Written Testimony of

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Committee on the Judiciary
Subcommittee on Intellectual Property, Competition and the Internet

Hearing on
"How Will the Proposed Merger Between AT&T and T-Mobile Affect Wireless Telecommunications Competition?"

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Mr. Chairman and Members of the Subcommittee - thank you for the opportunity to testify before you today. My name is Joshua D. Wright. I am a Professor of Law at the George Mason University School of Law. I also hold a courtesy appointment in the Department of Economics. I received a J.D. from UCLA in 2002 and a Ph.D. in economics in 2003. I was the inaugural Scholar-in-Residence at the Federal Trade Commission from 2007 to 2008 and have also served as a consultant to the Federal Trade Commission on a number of issues. My research focuses on antitrust and regulatory economics, including evaluating the competitive effects of mergers and other business transactions. I represent myself solely at this hearing and I have received no financial support for this testimony.

My testimony today focuses upon how we should think about evaluating the likely competitive effects of the proposed transaction between AT&T and T-Mobile USA from a consumer welfare perspective. There is a standard and well-understood economic framework for analyzing horizontal mergers. The 2010 Horizontal Merger Guidelines "describe the principal analytical techniques and the main types of evidence on which the Agencies usually rely to predict whether a horizontal merger may substantially lessen competition."[1] The Guidelines focus upon whether the proposed merger will "create, enhance, or entrench market power or to facilitate its exercise."[2]

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[1] U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES (2010), *available at* http://justice.gov/atr/public/guidelines/hmg-2010.pdf.
[2] *Id.*

Understanding both how the merging parties compete and how the proposed merger will change competition is necessarily key to this analysis.

Economists and lawyers at antitrust agencies answer these questions through highly fact-intensive investigations. Antitrust agencies collect evidence from the merging parties, their customers, competitors, suppliers, and industry observers;[3] the agencies then conduct various quantitative and qualitative analyses with these data. Given that the Agencies have better information and more time to conduct such analyses, my goal here is not to predict the competitive effects of the proposed AT&T / T-Mobile merger directly, but rather to highlight the types of issues that the antitrust agencies are likely to confront along the way in applying the analytical framework articulated in the Guidelines.

I. The Proposed Transaction and Competitive Landscape

A. The Proposed Transaction

AT&T, Inc.[4] is a company that serves as one of the leading providers of "wireless, Wi-Fi, high-speed Internet, local and long distance voice, mobile broadband and advanced TV services."[5] AT&T is headquartered in Dallas, Texas. T-Mobile USA, Inc. is a wholly owned subsidiary of the international telecommunication company

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[3] *Id.*

[4] AT&T Mobility LLC operates AT&T's wireless network and is a wholly owned subsidiary of AT&T, Inc. I will use AT&T throughout my testimony to refer to both AT&T Mobility and AT&T, Inc. and its wholly owned subsidiaries.

[5] AT&T, INC., ACQUISITION OF T-MOBILE USA, INC.: DESCRIPTION OF TRANSACTION, PUBLIC INTEREST SHOWING, AND RELATED DEMONSTRATIONS, at 15 (filed with the Federal Communications Commission April 2, 2011).

Deutsche Telekom AG. T-Mobile USA is headquartered in Bellevue, Washington. T-Mobile USA offers "nationwide voice and data services to both residential and business customers in the United States,"[6] but the majority of Deutsche Telekom AG's capital investments are concentrated in "the provision of fixed broadband and wireless services in Germany and the rest of Europe."[7]

In the proposed transaction, AT&T has agreed to acquire from Deutsche Telekom AG all of the stock of the T-Mobile USA on a debt-free basis for total consideration of $39 billion. The total consideration includes cash payment of $25 billion. The balance will be paid with AT&T common stock.

The key inquiry economists and agencies alike undertake is to determine whether and to what extent the merger may change the merging parties' incentive and ability to compete. This analysis is crucial to developing sensible predictions of the proposed merger on consumers. This inquiry begins with a fact-intensive analysis of how the firms compete with each other in the existing marketplace including a complete understanding of the competitive landscape in which the proposed transaction is occurring. The agencies will be expected to engage in this type of thorough analysis, and they will certainly do so. Here, I will highlight several industry trends and facts that will provide important context for an analysis of the likely competitive effects of the proposed transaction.

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[6] *Id.* at 15.

[7] *Id.*

B. The Competitive Landscape

The wireless market has grown dramatically since the mid-1990s. The number of wireless subscribers has increased over 650 percent from June 1996 to June 2010, growing from 38 million to over 293 million.[8] The average use of monthly voice minutes has increased 475 percent over the same time period, from 119 to 686 minutes per subscriber.[9]

Moreover, however, the remarkable increase in data services has proven perhaps the most significant development in the wireless market over this period. The Federal Communications Commission's Fourteenth Annual Wireless Competition Report (2010 FCC Report) confirms this shift from voice to data services while noting that AT&T alone reported that its mobile data traffic increased four times between June 2008 and June 2009 and 5000 percent from mid-2006 to mid-2009.[10] One industry analyst notes that Cisco "forecasts a 48-fold cumulative increase in North American mobile data traffic between 2009 and 2014,"[11] observes that "the biggest challenge facing the industry is the hyper growth of wireless data," and predicts that the industry average

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[8] *See* CTIA, CTIA'S WIRELESS INDUSTRY INDICES MID-YEAR 2010 RESULTS 24 (Chart 3) (2010).

[9] *Id.* at 204-05 (Table 86).

[10] FED. COMMC'N COMM'N, THE FOURTEENTH ANNUAL WIRELESS COMPETITION REPORT ¶ 183 (2010). A significant portion of this increase is attributable to the adoption of smartphones, and in particularly the iPhone. The FCC Report indicates that smartphone sales and adoption rates have increased in recent years. *Id.* ¶ 309.

[11] BERNSTEIN RESEARCH, U.S. TELECOMMUNICATIONS AND CABLE & SATELLITE: CAPITAL PUNISHMENT 57 (2010),. *See also* FEDERAL COMMUNICATIONS COMMISSION, MOBILE BROADBAND: THE BENEFITS OF ADDITIONAL SPECTRUM 18 (exhibit 10) (2010) (stating the average of three forecasts suggests a traffic growth rate of more than 35 times the 2009 level).

will fall from $0.42 per megabyte of data traffic in 2009 to just $0.02 in 2014.[12] Industry revenues also reflect the growing demand for wireless data services; they account for 31 percent of carrier revenues as of June 2010.[13]

Wireless service providers have vigorously competed on price, quality, and innovation during this period. For example, the 2010 FCC Report notes an 88 percent decline in average revenue per voice minute between June 1996 and June 2010.[14] The report notes average revenue per voice minute fell to $0.05 in December 2008 and dropped beneath $0.05 by June 2010.[15] Carriers compete on other margins as well. While the 2010 FCC Report notes that the wireless industry has seen an increase in market concentration (from a Herfindahl-Hirschman Index (HHI) of 2150 in 2003 to 2848 in 2008),[16] it correctly recognizes that "market concentration, by itself, is an imperfect indicator of market power."[17] That recognition appears pertinent in the wireless industry. Industry analysts have observed – even in the midst of dramatic growth and increasing industry consolidation – that neither AT&T nor Verizon "has been able to generate returns in excess of the cost of capital in the past decade"[18] due to the cost of continued capital investments in new spectrum and facilities to keep up with data traffic loads. Importantly, these facts suggest that mergers in this industry can and

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[12] *Id.* at 60.
[13] CTIA, *supra* note 8, at 124 (Chart 28).
[14] Declaration of Dennis W. Carlton, Allan Shampine & Hal Sider at ¶ 15 (June 13, 2008).
[15] Fed. Commc'n Comm'n, *supra* note 10, at 112 (Table 19).
[16] *Id.*, at 48 (Chart 2).
[17] *Id.* ¶ 55.
[18] Bernstein Research, *supra* note 11, at 69.

have generated important efficiencies which intensify competition and benefit consumers.

Capacity constraints characterize the current wireless competitive landscape. Wireless carriers must make significant investments to expand and upgrade network capacity. As consumer demand for data increases, and along with it smartphone adoption rates, wireless carriers are under competitive pressure to deploy "next generation" services and expand spectrum holdings in frequency bands compatible with their existing network equipment and devices. Given the practical difficulties and delays associated with expanding spectrum holdings through new auctions,[19] acquisition of incremental spectrum through merger is desirable relative to delay and rationing existing spectrum through higher prices. Further, capacity constraints can be conceptualized as creating a high marginal cost of expanding output to new consumers or improving quality for existing consumers. Relaxing capacity constraints reduces that cost and facilitates benefits to consumers including increased output and lower prices. To the extent that T-Mobile USA's network and available spectrum will complement AT&T's spectrum and network resources, the combination creates enhanced outputs that neither would be able to achieve as standalone companies. Without such integration, both companies will face significant commercial and spectrum-related

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[19] *See*, *e.g.*, FED. COMMC'N COMM'N, FCC SPECTRUM ANALYSIS: OPTIONS FOR BROADCAST SPECTRUM, OBI TECHNICAL PAPER NO. 3 (2010).

challenges that cannot be solved by non-merger devices. Because both companies use GSM and UMTS/HSPA+ technologies, AT&T's acquisition of T-Mobile is anticipated to benefit consumers by freeing up spectrum for more "spectrally efficient LTE technologies," increasing and providing for more efficient use of capacity as well as improving overall service quality.[20]

II. Analyzing the Competitive Effects of the Proposed Transaction

As observed above, when assessing the potential competitive effects of a proposed merger, it is important to recognize that market concentration alone is a poor predictor. Indeed, one of the fundamental contributions of antitrust economics in merger analysis over the past several decades – during which time there has been a substantial convergence in the economic analysis of horizontal mergers – has been a shift away from near-sole reliance upon market definition and calculation of market shares, towards a direct, fact-intensive analysis of economic evidence on competitive effects.[21] This trend has been consistent, based upon advances in economic theory and empirical learning, and has resulted in a slow erosion of "structural presumptions" that infer anticompetitive effects from changes in market structure.[22] Fact-intensive analysis

[20] AT&T, Inc., *supra* note 5, at 7.

[21] *See* Carl Shapiro, *The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years*, 77 Antitrust L. J. 701, 703 (2010) ("But the Court has given a great deal of guidance in Sherman Act cases, moving away from simple rules and towards an approach emphasizing the practical reality of the market and the likely effects of the practice in question.").

[22] Carl Shapiro, former Department of Justice Chief Economist, and one of the chief architects of the new Guidelines, has observed that the shift away from market concentration and "base predictions of

of potential anticompetitive effects as well as cost savings and other efficiencies are favored over such presumptions wherever possible.

Modern merger analysis articulates two general classes of theories of anticompetitive harm from horizontal mergers. Both classes of theories postulate that a proposed merger can reduce the incentives of the post-merger firm to compete by removing an important competitive constraint. "Unilateral" price effects arise when the post-merger firm will acquire market power that allows it to unilaterally – that is, without coordinating with its rivals – increase prices. "Coordinated" price effects, by contrast, arise when coordinated pricing or collusion between firms is more likely post-merger. One classic example of a coordinated price effect arises when an acquisition removes a "maverick" from the industry–a firm that disrupts attempts at coordinated pricing by the industry with its own low prices that steal market share from rivals. Whether either or both of these theories fit the facts of a given case requires a fact-intensive and careful economic analysis. Any such analysis must weigh both upward pricing pressure as well as potential pro-competitive efficiencies.

While a complete analysis of the merger is beyond the scope of this testimony, several established facts indicate significant tension with both unilateral and coordinated theories of potential competitive harm. On the other hand, the available evidence concerning the dramatic growth in data demand and capacity constraints

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competitive effects primarily on market concentration" reflects not only change in agency practice, but also the "gradual decline of the structural presumption" in the courts. *Id*. at 708 n. 25.

facing AT&T in particular with regards to available spectrum generates strong inferences that the merger is likely to produce consumer-welfare-enhancing efficiencies by relieving those constraints.

A. Unilateral Price Effects Appear Unlikely

Unilateral pricing effects appear unlikely to result from the merger. A conventional unilateral price effects analysis is based upon the notion that when the suppliers of two close substitutes merge and then raise the price of one product after the merger, some of the customers that the firm *would* have lost from the price increase are in fact recaptured in the form of increased sales by the merged firm's own (formerly-competing) product. These recaptured sales give the post-merger firm a greater incentive to increase prices than existed before the merger. Unilateral price effects are unlikely to arise when (and are not conventionally analyzed in the context of)[23] a merger allows an expansion of capacity.[24] Further, a theory of unilateral effects is especially relevant when the two merging firms sell products that are close substitutes. There is some evidence here that consumers do not perceive AT&T and T-Mobile USA wireless products as particularly close substitutes. For example, AT&T earns a greater fraction of its revenue from data services while T-Mobile USA substantially targets non-

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[23] *See*, *e.g.*, Jonathan B. Baker, *Merger Simulation in an Administrative Context*, 5 (Feb. 22, 2011), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1790943.
[24] *See* Decl. Dennis Carlton et al, ¶¶ 139-40.

contract subscribers and places less emphasis on commercial customers.[25] The 2010 FCC Report, for example, emphasizes the close price competition between AT&T and Verizon, not between AT&T and T-Mobile USA.[26] Given the continued presence of Verizon and Sprint after the merger, the likelihood that AT&T will be able to unilaterally raise prices after the merger therefore appears questionable. Similarly, given the continued presence of Sprint, Metro PCS, Leap and others that cater to the value oriented consumers that have been the focus of T-Mobile USA's business, it also seems questionable whether there could be unilateral effects with respect to those customers.

B. Coordinated Effects Appear Unlikely

It also does not appear that the proposed transaction raises a significant likelihood of coordinated effects. Mergers can facilitate pricing coordination by eliminating a particularly disruptive and aggressive rival – a "maverick," in antitrust parlance. A typical maverick disrupts stable and coordinated pricing with discounts, stealing market share and increasing output whenever possible.[27] It does not appear that T-Mobile USA is a maverick in the antitrust sense of the term.[28] While T-Mobile USA has sometimes offered lower prices than AT&T, this is not the economic definition

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[25] *Id.* ¶ 145.
[26] Fed. Commc'n Comm'n, *supra* note 10, ¶ 92.
[27] The FCC adopts a similar definition of a maverick as "firms that have a greater economic incentive to deviate from the terms of coordination than do most of their rivals," and "is well positioned to attract customers currently served by competitors." *See* FCC Memorandum Opinion and Order, FCC 04-255, ¶ 160 (October 25, 2004).
[28] *See also* Decl. Carlton et al, ¶¶ 154-55.

of a maverick. Without more, a price difference does not connote an aggressive pricing strategy. For example, the 2010 FCC Report recognizes that AT&T's price premium relative to T-Mobile USA includes consumer perceptions of higher quality and access to better handsets and phones.[29] Further, to be effective (and by definition), a maverick, must steal market share from rivals by lowering price and increasing output. In contrast – and standing in stark contrast to the industry in a period of broad growth – 2011 Q1 results indicate that T-Mobile USA has steadily lost customers and has not increased output and market share.[30] Instead, the 2010 FCC Report notes that "prepaid service providers (like MetroPCS) have been the most aggressive in cutting the price of unlimited service offerings."[31]

It appears that T-Mobile USA is neither a particularly close competitor, as required for a unilateral effects theory, nor a maverick, as required for a coordinated effects theory. As one industry analyst observed:

> due to the sins of the past T-Mobile is melting at both ends of the subscriber spectrum. It is losing premium subscribers to Verizon and AT&T, it is losing value conscious subscribers to Sprint, and budget

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[29] Fed. Commc'n Comm'n, *supra* note 10, ¶ 92. *See also* Roger Entner, *When Choosing a Carrier, Does the iPhone Really Matter?*, NIELSENWIRE (Aug. 10, 2009) http://blog.nielsen.com/nielsenwire/consumer/when-choosing-a-carrier-does-the-iphone-really-matter/ (noting that "the number of consumers who perceive Verizon Wireless as having the best mobile network has shot up over the last two years and it leads its closest competitor now by an almost 2:1 margin").

[30] For example, T-Mobile USA reported that it lost over 400,000 post-paid subscribers. Roger Entner, *T-Mobile Results Show AT&T Arrived Just in Time*, FIERCE WIRELESS (May 9, 2011), http://www.fiercewireless.com/story/entner-t-mobile-results-show-att-arrived-just-time/2011-05-09#ixzz1NLJdfX6r.

[31] Fed. Commc'n Comm'n, *supra* note 10, ¶ 102.

> conscious subscribers to the disruptive unlimited providers such as MetroPCS, Leap Wireless, and Tracfone's StraightTalk products."[32]

C. Efficiencies

As discussed above, both AT&T and T-Mobile USA face significant capacity constraints. These capacity constraints are due to the lack of available new spectrum – a problem unlikely to resolve itself in the immediate future – and create a high marginal cost of expanding output. The alternative to relieving the capacity constraint is to ration existing spectrum by raising prices. Consumers thus stand to capture significant welfare gains (by avoiding price increases) from relieving these constraints. Relief of capacity constraints seems likely to result from this merger. AT&T and T-Mobile USA have similar spectrum and network assets; both offer GSM and UMTS/ HSPA/ HSPA+ services and operate 1900 and AWS spectrum. Combining these assets provides some relief from the capacity constraints discussed above and further facilitates greater deployment of 4G LTE services (utilizing T-Mobile USA's AWS spectrum). Facilitating a shift to consumer use of faster and more spectrally efficient technology is tantamount to expanding capacity and provides significant consumer welfare benefits.

A full and fact-intensive analysis under the Guidelines is likely to discover and document other substantial cost savings as well. For example, AT&T and T-Mobile USA each operate a separate control channel for its GSM network. Combining these networks would allow the combined firm to deploy for consumer use the capacity from

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[32] Entner, *supra* note 30.

one of these channels. Further, combining the spectrum assets of the firms can increase capacity by creating a denser network, allowing the same physical resources to more efficiently service a greater number of users. The Agencies will evaluate these efficiency arguments under the analytical framework set forth in the Guidelines and with an eye toward assessing whether the resultant efficiencies will generate consumer benefits. One issue that frequently arises in this context is whether efficiencies that result in a reduction in the merging parties' fixed costs should be incorporated in the antitrust calculus.[33] However, it is important to recognize that the Guidelines allow sufficient flexibility so as to properly consider fixed cost savings as a pro-competitive efficiency when these savings generate significant competitive benefits such as a resultant increase in output.

III. <u>Conclusion</u>

A comprehensive and fact-intensive analysis of this merger is beyond the scope of my testimony here. However, I am hopeful that I have highlighted some of the relevant antitrust economic issues. Thank you for allowing me the opportunity to share my views on this timely and important topic.

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[33] Judd E. Stone & Joshua D. Wright, *The Sound of One Hand Clapping: The 2010 Merger Guidelines and the Challenge of Judicial Adoption*, Rev. Indus. Org. (forthcoming 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1744299 (discussing fixed cost efficiencies).

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Professor of Law, George Mason University School of Law

- Courses: Antitrust, Advanced Antitrust, Contracts I, Contracts II, Economic Foundations of Legal Studies, Intellectual Property and Antitrust

Associate Professor, George Mason University School of Law (August 2010-May 2011)

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- Taught courses in microeconomics and antitrust economics to state and federal judges
- Case Analysis Seminars (with Judge Douglas H. Ginsburg)
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Assistant Professor, George Mason University School of Law (January 2005-August 2010)

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RESEARCH INTERESTS

- Antitrust Law and Economics
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TEACHING EXPERIENCE

Adjunct Professor, Pepperdine University Graduate School of Public Policy (2003)
- Graduate course in Law and economics

Lecturer, UCLA Department of Economics
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- Introductory, intermediate, advanced and graduate level microeconomic theory courses
- Departmental Teaching Assistant Award (2001-2003)

HONORS, GRANTS AND AWARDS

Principal Investigator, Searle Center on Law, Regulation, and Economic Growth Civil Justice Institute Project on State Consumer Protection
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Senior Consultant, Charles Rivers Associates, Inc. (October 2009 – Present)
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Law Clerk to the Honorable James V. Selna, U.S. District Court for the Central District of California (2003-2004)
Consultant, Economic Analysis, LLC (1998-2002)
Summer Associate, Latham and Watkins (2001)
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PUBLICATIONS

BOOKS AND BOOK CHAPTERS

Co-Editor, PIONEERS IN LAW AND ECONOMICS (with Lloyd R. Cohen) (Edward Elgar Publishing, 2009)

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The Antitrust-Consumer Protection Paradox: Two Policies at War with Each Other

ACADEMIC PRESENTATIONS

State Regulation of Alcohol Distribution: The Effects of Post and Hold Laws on Output and Social Harms

American Law and Economics Association Annual Meeting (May 2011)
United States Department of Justice Antitrust Division (October 2010)
George Mason University School of Law Levy Workshop (September 2010)
Washington University at St. Louis Law and Economics Workshop (September 2010)
Conference on Empirical Legal Studies (November 2010)

Behavioral Economics, Law, and Liberty

George Mason University School of Law (September 2010)
Mont Pelerin Society Annual Meetings (October 2010)

Misbehavioral Economics: The Case Against Behavioral Antitrust

Canadian Law and Economics Association Annual Meeting (October 2010)

Antitrust Sanctions

American Law and Economics Association Annual Meeting (May 2010)

Is Antitrust Too Complicated for Generalist Judges? The Impact of Economic Complexity and Judicial Training on Appeals

Southern Economic Association Annual Meeting (November 2010)
Georgetown University Law and Economics Workshop (October 2009)
Washington University at St. Louis Law and Economics Workshop (October 2009)
UCLA Law and Economics Workshop (September 2008)
Northwestern University Law and Economics Workshop (September 2008)
Stanford Law and Economics Workshop (January 2009)
University of Texas Law and Economics Workshop (December 2008)
George Mason University Economics Department Public Choice Seminar (April 2009)
American Law and Economics Association Meetings (May 2009)

Federalism, Substantive Preemption, and Limits on Antitrust: An Application to Patent Holdup

Duke University Law School Intellectual Property Symposium (February 2008)
George Mason/ Microsoft Conference on the Law and Economics of Innovation (2008)
Tilburg Law and Economics Center (December 2008)

The Effects of Contract Regulation in the Alcoholic Beverage Industry

Southern Economic Association Annual Meeting (November 2007)

Antitrust, Multi-Dimensional Competition, and Innovation: Do We Have An Antitrust Relevant Theory of Competition Now?
George Mason/ Microsoft Conference on the Law and Economics of Innovation (May 2007)

The Antitrust Law and Economics of Category Management
American Law & Economics Association 2004 Annual Meeting

The Economics of Slotting Contracts
Silicon Flatirons New Institutional Economics Conference (June 2009)
Peking University Conference on Chinese Anti-Monopoly Law (October 2007)
American Law & Economics Association 2005 Annual Meeting
International Society of New Institutional Economics 2004 Annual Meeting
George Mason University Law School Levy Workshop (March 2004)

Slotting Contracts and Consumer Welfare
George Mason University Law School Levy Workshop (March 2006)
University of Texas Law School Center for Law, Business, and Economics (January 2006)
International Industrial Organization Conference (April 2006)
American Law & Economics Association 2006 Annual Meeting (May 2006)
Southeastern Association of Law Schools Annual Meeting (July 2006)
Southern Economic Association Annual Meeting (September 2006)
First Annual Conference on Empirical Legal Studies (October 2006)

Behavioral Law and Economics, Paternalism, and Consumer Contracts: An Empirical Perspective
NYU Journal of Law and Liberty Symposium (October 2006)

The Roberts Court and the Chicago School of Antitrust: The 2006 Term and Beyond
University of Missouri-Columbia School of Law (February 2008)
William S. Boyd School of Law, UNLV (April 2008)

CONFERENCES AND TESTIMONY

Panelist, George Mason University Law and Economics Center Conference on The Law and Economics of Search Engines and Online Advertising (June 2011)
Panelist, The FCC's Wireless Competition Report: A Preview (May 2011)
Panelist, George Mason University Law and Economics Center Conference on Behavioral Economics and the Consumer Financial Protection Bureau (March 2011)
Panelist, The Federalist Society Program on the FTC and The Internet (January 2011)
Panelist, The Federalist Society Program on Regulation of the Internet (December 2010)
Panelist, Stanford/ Hoover Institute Conference on Patents, Innovation and Business (June 2010)
Panelist, DOJ/FTC Proposed Merger Guidelines Workshop (January 2010)
Panelist, LECG Consumer Protection and Antitrust Conference (October 2009)
Panelist, Technology Policy Institute Conference on High-Tech Antitrust (October 2009)

Panelist, SEALS Empirical Legal Research Workshop (August 2009)
Panelist, ICANN Workshop on Economic Analysis of Vertical Separation for New gTLDs (June 2009)
Panelist, Cato Institute Program on Antitrust in the New Administration (June 2009)
Panelist, FTC Workshop on Resale Price Maintenance (May 2009)
Panelist, Searle Center Conference on Antitrust Law and Economics (September 2008)
Panelist, FTC at 100 Conference (September 2008)
Panelist, Federalist Society Conference on Intellectual Property (July 2008)
Panelist, SIEPR/ Hoover Institution Conference on the Modernization of Antitrust (May 2008)
Panelist, Searle Center Research Roundtable on the Theory of the Firm (March 2008)
Panelist, Searle Center Research Roundtable on the Law and Economics of Innovation (January 2008)
Panelist, Searle Center Conference on The End of the Microsoft Consent Decree (November 2007)
Panelist, DOJ/FTC Hearings on Sherman Act Section 2 and Single Firm Conduct on Exclusive Dealing
Panelist, George Mason Law Review Fall 2006 Antitrust Symposium

PROFESSIONAL ACTIVITIES

Director of Research, International Center for Law and Economics in Honor of Armen Alchian
Research Director, Searle Civil Justice Institute at the George Mason Law and Economics Center
Member, National Science Foundation Law and Social Science Advisory Panel
Member, Global Competition Policy Magazine Advisory Board
Editor, Supreme Court Economic Review (Volume 20-present)
Assistant Editor, *Antitrust Law Journal*
Referee, *Review of Law and Economics*; *Supreme Court Economic Review*, *Review of Industrial Organization*, *Journal of Legal Studies*
Contributor, *Truth on the Market* (a blog dedicated to academic commentary on law, business, and economics)
Co-Founder, Microsoft and George Mason Conference Series on the Law and Economics of Innovation
    Conference Organizer, Merger Analysis in High Technology Markets (Feb. 1, 2008)

AFFILIATIONS AND MEMBERSHIPS

International Industrial Organization Society
American Economics Association
Southern Economic Association
International Society of New Institutional Economics
Sloan Foundation Industry Studies Affiliate
American Law and Economics Association

Federalist Society
California Bar Association
American Bar Association Antitrust Section