

Paroma Sanyal

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Dr. Paroma Sanyal is a Senior Consultant in the Washington, D.C. office of The Brattle Group. Prior to joining Brattle, she was the Chief Economist of the Wireless Telecommunications Bureau at the US Federal Communications Commission. Prior to that, she had a joint appointment at the Economics Department and International Business School at Brandeis University. She is an expert in telecommunications regulation, spectrum policy, competition issues and all FCC regulatory policies. While at the Commission, she has led the wireless agenda for economic analysis and policy and has widely consulted with the industry and other international regulators on spectrum policy, spectrum auctions, roaming, mergers, universal service, broadband mapping and other wireless telecommunications issues in general. She has authored opinion pieces and memos on various high impact policy options in the telecommunications field, and has provided economic advice and data based empirical analysis in the area of general competitive and economic developments in the wireless industry. She has also worked on several high profile telecom mergers AT&T- T Mobile and AT&T-Direct TV. She has published in peer reviewed journals such as *Review of Economics and Statistics*, *The Energy Journal*, *Journal of Regulatory Economics*, *Quarterly Review of Economics and Finance*, *International Review of Economics and Finance*, and *Review of Development Economics*.

PROFESSIONAL EXPERIENCE

Senior Consultant, The Brattle Group, November 2018 - Current

Chief Economist, Wireless Telecommunications Bureau, Federal Communication Commission, 2015 – November 2018

Deputy Division Chief, Spectrum and Competition Policy Division, Wireless Telecommunications Bureau, Federal Communication Commission, 2014-2015

Associate Division Chief, Spectrum and Competition Policy Division, Wireless Telecommunications Bureau, Federal Communication Commission, 2013 - 2014

Senior Economist, Office of Strategic Planning, Federal Communication Commission, 2011 - 2013

Economist, Data for Decisions, 2010

Assistant Professor, Department of Economics & IBS, Brandeis University, 2001 – 2010

OECD Visiting Researcher, 2005 (STI group)

Consultant, The World Bank, Competition and Regulation Policy Research Group, Summer, 2000.

California Science and Technology Infrastructure Project for the California Council for Science and Technology, Researcher, 1998.

SELECTED CONSULTING PROJECTS

Projects

- Advised client on several regulatory matters related to the FCC
- Advised client on a FTC consumer protection / false advertising case related to broadband speeds
- Reviewed the FCC's Order on Inmate Calling Services and filed comments
- Advised bidder in the Rural Digital Opportunity Fund Reverse Auction
- Advised NCTA on sharing the 5.9 GHz band and FCC ExParte Presentation
- Advised Intelsat on a cost allocation issue in the C-Band and FCC ExParte Presentation
- Advised bidder in FCC CBRS spectrum license auction.
- Advised bidder in FCC C-Band spectrum license auction.
- Estimated value of 900 MHz spectrum licenses for several clients.
- Estimated Value of 600 MHz, 2.4 GHz, 3.5 GHz licenses
- Estimated the value created from an accelerated clearing of the C-Band spectrum (US and Canada)
- Analyzed value of repurposing lower mid-band spectrum.
- Analyzed impact of 5G on mobile spectrum values.
- Assessed benefits of fiber-based broadband in rural areas.
- Universal Service Fund related project on the choice of appropriate auction weights
- Providing expert analysis and support for setting up the 4G spectrum auctions in Afghanistan
- Consulted on a radio-licensing case
- Evaluated the impact of network effects on customer growth and asset value for a social-networking platform case
- Evaluated potential impact in an insurance matter and supporting the expert with quantitative analysis
- International arbitration cases on telecom

Federal Communications Commission and Other Regulatory Filings

- "Exclusive Use of Public Rights of Way, Unfair Competitive Practices, and Fair and Reasonable Compensation," FCC, May 12, 2021.

- “Valuing the 12 GHz Spectrum Band with Flexible Use Rights,” with Coleman Bazelon, FCC, May 7, 2021.
 - Further Comments on “Rates for Interstate Inmate Calling Services,” Report and Order on Remand and Fourth Further Notice of Proposed Rulemaking, with Coleman Bazelon and Andrea Helfant, FCC, WC Docket Nos. 12-375, March 25, 2021.
 - “Valuing an Accelerated Clearing of the C- Band Spectrum in Canada,” with Coleman Bazelon and Renee M. Duplantis, Canada, February, 2021.
 - Reply Comments on “Rates for Interstate Inmate Calling Services,” Report and Order on Remand and Fourth Further Notice of Proposed Rulemaking, with Coleman Bazelon and Andrea Helfant, FCC, WC Docket Nos. 12-375, January 15, 2021.
 - Comments on “Rates for Interstate Inmate Calling Services,” Report and Order on Remand and Fourth Further Notice of Proposed Rulemaking, with Coleman Bazelon and Andrea Helfant, FCC, WC Docket Nos. 12-375, November 23, 2020.
 - “Allocating Costs for Hosted Payloads on the C-Band Satellites,” Paroma Sanyal, FCC, GN Docket Nos. 18-122, 20-173, August 6, 2020.
 - “Benefits and Costs of Greater Connectedness,” with Coleman Bazelon, FCC, IB Docket No. 11-109, 12-340, June 1, 2020.
 - “The Economics of Unlicensed and Dedicated Use Spectrum in the 5.9 GHz Band,” with Coleman Bazelon, FCC, ET Docket No. 19-138, April 27, 2020
 - “Value Creation from an Accelerated Clearing of the C-Band Spectrum,” with Coleman Bazelon, FCC, WTB 18-122, January 16, 2020.
- (Due to a 1 year cooling-off period my name does not appear on these papers)*
- “Public Interest Benefits of Expanding Fiber Networks,” FCC, WC Docket Nos. 19-126, WC Docket Nos. 10-90, WC Docket Nos. 19-195, October 21, 2019.
 - “Advancing 5G Deployment: Shared Flexible Use of the 1675 – 1680 MHz Band,” FCC, WTB Docket Nos. 19-116, ETRN Docket Nos. 11-681, July 22, 2019
 - “Choosing an Appropriate Geographic Licensing Size,” FCC, WTB Docket No. 19-116, ETRN Docket No. 11-681, June 21, 2019.

Reports and Papers

- Coleman Bazelon and Paroma Sanyal, “The Benefits of a 180-Day Locking Period for Verizon Pre-Paid Devices,” Prepared for Verizon Communications, March 30, 2021.
- Coleman Bazelon, Paroma Sanyal, Jonathan Lee, Ezra Frankel, Ryan Taylor, “Network Value Drivers in a 5G World,” Telecommunications Policy Research Conference 48, Conference Presentation, February 17, 2021.

- Coleman Bazelon and Paroma Sanyal, “Evaluating Broadband Speed Differences in Frontier’s Copper Network,” Prepared for Kelley Drye and Frontier Communications, January 4, 2021.
- Coleman Bazelon and Paroma Sanyal, “Value Creation from an Accelerated Clearing of the C-Band Spectrum,” Prepared for the C-Band Alliance, January 16, 2020.
- Augustin Ros, Paroma Sanyal and Ezra Frankel, “Valuing the 900 MHz Spectrum Band in Ameren’s Service Territory,” Prepared for Ameren, November 6, 2019.
- Coleman Bazelon and Paroma Sanyal, "Spectrum Assignment for Advanced Mobile Broadband Services," Policy/ Consultation Paper for the Afghanistan Telecommunications Regulatory Authority (ATRA), Selected Chapters on Auctions, September 2019.
- Coleman Bazelon and Paroma Sanyal, “Valuing the 1300 MHz – 1350 MHz Band”, Prepared for Raytheon, August 7, 2019.
- Coleman Bazelon and Paroma Sanyal, “Mobile Broadband Spectrum: A Revaluation in a 5G World”, Prepared for CTIA, May 29, 2019.
- Worked on Reports/Papers to be Filed at the FCC
(Due to a 1 year cooling-off period my name does not appear on these papers)
- Coleman Bazelon, “The Public Interest Benefits of a Market-Based Solution for the C-Band,” Prepared for The C-Band Alliance, November 13, 2019.
- Coleman Bazelon, “Cost Benefit Analysis: A Case Study of the 5.9 GHz Band,” Presented to the FCC, May 8, 2019.

WORK AT THE FEDERAL COMMUNICATION COMMISSION

- Leading, directing and managing the agenda for economic analysis and economic policy for the Wireless Telecommunications Bureau
- Consulted with the industry and other international regulators on spectrum policy, spectrum auctions and other mobile telecommunications policy in general
- Supervising economists, engineers and attorneys as Deputy Bureau Chief at the Spectrum and Competition policy Division of the Wireless Bureau
- Directing, managing and evaluating the work of various multi-disciplinary teams that include economists, analysts, engineers and attorneys.
- Monitoring the wireless market space and writing option pieces and memos on various high impact policy options in the telecommunications field.
- Providing economic advice and analysis in the area of general competitive and economic developments in the wireless industry.

- Making regular presentations and meeting with industry, other regulatory agencies and the Chairman's and Commissioner's staff.
- Recent work on several high profile Commission items such as High Cost Support, spectrum policy, auctions, roaming issues, deployment of wireless broadband in the US, infrastructure issues, Measuring Mobile Broadband America.
- Past work on several high profile Commission items such as the Open Internet Order, Competitive Bidding and DE Rules, 477 data collection.
- Managed/ Worked on several merger cases including AT&T-Direct TV, AT&T- T Mobile, ACS- GCI Joint Venture Transaction, Verizon-Grain, AT&T Leap, and AT&T-Direct TV (2011 – 2018)
- Managed and co-authored the Wireless Competition Report (2014-2015)
- Spearheaded the reform of important data collection processes with other Bureaus (2012-present)
- Economic analysis of cross-country pricing and broadband performance metrics for the International Broadband Data Report (2011 – 2013)
- Universal Service Fund issues, cost modelling and auction (2011-2018)
- Analysis of broadband adoption and in the United States (2012)

PUBLICATIONS

- Captive Audiences: A Case Study of Phone Rates for Incarcerated Persons (with C. Bazelon), Consumer Policy International, April 2021.
- Economics at the FCC 2016 – 2017: Auction Designs for Spectrum Repurposing and Universal Service Subsidies (with E. Krewel, et. al.), (2017), Review of Industrial Organization.
- Economics at the FCC 2015 – 2016, (2016): Competition, Merger Review, and Spectrum Management (with O. Carare, et. al.) Review of Industrial Organization.
- Product Market Competition and Upstream Innovation: Theory and Evidence from the US Electricity Market Restructuring (with S. Ghosh) (2012) Review of Economics and Statistics.
- Bulan, L. and Sanyal P., (2011) "Incentivizing Managers to Build Innovative Firms", Annals of Finance, Vol. 7(2), pp. 267 – 283.
- Sanyal, P. and Bulan, L., (2011) "Regulatory Risk, Competition and Capital Structure: Evidence from US Electric Utilities", Quarterly Review of Economics and Finance, Vol. 51(3), pp. 248 – 268.
- Sanyal, P. and Shankar, R., (2011) "Productivity, Ownership and Competition: An Analysis of Indian Banking in the Post-Reform Period, International Review of Economics and Finance, Vol. 20(2), pp. 225 – 247.

- Book Chapter (2010): “Economic, Regulatory and Industry Effects on Capital Structure” (Chapter 15) in H. Kent Baker and Gerald S. Martin edited “Capital Structure and Corporate Financing Decisions”, Kolb Series in Finance, Wiley
- Bulan, L. and Sanyal, P., (2010) “A Few Bad Apples: An Analysis of CEO Performance Pay and Firm Productivity”, *Journal of Economics and Business*, Vol. 62(4), pp. 116 – 128.
- Sanyal, P. and Cohen L. R., (2009) “Powering Progress: Restructuring, Competition and R&D in the U.S. Electric Utility Industry”, *The Energy Journal*, Vol. 30 (2), pp. 41-80.
- Sanyal, P., (2007) “The Effect of Deregulation on Environmental Research by Electric Utilities”, *Journal of Regulatory Economics*, Vol. 31 (3), pp. 335-353.
- Menon, N. and Sanyal, P., (2007) “Labor Conflict and Foreign Investments: Some Endogeneity Issues”, *Review of Development Economics*, Vol. 11(4), pp. 629-644.
- Sanyal, P. and Shankar, R., (2007) “Determinants of Productivity in Indian Banking: What has Changed in the Post-Reform Period?” *Journal of Macro Marketing Papers and Proceedings*, June.
- Sanyal, P. and Jaffe, A. B., (2006) “Peanut Butter Patents Versus the New Economy: Does the Increased Rate of Patenting Signal More Invention or Just More Lawyers?” *Annales d’Economie et de Statistique*, Special Issue in the memory of Zvi Griliches.
- Sanyal, P. and Menon, N. (2005) “Labor Conflicts and the Economics of Firm Geography: Evidence from India”, *Economic Development and Cultural Change*, Vol. 53(4), pp. 825-854.
- “A Retrospective on the Electricity Restructuring in California”, (2004) Joint Author California Science and Technology Commission & California Energy Commission <http://www.ccst.us/publications/2004/EnergyReport.pdf>
- Sanyal, P., (2002) “Understanding Patents: The Role of R&D Funding Sources and the Patent Office”, *Economics of Innovation and New Technology*, Vol. 12(6), pp. 507 – 529.

WORKING PAPERS AND UNPUBLISHED MONOGRAPHS

- The Financial Structure of Startup Firms: The Role for Asset, Information, and Owner Characteristics (with C. L. Mann) Federal Reserve Bank of Boston Working Paper, 2011.
- Is There Room for Growth? Debt, Growth Opportunities and the Deregulation of U.S. Electric Utilities (with L. Bulan) (2010)
- Innovation, R&D and Managerial Compensation (with L. Bulan) (2010)
- Financing Choices and Entrepreneurial Success (with C. L. Mann) (2010)

- The Subsequent Financing of Small Startups: Initial Capital Structure, Entrepreneur and Firm Attributes (with C. L. Mann) (2010)
- Directors, Outsiders and Efficiency: An Analysis of How Board Characteristics Influence Firm Productivity (with L. Bulan & Z. Yan) (2009)
- What Drives Bank Performance? An Analysis for the Post-Reform Period in India (with R. Shankar) (2006)
- R&D Choice in Restructured Industries: In-house v/s Collaborative Research in the US Electricity Industry (with L. R. Cohen) (2002)
- Determinants of International Patenting Activity and IPR Regimes Shifts: A Cross-Country Analysis (2002)
- Knack, S. and Sanyal, P. (2000) “Making a Difference: How Women In Politics Affect Health and Education Outcome”, World Bank Mimeo.
- Implication of Aggregate Trends in Support and Performance of R&D in California on Patent Activity (with Linda Cohen), 1999

CONFERENCE AND SEMINAR PRESENTATIONS

- TPRC, “Network Value Drivers in a 5G World,” February, 2021.
- US Telecom Roundtable, 2019
- TPRC, “Spectrum Value in a 5G World,” Washington D.C. September, 2019
- Georgetown University, “Can 5G Technology Create New Opportunities for Competition,’ July, 2019
- Brownbag Presentations, Federal Communication Commission, 2012 - present
- Federal Communication Commission, 2011
- University of Texas, Arlington, Dept. of Economics Seminar, December, 2010
- Wesleyan University, Department of Economics Seminar, October 2010
- US Energy Policy in Transition, PURC, U. of Florida, Gainesville, March, 2010
- Entrepreneurial and Innovation Conference, Cambridge, Ma, June 2010
- Kauffman Foundation Workshop, Atlanta, January, 2010
- Kauffman Foundation Seminar, Washington DC, November, 2009
- Bentley College Research Seminar, November, 2009
- Northeastern University Research Seminar, September, 2009
- Indian School of Business, Hyderabad, June, 2009
- American Law and Economics Conference, San Diego, May, 2009
- Indian Institute of Management, Bangalore, December, 2008
- AEA Conference, January, 2003, 2005, 2006
- International Industrial Organization Conference, 2003 – 2010
- NBER Productivity Seminar Series, Cambridge, 2001 – 2009
- NBER Summer Institute, Productivity Potpourri, July, 2004, 2007
- Midwest Finance Association, 2007, 2008
- Florida Atlantic University, Boca Raton, Florida, December, 2007

- International Society of Marketing and Development Conference, Washington, D.C., June, 2007
- IMF MFD Seminar Series, Washington D.C., February, 2006
- MIT Innovation Seminar, November, 2005
- Econometric Society World Congress, London, August, 2005
- European Patent Office, Munich, May, 2005
- 24th Annual North American Conference of USAEE/IAEE, Washington, D. C., July, 2004
- NBER & CRIW Conference in Memory of Zvi Griliches, Paris, August, 2003
- Second World Congress of Environmental Economics, CA, June, 2002
- NBER Spring Productivity Conference, Cambridge, March 15, 2002
- 5th Occasional California Workshop on Environmental and Resource Economics”, UCSB, 2000.
- “R&D Investment and Economic Growth in the 20th Century” Conference - UC Berkeley, March, 1999.

GRANTS AND AWARDS

- Excellence in Economic Analysis Award, Federal Communication Commission, 2012
- Kauffman Foundation Research Grant (with Catherine L. Mann)
- Brandeis University Norman Grant, 2005, 2006, 2007
- Best Paper Award in Corporate Finance, Midwest Finance Annual Meetings, 2007
- Schiff Award (Brandeis University), 2005
- UC Energy Institute Research Fellowship, 2000

EDUCATION

- Ph.D. University of California, Irvine (2001)
 Fields of Concentration: Industrial Organization, Econometrics, Applied Microeconomics, Regulatory Economics
 Dissertation Title: Essays on Research and Development
- MASTERS Applied Mathematics, University of California, Irvine (1998)
 Economics, Delhi School of Economics (1996)

RESEARCH INTERESTS

Main Focus	Telecommunications Sector
Related Areas	Antitrust Policy, Innovation, Entrepreneurship, R&D Productivity, Corporate Finance, Regulation and Public Policy Applied Econometrics.

PROFESSIONAL ACTIVITIES/SERVICE

Program Organizer

- FCBA Brattle Brownbag, 2020
- Eastern Finance Association, 2006
- Electricity Issues (International Industrial Organization Conference, 2005, 2008)
- Patents and Innovation (International Industrial Organization Conference, 2005, 2008)

Discussant

- International Industrial Organization Conference, 2003 – 2010
- Midwest Finance Conference, 2008
- Eastern Economic Society, 2008
- AEA Conference, 2004

Referee

American Economic Review, Economic Development and Cultural Change, Economic Inquiry, Economics of Innovation and New Technology, Energy, Energy Policy, Energy Journal, Journal of Economics and Management Strategy, Journal of Environmental Economics and Management, Review of Economics and Statistics, Research Policy, Review of International Economics, National Science Foundation, University of California Energy Institute, Oxford University Press, Addison Wellesley.

Professional Development

- Kauffman Foundation Entrepreneurship Conference, Atlanta, January, 2010
- Empirical Patent Research Conference, California, February, 2005
- CWSEP Workshop on Research and Teaching, New Orleans, November 2004.

TEACHING

PH.D.	Industrial Organization; Econometrics; Applied Econometrics.
MASTERS	Regulating Competition; Regulating Private Enterprise.
EXECUTIVE MBA	Lessons from the US Energy Market Restructuring

UNDERGRADUATE Intermediate Microeconomics; Industrial Organization; Regulation,
Deregulation and Antitrust; Honors Applied Econometrics Seminar.

ADVISING

Ph.D Thesis co-advisor (2006-2009), Committee member (2002-2007), Undergraduate thesis advisor (2003-2008).