, and applied econometric methods at Carnegie Mellon University. Karolyi has a Ph.D. in financial economics from Yale University.

Biographies

Andrew McCormack

Head
Bank for International Settlements Innovation Hub (BISIH), Singapore
Bank for International Settlements (BIS)

Andrew McCormack is the center head for the Bank for International Settlements Innovation Hub (BISIH) in Singapore. Prior to this appointment at the BIS in 2020, he was the chief information officer at Payments Canada and was responsible for Canada's clearing and settlement systems. As a technology and innovation leader, he led a number of well-known central bank digital currency (CBDC) initiatives, including Project Jasper (with the Bank of Canada) and Project Dunbar (BIS), as well as groundbreaking work on real-time cross-border payment systems known as Project Nexus (BIS). McCormack has an M.B.A. from Ivey Business School and a bachelor's degree in computer science from Carleton University.

John McNamara

Assistant Director
Consumer Credit, Payments, and Deposits Markets
Consumer Financial Protection Bureau

John McNamara is the principal assistant director of Markets and the assistant director for Consumer Credit, Payments, and Deposits Markets in the Research, Markets, and Regulations Division of the Consumer Financial Protection Bureau (CFPB). He leads a team of subject matter experts and analysts covering the credit card, payments, deposits, student, auto, small dollar, marketplace, and installment lending markets, as well as credit reporting, debt collection, debt relief, fintech, and the use of artificial intelligence and machine learning in consumer financial services. He also manages budgeting, staffing, and administration of the CFPB's Markets Office.

Biographies

Jesse McWaters

Senior Vice President, Regulatory Affairs Advocacy
Mastercard

Jesse McWaters, senior vice president, leads Mastercard's global regulatory advocacy function, where he is responsible for directing the company's public sector engagement on a wide range of emerging regulatory and policy issues. Prior to joining Mastercard, McWaters was head of financial technology and innovation at the World Economic Forum and a financial services strategy consultant at Deloitte, where he drove large-scale technology transformations for leading banks, insurers, and wealth managers. In his current role, he drives public/private collaboration at the frontier of financial innovation, including cryptoassets, central bank digital currencies, artificial intelligence, 5G, and open banking.

Paolina C. Medina

Assistant Professor of Finance
Mays Business School
Texas A&M University

Paolina C. Medina is an assistant professor of finance at the Mays Business School of Texas A&M University. She conducts research on household finance using field experiments and observational data, with a focus on understanding how psychological biases in consumer behavior affect financial market outcomes. Previously, she worked at the Mexican central bank for three years, with the retail financial services group. Medina has a Ph.D. in managerial economics from Northwestern University and a B.A. in economics from ITAM.

Vitaly Meursault

Machine Learning Economist
Federal Reserve Bank of Philadelphia

Vitaly Meursault is an economist at the Federal Reserve Bank of Philadelphia, using machine learning to study questions in economics and finance. His particular areas of interest are fairness in consumer lending and using natural language processing to study the financial markets. Meursault has a Ph.D. in financial economics from Carnegie Mellon University.

Biographies

John Morgan

Assistant Chief Model Risk Officer
Model Risk Office
Capital One

John Morgan is assistant chief model risk officer at Capital One's Model Risk Office. In this role, he leads the model risk management function for the Technology, Banking, Compliance, and Lending lines of business. His organization is responsible for model, computation, and automation validation, and it is also active in research and development in predictive analytics and supporting technologies. Before joining Capital One, he worked in the price-competitive personal insurance industry, with a focus on developing proprietary machine learning algorithms, competitive intelligence, pricing, and lifetime value modeling. Morgan has a bachelor's degree in physics from the University of Illinois and an A.B.D. in astronomy and astrophysics at the University of Chicago, where he conducted research in computational astrophysics.

Jonathan Olin

Managing Vice President and Chief Regulatory Counsel
Capital One

Jonathan Olin is managing vice president and chief regulatory counsel at Capital One. As head of the Regulatory Legal team, he works with a team of lawyers and other professionals to provide expert legal advice to Capital One's businesses across the enterprise on the complex web of regulatory laws, including prudential banking law, consumer finance, privacy, financial crimes, and other legal and regulatory issues. Prior to Capital One, Olin held a variety of senior roles at the U.S. Department of Justice, including as the deputy assistant attorney general leading the department's consumer protection branch. As deputy assistant attorney general, he oversaw approximately 100 lawyers, analysts, and staff and directed civil and criminal investigations involving the enforcement of a range of federal consumer protection laws. He also supervised the defense of civil suits challenging certain government programs. Previously, he was chief of staff and counselor to the assistant attorney general for the Civil Division. In that role, he participated in nearly every significant civil case involving the U.S. government, while helping manage the Justice Department's largest litigating unit, with approximately 1,400 lawyers and staff. Prior to his government service, Olin was a litigator in private practice and clerked for Judge James Robertson of the U.S. District Court for the District of Columbia. He graduated from the University of Pennsylvania Law School and Brown University.

Biographies

Moshe Orenbuch

Managing Director
Specialty Finance
Credit Suisse

Moshe Orenbuch is a managing director at Credit Suisse, responsible for research of the Specialty Finance sectors. In January 1999, he formed part of the Donaldson, Lufkin & Jenrette (DLJ) financial services team covering specialty finance companies. He joined Credit Suisse in October 2000, upon the merger of DLJ with Credit Suisse. Before joining DLJ, Orenbuch was a senior research analyst at Sanford C. Bernstein, where he covered regional banks and credit card issuers. While there, he authored two editions of *The Future of the Credit Card Industry*, as well as numerous other industry and company reports. Prior to his work at Sanford C. Bernstein, Orenbuch worked as an auditor and management consultant at Deloitte Haskins & Sells. He was also a past president of the Bank and Financial Analysts Association. In each year beginning in 1993, he has been a highly ranked analyst on Institutional Investor's All-America Research Team. In 2010, he achieved the No. 2 ranking for his coverage of Consumer Finance, advancing from his No. 3 position in the prior two years. He has a B.S. in accounting (summa cum laude) from Yeshiva University.

Michaela Pagel

Roderick H. Cushman Associate Professor
Columbia Business School

Michaela Pagel, the Roderick H. Cushman Associate Professor at Columbia Business School, focuses her research on topics in behavioral economics, household finance, and macroeconomics. Her dissertation centers on the consumption and investment implications of nonstandard preferences. More specifically, she theoretically studied how decision-making is affected by people's beliefs about their consumption. Her current work analyzes transaction-level data on income, spending, balances, credit limits, and logins stemming from a financial aggregation app. She is also working with bank account data linked to individual investors' security trades and portfolios; her interests are in determining household consumption and savings, stock market participation, and portfolio shares. Pagel has a Ph.D. in economics from the University of California, Berkeley.

Biographies

Andrea F. Presbitero

Senior Economist
Research Department
International Monetary Fund

Andrea F. Presbitero is a senior economist in the Research Department of the International Monetary Fund, CEPR Research Fellow in the International Macroeconomics and Finance program, associate fellow at SAIS Europe, and a member of the Money & Finance Research. He has been assistant professor at the Universita' Politecnica delle Marche and associate professor of economics at the Johns Hopkins University School of Advanced International Studies. His research focuses on financial intermediation, banking, development finance, and sovereign debt. He is associate editor of the *IMF Economic Review*, *Economia* (*LACEA*), and the *Journal of Financial Stability*.

Ben Ranish

Principal Economist
Supervision and Regulation
Board of Governors of the Federal Reserve System

Ben Ranish is a principal economist at the Board of Governors of the Federal Reserve System, where he has worked in Supervision & Regulation in the policy research area since 2013. He has been involved on CECL-related projects since 2018, including two public facing notes on the standard, and continues to monitor discussions on the topic. His other policy work relates mostly to credit risk and regulations, and his research interests span finance more broadly.

Biographies

Debra Saito

Officer
Supervision Group
Federal Reserve Bank of New York

Debra Saito is an officer in the Supervision Group at the Federal Reserve Bank of New York and is the central point of contact for American Express. With more than 16 years at the New York Fed, Saito has been the Governance & Controls lead, Business Line Specialist team lead, financial analyst, model risk specialist, Basel coordinator, wholesale credit risk specialist, risk coordinator, and relationship manager at a variety of institutions, including MetLife, Citi, BNYM, Barclays, Deutsche Bank, MUFJ, and smaller Japanese banks. Before joining the Fed, Saito worked in international development, managing technical assistance and infrastructure projects in Central America and the Caribbean that were funded by the Japanese government.

Kareem Saleh

Founder and Chief Executive Officer
FairPlay

Kareem Saleh is the founder and chief executive officer of FairPlay, the world's first fairness-as-a-service company. Financial institutions use FairPlay's APIs to embed fairness considerations into their marketing, underwriting, pricing, and loss mitigation algorithms, as well as to automate their fair lending testing and reporting. Previously, Saleh was executive vice president at Zest.ai, where he led business development for the company's machine learning-powered credit underwriting platform. Prior to that, he was an executive at SoftCard, a mobile payments company that was acquired by Google. He also was in the Obama administration, first as chief of staff to the State Department's Special Envoy for Climate Change, where he helped manage the 50-person team that negotiated the Paris Climate Agreement. He then was as senior advisor to the chief executive officer of the Overseas Private Investment Corporation, where he helped direct the U.S. government's $30 billion portfolio of emerging market investments, with responsibility for transaction teams in Europe, Latin America, and the Middle East. He is a *Forbes* contributor and a frequent speaker on the application of artificial intelligence to financial services. He is a graduate of Georgetown University Law Center and an honors graduate of the University of Chicago.

Biographies

Larry Santucci

Advisor and Research Fellow
Consumer Finance Institute
Federal Reserve Bank of Philadelphia

Larry Santucci is an advisor and research fellow at the Consumer Finance Institute at the Federal Reserve Bank of Philadelphia. He joined the Philadelphia Fed in 2013. His research helps us understand consumer credit markets and their effect on vulnerable and underserved consumer groups. He has written influential studies of the consequences of the previous financial crisis and subsequent regulation and empirical analyses of secured credit cards. More recently, he published research on checking account overdraft, neuroeconomics, and the consequences of cognitive decline on the financial well-being of older adults. His research also benefits from conferences he has organized. His current research interests include fairness in machine learning-based credit decisions and the effects of housing restrictions on residential composition and wealth accumulation. He is leading a project to understand how the prevalence and spatial distribution of racially restrictive covenants placed on Philadelphia properties during the first half of the 20th century. This project involves digitizing and geolocating information from what were originally thousands of paper records, often handwritten. This is the basis of new original research, a data visualization, and public use data set is available on the Philadelphia Fed's website: A Map of Racially Restrictive Covenants in the City of Philadelphia. Previously, he spent eight years in consumer lending, with a focus on data, analytics, and business strategy and was a credit card product manager at SunTrust Bank. He also was a research assistant at the Federal Reserve Bank of Richmond. Santucci has a master's degree in economics from the Pennsylvania State University and a bachelor's degree in economics and business administration from Ursinus College.

Lauren Saunders

Associate Director
National Consumer Law Center

Lauren Saunders is associate director of the National Consumer Law Center (NCLC), a nonprofit organization that works for economic justice for low-income and other disadvantaged people through policy analysis, advocacy, publications, litigation, and training. In this role, she manages NCLC's Washington, D.C. office and directs its federal legislative and regulatory work. She is a recognized expert in consumer protection areas, including small dollar loans, predatory lending, banking, fintech, and payment systems. Saunders is an author of NCLC's treatise *Consumer Banking and Payments Law* and contributes to *Consumer Credit Regulation*, among other publications.

Biographies

Johan Schmalholz

Payment Infrastructure Advisor
Ekrona Division
Sveriges Riksbank

Johan Schmalholz is the payment infrastructure advisor at the e-krona division of Sveriges Riksbank. He has an extensive background in the financial sector and has held positions at the financial stability and payment departments of the Riksbank. Previously, he held project management and financial infrastructure coordination positions at Swedbank and the Swedish Bankers´ Association.

Hyun Song Shin

Economic Adviser and Head of Research
Bank for International Settlements

Hyuan Song Shin is the economic adviser and head of research at the Bank for International Settlements (BIS), where he coleads the Monetary and Economic Department and is part of the Bank's senior management as a member of its Executive Committee. Shin has a background in academia. Prior to this, he was the Hughes-Rogers Professor of Economics at Princeton University, having previously held appointments at Oxford University and the London School of Economics. He has been an intellectual leader in the fields of banking, international finance, and monetary economics, topics on which he has published widely, both in leading academic and official publications. One area of recent focus has been in developing BIS's research program on digital innovation and the financial system, including the design of central bank digital currencies and their implications for users, financial intermediaries, and the central bank. He was part of the BIS management team that developed the BIS Innovation Hub and was its interim head at its launch in 2019. In 2010, he was senior adviser to the Korean president, taking a leading role in formulating financial stability policy in Korea and developing the agenda for the G20 during Korea's presidency.

Biographies

Minchul Shin

Economic Advisor and Machine Learning Economist
Federal Reserve Bank of Philadelphia

Minchul Shin is an econometrician/data scientist with both theoretical and empirical interests at the Federal Reserve Bank of Philadelphia. At the Bank, he has been developing new econometric, statistical, and machine learning tools that can be used in economic forecasting, macroeconomics, and urban economics. In addition, he helps develop and implement machine learning methods and applications for other areas of the Bank that are working on projects with big data and text data. Previously, Shin was an assistant professor of economics at the University of Illinois. He has a Ph.D. in economics from the University of Pennsylvania.

Shamina Singh

Founder and President
Mastercard Center for Inclusive Growth
Executive Vice President, Sustainability
Mastercard

Shamina Singh is the founder and president of the Center for Inclusive Growth, the philanthropic hub of Mastercard. For more than 20 years, she has been on the frontlines of developing and implementing solutions to make the global economy work for everyone, everywhere. She also is executive vice president of Corporate Sustainability and is a member of the company's Management Committee. In 2018, Mastercard pledged $500 million to create the Mastercard Impact Fund; Singh was named president and charged with activating those philanthropic dollars to advance inclusive growth and financial inclusion around the world. She is on the boards of ADL, a global antihate organization; and the Ann Richards School for Young Women Leaders in Austin, Texas. She is on the advisory boards of several organizations, including Data and Society, The Aspen Institute Civil Society Fellowship; and NEON, an organization committed to dismantling structural racism in the United States.

Biographies

William (Bill) G. Spaniel

Senior Vice President and Lending Officer
Supervision, Regulation, and Credit
Federal Reserve Bank of Philadelphia

William (Bill) G. Spaniel oversees the Supervision, Regulation, and Credit Department at the Federal Reserve Bank of Philadelphia. He started his career as a senior consultant for KPMG, but his interest in regulatory compliance led him to a 25-year tenure with the Board of Governors of the Federal Reserve System. While there, he held many roles and was able to serve on the Y2K planning and response committees and to coordinate the System's participation in the first International Monetary Fund Financial Sector Assessment Program review of the United States. Early in his career, Spaniel worked in a community bank that placed a focus on outreach and support. He has seen firsthand the difference that banks and bankers can make in both large and small communities. He is also interested in how financial institutions support growing and vibrant communities. Spaniel explores much of this interest in his department's community bank portfolio, which spans the Third District. Since joining the Bank in 2015, he has implemented several cultural initiatives in the supervision function. Spaniel has a bachelor's degree in economics from the College of William and Mary.

P-R Stark

Director
Machine Learning Research
FinRegLab

P-R Stark is FinRegLab's director of Machine Learning Research. In that role, she leads the organization's efforts to develop and execute policy-relevant research on the use of artificial intelligence and machine learning in financial services. That includes ongoing research being conducted with researchers at the Stanford Graduate School of Business on the explainability and fairness of machine learning underwriting models. This research explores the capabilities and performance of available model diagnostic tools in helping lenders comply with a variety of regulations that apply to various model a lender uses to make consumer credit decisions. Prior to joining FinRegLab, Stark was an advisor to bank and nonbank financial institutions, most recently in the finance and risk practice of Oliver Wyman. Her practice focused on helping firms operationalize compliance with the full range of federal consumer protection laws and regulations, including prohibitions on unfair, deceptive, or abusive acts or practices. P-R was also among the first employees of the Consumer Financial Protection Bureau, where her work included shaping issues in the Enforcement Division and developing strategic priorities. She also shared frameworks for evaluating market risks for the division of Supervision, Enforcement, and Fair Lending. Stark is a graduate of Princeton, Oxford, and Harvard universities.

Biographies

Silvio Tavares

President and CEO
VantageScore

Silvio Tavares is president and chief executive officer of VantageScore, the provider of the leading national consumer credit score used by more than 2,200 banks, fintech apps, and financial institutions, including Chase, Capital One, Synchrony, and nine out of the top 10 U.S. banks. Tavares is an experienced fintech and data analytics chief executive officer. He is also a sought after public company board director. He is on the board of directors of CSG, a NASDAQ-listed provider of digital engagement and payment services to leading cable companies and mobile operators. Previously, he was chair of the Audit Committee and board director for CPI, a NASDAQ-listed provider of secure payment cards. Prior to VantageScore, Tavares was chair and chief executive officer of the Digital Commerce Alliance (DCA), a leading global trade association serving the world's largest banks, fintechs, merchants, and technology companies, including Bank of America, Discover, Google, Microsoft, Mastercard, and Walmart. At DCA, Tavares led the establishment of the association from three founding companies to serving members in over 15 countries. Under his leadership, the DCA became the leading technical standards and innovation association for mobile wallets, financial data, and card-linked offers. Previously, Tavares was a senior executive at Visa. He was senior vice president of the Information Products business unit and pioneered the use of neural networks for payment card fraud detection and the use of financial data for digital advertising and loyalty applications. Before Visa, he was senior vice president and head of the Information Products business unit at First Data, leveraging financial data to decrease risk for banks and merchants while increasing their revenues. He patented and launched First Data's first widely followed macroeconomic indicator called SpendTrend. Tavares is an inventor or coinventor of more than 16 issued patents in data analytics and financial data. He has a J.D. from Boston University, an M.B.A. from Boston College, and a B.S. in electrical and computer engineering from Tufts University.

Natalie Tiernan

Acting Deputy Director
Retail Credit Risk Analysis Division
Office of the Comptroller of the Currency

Natalie Tiernan is an acting deputy director of the Retail Credit Risk Analysis Division at the Office the Comptroller of the Currency. In this role, she is an advisor to the agency on supervision and policy issues in consumer credit risk modeling, model risk management, and retail credit risk. Tiernan's research interests include banking and regulation, quantitative macroeconomics, and real estate economics. She has a Ph.D. in economics from Georgetown University and a B.S. in business from the Kelley School of Business at Indiana University.

Biographies

Emily Williams

Assistant Professor
Business Administration
Harvard Business School

Emily Williams is an assistant professor of business administration in the Finance Unit at Harvard Business School, where she teaches the Finance II course to M.B.A. students. Her research focuses on financial intermediation, traditional intermediation and payments, the use of technology in financial intermediation, and financial services offered to the underbanked. Williams has a Ph.D. in finance from London Business School, an M.A. in mathematics from Warwick University, and an M.B.A. from the Tuck School of Business at Dartmouth.

Anna Zhou

Vice President
Economist
Bank of America Institute

Anna Zhou is a vice president and economist at the Bank of America Institute, a think tank that draws on data and analyses from across the bank and the world to provide timely and original perspectives on the economy; environmental, social, and governance (ESG); and global transformation. She joined Bank of America in 2017 and is based in New York. Prior to her current role, she was part of the U.S. economics team under Bank of America Global Research. Zhou has a master's degree in economics from Columbia University and a bachelor's degree in economics from Cornell University.