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Education

Ph.D. Economics, University of Maryland at College Park, December 2001
Thesis: *Bidder-Auctioneer Cheating in Sealed Bid Auctions*
Fields of Study: Game Theory, Public Finance, and Econometrics.

M.A. Economics, University of Maryland at College Park, May 1998

B.A. *magna cum laude*, Honors in Economics, Colby College, May 1996
Thesis: *The Effects of Non Need-Blind Admissions on Academic Quality at a Selective College*

Current Position

Principal, Economists Incorporated

Work History

Principal, Navigant Economics, LLC, January 2010 to December 2013

COO and Managing Partner, Empiris LLC, September 2008 to January 2010

President, Criterion Auctions, July 2007 to September 2008

Senior Vice President, Vice President, Senior Economist, Criterion Auctions,
February 2001 to July 2007

Research Assistant, University of Maryland, Sept. 1998 to Feb. 2001

Teacher's Assistant, University of Maryland, Sept. 1996 to May 1999

Industry Economist, U.S. Food and Drug Administration, June 1997 to Aug.
1999

Publications

The Adverse Economic Effects of Spectrum Set-Asides, reprinted in SPECTRUM LAW AND REGULATIONS (IUP Press, 2008).

The Effects of Incumbent Bidding in Set-Aside Auctions: An Analysis of Prices in the Closed and Open Segments of FCC Auction 35, 32 TELECOMMUNICATIONS POLICY, (with Peter Cramton and Hal Singer, 2008).

The Adverse Economic Effects of Spectrum Set-Asides, 6 CANADIAN J. OF LAW & TECHNOLOGY, (with Robert Crandall, 2007)

A Fair Posting Process for Japanese Professionals Entering Major League Baseball 24 ENTERTAINMENT AND SPORTS LAWYER (2007).

A Test for Collusion between a Bidder and an Auctioneer in Sealed-Bid Auctions 4 CONTRIBUTIONS TO ECON. ANAL. & POL. (2005).

Do States Tax Wireless Services Inefficiently? Evidence on the Price Elasticity of Demand 23 VIRGINIA TAX R. (with J. Gregory Sidak, 2004).

Do Unbundling Policies Discourage CLEC Facilities-Based Investment?, *Topics in Economic Analysis & Policy* Section, 4 TOPICS IN ECON. ANAL. & POL. (with Robert W. Crandall and Hal J. Singer, 2004).

Mandatory Unbundling, UNE-P, and the Cost of Equity: Does TELRIC Pricing Increase Risk for Incumbent Local Exchange Carriers? 20 YALE J. ON REG. 389 (with J. Gregory Sidak, 2003).

Working Papers

Analysis of the UK LTE Auction, April 2013 (with William Schwartz)

An Agent-Based Computational Model of a Media Market, January 2010 (with Oleg Smirnov).

Improving Public Safety Communications: An Analysis of Alternative Approaches, (with P. Cramton, T. Dombrowsky, J.Eisenach, H. Singer) Criterion Economics, LLC, February 6, 2007

Working Papers (continued)

Inter-City Competition for Retail Trade: Can Tax Increment Financing Generate Incremental Tax Receipts?, July 2005 (with Hal J. Singer and Thomas G. Thibodeau).

A Methodology for Evaluating Production in Football: An Armchair Quarterback's Rating System, June 2005.

Equilibrium Bidding in the Presence of Bidder-Auctioneer Cheating, Dec. 2001.

Expert Testimony and Commissioned Research

Supplemental Declaration of Robert W. Crandall, Everett M. Ehrlich, Jeffery A. Eisenach, and Allan T. Ingraham Regarding the Berkman Center Study, Federal Communications Commission, GN Docket No. 09-47 (May 2010).

Declaration of Allan T. Ingraham on behalf of Sharon Dougherty, In Sharon Dougherty v Thomas J. Dougherty (Circuit Court of Fairfax August 2008) (Case No. CL 2007-0008757).

Declaration of Allan T. Ingraham on behalf of AT&T, In the Matter of Rulemaking into the Review of the California High Cost Fund B Program, before the Public Utilities Commission of the State of California, R. 06-06-028 (June 2008).

Declaration of Allan T. Ingraham and Hal J. Singer on behalf of Mid Atlantic Sports Network, In the Matter of Mid Atlantic Sports Network, Claimant, v. Time Warner Inc., Respondent, before the American Arbitration Association, Case No. 12 494 E 000326 07 (May 2008).

Declaration of Allan T. Ingraham and Hal J. Singer on behalf of the Consumer Coalition for Competition in Satellite Radio, In the Matter of Sirius Satellite Radio, Inc. and XM Satellite Radio, Inc., Applications for Approval of Transfer of Control, Federal Communications Commission, MB Dkt. 07-57 (Feb. 27, 2008).

Rebuttal Report of Allan T. Ingraham on behalf of Lead Plaintiff, In Apollo Group, Inc. Securities Litigation (D. Arizona. Dec. 2006) (Lead Case No. CV 01-2147-PHX-JAT)

Expert Testimony and Commissioned Research (continued)

Expert Report of Allan T. Ingraham on behalf of Lead Plaintiff, In Apollo Group, Inc. Securities Litigation (D. Arizona. Oct. 2006) (Lead Case No. CV 01-2147-PHX-JAT)

Rebuttal Testimony of Allan T. Ingraham on Behalf of the Newspaper Association of America, Before the Postal Rate Commission, Washington, DC (Docket No. R2006-1).

Direct Testimony of Allan T. Ingraham on Behalf of the Newspaper Association of America, Before the Postal Rate Commission, Washington, DC (Docket No. R2006-1).

Expert Declaration of Allan T. Ingraham on behalf of Coventry First, In Coventry First LLC v. 21st Services (D. Penn. Dec. 2005) (Civil Action No. 04-05293-PBT).

The Static and Dynamic Inefficiency of Abandoning Unrestricted Auctions for Spectrum: A Critique of Professor Wilkie's Analysis of the M2Z Proposal (prepared for CTIA and submitted to the FCC, August 2008), Co-authored with Robert W. Hahn, J. Gregory Sidak, and Hal J. Singer.

The Relevance of Recent United Kingdom Telecommunications Policy to the Policy Choices in Canada, (prepared for Telus, July 2007), Co-authored with Robert Crandall.

The Economic Effects of Spectrum Set-Asides (prepared for Telus, May 2007), Co- authored with Robert Crandall.

Productivity and Value of Players in the NBA between the 1999-2000 and 2005-2006 Seasons (prepared for the Commissioner's Office of the National Basketball Association April 2006), co-authored with Peter Cramton and Jeff West.

Analysis of NHTSA's August 2005 Notice of Proposed Rulemaking to Revise the CAFE Standards for Light Trucks (prepared for General Motors Corp. Nov. 2005), co-authored with Robert W. Crandall and Hal J. Singer.

Expert Testimony and Commissioned Research (continued)

Changes in the Level of Equality in Player Salary Between the 1996-1997 and 2005-2006 NBA Seasons (prepared for the Commissioner's Office of the National Basketball Association Oct 2005), co-authored with Peter Cramton and Jeff West.

How Do Consumers and the Auto Industry Respond to Changes in Exhaust Emission and Fuel Economy Standards? A Critique of Burke, Abeles, and Chen (prepared for General Motors Corp. Sept. 21, 2004), co-authored with Robert W. Crandall and Hal J. Singer.

Inter-City Competition for Retail Trade in North Texas: Can a TIF Generate Incremental Tax Receipts for the City of Dallas? (prepared for Harvest Partners July 16, 2004), co- authored with Thomas G. Thibodeau and Hal J. Singer.

An Analysis of Auction Volume and Market Competition for the Coastal Forest Regions in British Columbia (prepared for the British Columbia Ministry of Forests Sept. 2002), co-authored with Susan Athey and Peter Cramton.

Setting the Upset Price in British Columbia Timber Auctions (prepared for the British Columbia Ministry of Forests Sept. 2002), co-authored with Susan Athey and Peter Cramton.

Auctioning Timber to Maximize Revenues (prepared for the British Columbia Ministry of Forests June 2002), co-authored with Susan Athey and Peter Cramton.

Auction Based Timber Pricing and Complementary Market Reforms (prepared for the British Columbia Ministry of Forests March 2002), co-authored with Susan Athey and Peter Cramton.

The Effect of Auction Structure on the Winning Bidder and License Price (prepared for ArrayComm March 2001).

Market Design and Strategic Consulting in Auction Markets

Advice to T-Mobile US in connection with repacking and encumbrance in the 600-700 MHz band in the United States (ongoing).

Market Design and Strategic Consulting in Auction Markets (continued)

Advice to FarEasTone in preparation for and during the Taiwan LTE auction, July 2013 to October 2013.

Advice to CSL in preparation for the supplementary Hong Kong 2.6 GHz auction, February to March 2013.

Advice to EverythingEverywhere in preparation for UK LTE auctions, February 2011 to March 2013.

Advice to NII Holdings and Nextel Argentina in preparation for the 800 MHz and 1.9/2.1 GHz Auction, June 2010 to present.

Advice to ONO in preparation for and during the Spanish LTE Auction, April to July 2011.

Advice to NII Holdings and Nextel Brazil in preparation for the 2010 H Band Auction, 2010.

Advice to T-Mobile UK in preparation for the UK 3G Spectrum Auctions, January 2007 to Present.

Advice to T-Mobile US on auction design, December 2008 to present.

Advice to CSL on auction strategy in Hong Kong's 2.6 GHz auction, January 2009.

Advice to Telenor on auction strategy, December 2008-January 2009.

Advice to Globalive Communications Corp. in preparation for Canada's AWS spectrum auction, April 2008 to August 2008.

Advice to NII Holdings and Nextel Mexico in preparation for the 1.9 GHz and 1.7/2.1 GHz spectrum auctions in Mexico, December 2007 to October 2010.

Advice to AT&T relating to the U.S. 700 MHz Auction, December 2007-February 2008.

Advice to T-Mobile UK relating to the 10-40 GHz Auctions, June 2007 to February 2008.

Market Design and Strategic Consulting in Auction Markets (continued)

Advice to NII Holdings and Nextel Brazil in preparation for the 1.9 GHz Auction in Brazil, August 2007 to December 2007.

Administration of DONG auction for Natural Gas, February 2007 to March 2007.

Advice to NII Holdings and Nextel Brazil in preparation for the 3.5 GHz Auction in Brazil, August 2006 to October 2006.

Advice to T-Mobile USA in preparation for the FCC's Advanced Wireless Services Auction, April 2006 to September 2006.

Provided simulation tools to ISO New England in connection with the Market for Forward Reserves, 2005-2006.

Design and Implementation of the Telecommunications Authority of Trinidad & Tobago Spectrum Auction, March 2005 to June 2005.

Provided strategic advice, bid-tracking software, and on-site support to Nextel Mexico in connection with Mexico's 800 MHz auctions and PCS auction, 2004-2005.

Provided bid-tracking tools and on-site support for the mock auction landing slots at LaGuardia airport, February to March 2005.

Provided review of auction rules, strategic advice, bid-tracking software, auction simulator, and market analysis tools to PSEG before and during New Jersey's BGS auctions, 2001-2005.

Provided strategic advice and bid-tracking software to Poundradio during Ofcom's 3.4 GHz Spectrum Auction, June 2003.

Provided strategic advice and comments on auction rules to ArrayComm in preparation for FCC Auction #46, 2001-2002.

Provided strategic advice and bid-tracking software to Space Data Spectrum Holdings, LLC during the FCC's PCS Narrowband Auction, 2001.

Provided bid-tracking software for Cellcom during Israel's PCS auction, 2001.

Market Design and Strategic Consulting in Auction Markets (continued)

Provided strategic advice, on-site support, and bid-tracking software to Access Spectrum during the 700 MHz Guard Band Auction Re-Auction—FCC Auction 38, 2001.

Provided bid-tracking software to Burst Wireless during FCC Auction #35, 2001

Provided mock auction simulator, bid-tracking tool, and strategic advice to FirtMark in preparation for Ofcom's WLL Auction, 2000.

Provided strategic advice, on-site support, and bid-tracking software to Access Spectrum during the 700 MHz Guard Band Auction—FCC Auction #33, 2000.

Provided bid-tracking software and auction simulation tools to One2One during the UK 3G Wireless Auction, 2000.

Provided strategic advice, bid-tracking software, and auction website support to Stream Intelligent Networks during Industry Canada's 24-38 GHz Auction, 1999.

Refereed Journals

BE Journals in Economics Analysis and Policy, Journal of Quantitative Analysis in Sports, Journal of Regulatory Economics, Telecommunications Policy, Journal of Competition Law & Economics.

Honors and Awards

Distinguished Teacher's Assistant, University of Maryland, 1999-2000.

Economics Department Teaching Award, University of Maryland, Fall 1997.

Phi Beta Kappa Society, elected May 1996.

Colby College Faculty Award in Economics, April 1996.