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OVERVIEW

Dr. Rosa M. Abrantes-Metz is a managing director in the antitrust, securities and financial regulation, and data mining practices of Global Economics Group and Market Platform Dynamics based in New York. Her experience includes work in consulting and banking, as well as in government. Her main areas of specialization are econometrics and statistics, monetary and financial economics, and applied industrial organization. Dr. Abrantes-Metz is an adjunct associate professor at Leonard N. Stern School of Business, New York University, where she has taught money and banking, financial institutions and the financial crisis, industrial economics, and econometrics for MBA's. She previously taught econometrics honors at the department of economics at the University of Chicago, and various other fields of economics at Universidade Católica Portuguesa, in Lisbon, Portugal. Dr. Abrantes-Metz's work is regularly featured in the media such as the *Wall Street Journal*, *Financial Times*, *The Economist*, *CNNMoney*, *CNBC*, *Forbes*, *Bloomberg*, *Fox Business*, *BusinessWeek*, *Washington Post*, *Huffington Post*, *Reuters*, *Crain's*, *Risk Magazine*, *Investor's Business Daily*, *L'Agefi Hebdo*, *Les Temps*, *Le Monde*, *Bloomberg TV*, *Sky News TV*, *BNN TV*, *BBC Radio* and *BBC TV*. She also contributes with Opinion Articles to several of these outlets. In 2019 she was recognized among "40 in their 40's" Notable Women Competition Professionals in the Americas, for which thirty six distinguished lawyers and four distinguished economists were selected among North, Central and South American professionals.

After working as a staff economist at the Federal Trade Commission, Dr. Abrantes-Metz continued to serve as a consultant for special projects with the Commission's Bureau of Economics. She is also a senior competition policy advisor for the World Bank. Dr. Abrantes-Metz is the author of several articles on econometric methods and screens for conspiracies, manipulations and fraud, gasoline, pharmaceuticals and health care, telecommunications, monetary policy, event studies, valuation, structured finance, credit cards payments systems, credit default swaps, credit rating agencies and regulation, financial benchmarks reform, and new statistical tests, representing some of the areas in which she also works as an economic consultant. Dr. Abrantes-Metz has published in peer-reviewed journals such as the *International Journal of Industrial Organization*, the *Journal of Pharmaceutical Finance, Economics and Policy*, *Applied Economics Letters*, the *Journal of International Arbitration*, the *Journal of Banking and Finance*,

Harvard Business Law Review, University of Pennsylvania Journal of Business Law, with forthcoming publications in the Journal of Futures Markets and the Journal of International Money and Finance. Her work has also appeared in trade publications including the ABA Economics Committee Newsletter, The Antitrust Source, The Antitrust Magazine, The Antitrust Counselor, The Competition Policy International Journal and Antitrust Chronicle, Derivatives Litigation Reporter, and Securities Litigation Report.

Dr. Abrantes-Metz is a co-drafter of the chapter on the role of the economic expert in proving conspiracy cases under federal antitrust laws in a recent volume published by the American Bar Association. In addition, she has contributed to other books on international arbitration with a focus on event studies, and is a co-author of the chapter on antitrust corporate governance and compliance in the Oxford Handbook of International Antitrust Economics. In addition, Dr. Abrantes-Metz is the author of the 2014 guidelines on exchanges of information among competitors for the Latin America Regional Center for Competition.

Dr. Abrantes-Metz has developed numerous empirical screens for conspiracies, manipulations, and fraud, and is a pioneer in the field, contributing to the further development and increased adoption of these methods worldwide. In 2008 she flagged the possibility of collusion in LIBOR prior to the launch of large scale investigations. She has also flagged the possibility of manipulation and collusion in gold markets as well as in other markets, and more recently the possibility of bid rigging in US Treasuries auctions, among others. She has developed and applied screens not only to assist governmental agencies and plaintiffs, but also on the defense side when companies and individuals are faced with allegations of participation in conspiracies, manipulations and fraud in a variety of markets.

Dr. Abrantes-Metz has extended her experience in LIBOR to the analyses of other financial benchmarks and potential illegal behavior worldwide. Her experience in rigging also extends to a variety of financial and commodities markets including oil and gasoline, natural gas, electricity, silver, gold, platinum, palladium, aluminum, zinc, copper and other metals including scrap metals, as well as stock prices, futures prices and NYMEX settlement prices, various swaps and options, credit default swaps, foreign exchange markets, ISDAfix, US Treasuries, sovereign and supranational bonds, agency municipal bonds, variable rate demand obligations, mortgages, shorted securities, credit cards payment systems, mortgage backed-securities, catering, lithium-ion batteries, airlines, insurance, pharmaceuticals, mortgage foreclosure and evictions, among others. In addition to her work in this area, Dr. Abrantes-Metz was invited by regulatory bodies to participate in roundtables on how to reform financial benchmarks worldwide, and has formally advised American and European authorities on this topic. She has also advised public and private institutions on the development and implementation of new financial benchmarks. Dr. Abrantes-Metz has advised competition and other regulatory and securities agencies around the world on the use of empirical screens to detect the possibility of market rigging and fraud in general, on the use of pricing algorithms, and has formally been engaged as an economic expert in related matters by several of these governmental agencies.

In pharmaceuticals, she co-developed a model to estimate the likelihood of drugs failing and succeeding each of the clinical stages of the Food and Drug Administration, and their expected durations in each of these phases. This model has become one of the most used by industry analysts to assist in valuing pharmaceutical and biotechnology pipelines. More recently, she studied the possibility of collusion in pharmaceutical markets. Her research on pharmaceuticals

and on rigging of markets has been discussed in books on how to value pharmaceutical and biotechnology companies, and on publications pertaining to health care, intellectual property and cartels.

Dr. Abrantes-Metz has provided testimony on damages and liability related to alleged bid-rigging, price-fixing and market allocation in various markets, monopolization in generic pharmaceutical markets, pharmaceutical mergers involving horizontal and vertical restraints, market definition and collusion involving multisided platforms, the valuation of an energy services provider company, the valuation of expropriated oil services assets, the valuation of stock options and various types of swaps, and breach of contracts due to changes in financial and commodity benchmarks. Most recently she provided written and oral testimony as the economic expert for the US Government – The U.S. Federal Energy Regulatory Commission – on BP’s manipulation of natural gas markets, leading to a conviction. Dr. Abrantes-Metz has also testified on behalf of Fannie Mae through the Department of Justice on an alleged fraud matter in the market for mortgages foreclosures and evictions. In addition, she consults with various other competition authorities around the world, including the Canadian Competition Authority. Dr. Abrantes-Metz’s work is highly regarded in decisions by US Federal Courts and by other Courts and Administrative Proceedings.

Dr. Abrantes-Metz holds a Ph.D. and a Masters in Economics from the University of Chicago. She also holds a Masters in Economics from the Universitat Pompeu Fabra in Barcelona, Spain, and a *Licenciatura* in Economics from Universidade Católica Portuguesa. She is a member of the *Who’s Who* of Competition Lawyers & Economists since 2009.

PROFESSIONAL EXPERIENCE

2011 – present Global Economics Group & Market Platform Dynamics

Managing Director, Director, Principal

2007 – 2011 LECG & AFE Consulting

Principal

2004 – 2007 NERA Economic Consulting

Senior Consultant, Consultant

2002 – 2004 Federal Trade Commission, Bureau of Economics

Economist

2001 RCF Economic and Financial Consulting, Inc.

Part-time Consultant (June – October)

2001 Board of Governors of the Federal Reserve System

Spring Associate (February – June)

1998 Banco Bozano Simonsen - Rio de Janeiro, Brazil

Summer Associate (June – October)

Teaching & Research Positions

2009 - present **New York University, Leonard N. Stern School of Business**
Adjunct Associate Professor – Department of Economics

1998 – 2001 **University of Chicago, Department of Economics**
Lecturer for Econometrics Honors
Teaching Assistant for Graduate Econometrics and Macroeconomics

1992 – 1995 **Universidade Católica Portuguesa, Lisbon, Portugal**
Research Assistant
Teaching Assistant

OTHER ACADEMIC AND AGENCY AFFILIATIONS

2011 – present **World Bank**
Senior Competition Policy Expert
Consultant for Special Projects

2009 – 2011 **New York University, Leonard N. Stern School of Business**
Visiting Scholar – Department of Economics

2004 – 2008 **Federal Trade Commission, Bureau of Economics**
Consultant for Special Projects

2007 – 2009 **Suffolk University, Sawyer Business School**
Board of Advisors – Department of Accounting

EDUCATION

University of Chicago
PhD in Economics
MA in Economics

Universitat Pompeu Fabra, Barcelona, Spain
MA in Economics (with Honors)

Universidade Nova de Lisboa, Lisbon, Portugal
Completed First Year Ph.D. Program Course Work in Economics

Universidade Católica Portuguesa, Lisbon, Portugal
Licenciatura in Economics (Magna Cum Laude)

REPRESENTATIVE MATTERS

Antitrust, Oil & Gasoline, Pharmaceuticals, and Health Care

- **Alleged Conspiracy in Multi-Sided Platforms Markets.** Provided expert testimony on market definition and collusion on an alleged cartel by major financial institutions in a market involving multi-sided platforms.
- **Alleged Conspiracy in Catering.** Provided expert testimony on an alleged cartel case involving price-fixing, bid-rigging and market allocation in catering. Developed numerous empirical approaches to address materiality and likelihood of such behaviors, and to address the alleged exchange of information among competitors. Estimated alleged overcharges.
- **Class Certification in Lithium Ion Batteries.** Provided testimony on class certification in the LIB market, and on the likelihood of collusion and likely market price effect. Also provided testimony during the merits phase.
- **Airlines Price Fixing.** Prepared economic analyses on an alleged airlines price fixing cartel affecting most domestic market. Developed numerous empirical approaches to address materiality and likelihood of collusion, and price artificiality.
- **Class Actions Certification and Price-Fixing.** Addressed class certification using various empirical methods to determine similarity of effects across consumers allegedly belonging to the class in a price-fixing conspiracy case.
- **Alleged Manipulation and Collusion in Oil Markets Futures.** Developed various approaches to assess the likelihood of manipulation of specific WTI and Brent futures oil prices on specific days.
- **Alleged Conspiracies and Manipulations of Oil Prices Platts Indices.** Developed empirical approaches to determine whether there was evidence of a material impact of an alleged conspiracy and manipulation of the Platts WTI Index for oil prices. Studied trading data across all market players to address price materiality, causation, market power and possible motive. Studied other related commodities and markets. Calculated allegedly illegal profits and damages.
- **Alleged Collusion in Generics.** Developed economic and empirical analyses to address the possibility of price fixing for generic drugs and likely artificiality.
- **Monopolization in Generics.** Testimony submitted to the International Trade Commission on monopolization, damages and welfare loss related to market exclusion of competitor generics.
- **Alleged Conspiracy among Business Partners.** Developed an innovative approach to detect collusion based on survey data. Studied whether the patterns of responses to a survey by business partners of a major financial institution were indicative of collusion and identified suspects, later confirmed by internal records.

- **Guidelines on Exchanges of Information among Competitors.** Authored the guidelines on best practices for exchanges of information among competitors for Central and South American countries.
- **Collusion Detection in Oil and Gasoline Markets.** Developed empirical screens to detect conspiracies in gasoline markets. Applied screens to the US retail and wholesale data. Contributed to the FTC's gasoline monitoring program. Work performed as an FTC economist.
- **Mergers and Acquisitions in Oil and Gasoline Markets.** Developed empirical analyses to assess market behavior post mergers as an FTC economist. Developed and implemented empirical analyses to assist in merger evaluation both as an FTC economist and on behalf of the merging parties.
- **Training of Competition Authorities on Cartel Detection.** Trained Competition Authorities around the world on how to detect collusion through screening and advised on how to enhance anti-cartel antitrust policies. Training also involved the development of but-for models for prices and the estimation of overcharges.
- **International Bid-Rigging.** Developed economic and empirical analyses to flag likely ongoing bid-rigging in multiple international markets on behalf of competition authorities around the world.
- **Mergers and Acquisitions in Pharmaceuticals.** Worked on various mergers in the pharmaceutical and biotech industries and addressed potential anticompetitive effects. Work performed both as an FTC economist and as an economic consultant on behalf of merging or acquired parties.
- **Estimation of Exposed Population and Brand Name Drug Sales.** Built models to estimate exposed population to a disease of interest and relevant drug sales on behalf of an insurance company in order to assess validity of claims submitted due to adverse effects allegedly caused by the drug.
- **Analysis of Pharmaceutical Merger involving Vertical Restraints.** Expert report on vertical restraints related to an acquisition of major wholesalers by the national association of pharmacies in Europe. Report focused on tying, bundling and exchanges of information.
- **Brand Name vs. Generic Pharmaceutical Drugs.** Estimated the effect of generic entry on price, volume and market shares of branded drugs in specific therapeutic areas. Used findings to estimate the but-for scenario absent generic entry. Estimated alleged damages.
- **Material Adverse Change in Connection with Acquisitions.** Determined the materiality of a disclosure on the existence of a price-fixing conspiracy sometime in the past in the aspartame market, prior to the relevant acquisition, and which could have affected the later decision to acquire the company.
- **Merger in the Poultry Industry in Brazil.** Co-authored and submitted a report on the estimation of the elasticities of demand across products in the same relevant market in a

consummated acquisition in the Brazilian poultry industry. Estimated efficiency gains and price changes due to the acquisition.

- **Mergers and Acquisitions in the Waste Management Industry.** Report on likely pro and anticompetitive effects of a specific acquisition raising both horizontal and vertical concerns.
- **Daily Gasoline Pricing Forecast.** Developed an econometric model for a major oil company to predict daily gasoline prices for all its competitors at the terminal level, and across all its terminals in the United States. The model significantly improved analysts' forecasts and assisted daily pricing decisions.
- **Trends and Cycles in Gasoline Prices.** Decomposed movements in gasoline prices between long-run and short-run components, across 365 cities in the United States, in order to study interconnections across various regional markets. Work performed as an FTC economist.
- **Spectral Test for Mergers and Acquisitions.** Developed a new statistical test in the frequency domain and applied it to antitrust market definition in gasoline markets. This test was later used for other applications including in financial markets. Work performed as an FTC economist.
- **Prediction of Hart-Scott-Rodino Filings.** Developed econometric models to predict HSR filings as a function of major economic indicators. Work performed as an FTC economist.
- **Estimation of the Likelihood of Success and Duration of Drugs in Clinical Stages.** Co-developed a duration model to estimate the likelihood of success and failure of drugs in each of the clinical stages of the Food and Drug Administration, as a function of various drugs characteristics. The model also estimates the expected duration for each of the drugs based on the same characteristics. Model informs mergers and acquisitions, intellectual property and valuation. Used as supporting evidence in FTC decisions such as in the Genzyme Corporation / Novazyme Pharmaceuticals, Inc., 2003 merger. Work performed as an FTC economist and as an economic consultant.
- **Mergers and Acquisitions in Other Areas.** Worked on mergers and acquisitions in various other industries such as sporting goods, cable television, boats, railroads, appliances, supermarkets, and real estate.
- **Collusion in Health Care Markets.** Worked on screening health care markets to flag possible collusion among various providers.
- **Health Care Costs and Innovation.** Developed a new econometric approach to estimate the contribution of technological progress to the increase in health care expenditures in the United States over the last four decades.
- **Benefits of Health Care Spending.** Developed simple econometric models to assist in determining if countries spending more on health care also experience greater health benefits from such spending.

Securities, Valuation, Risk Assessment, Financial Regulation, Other Conspiracies and Antitrust involving Financial Markets, and Manipulations and Fraud in Financial and Commodities Markets

- **USD LIBOR Conspiracy and Manipulation.** Research assisted in the launching of investigations around the world. Subsequently analyzed liability and estimated damages for various securities benchmarked against USD LIBOR on behalf of large institutional investors and governmental agencies in the US and abroad.
- **Reform of LIBOR and Other Financial Benchmarks.** Advised regulatory agencies around the world on methodology, governance, regulation, transition and implementation of reforms of key financial benchmarks worldwide.
- **Natural Gas Manipulation by BP.** Testimony on behalf of the Federal Energy Regulatory Commission. Developed various empirical approaches to assist in addressing intent, causation, and artificiality, consistent with BP's manipulation in natural gas markets in 2008. BP was found guilty if such conduct.
- **Fraud in Services Provided on Mortgages Foreclosures and Evictions.** Testimony on behalf of Fannie Mae and the U.S. Department of Justice. Developed various empirical approaches to address liability and damages due to alleged overpricing of service providers in the market for mortgages foreclosures and evictions for a decade.
- **Design and Implementation of New Financial Benchmarks.** Advised private companies interested in developing and implementing new financial benchmarks.
- **Manipulations and Conspiracies of other (besides USD LIBOR) Financial Benchmarks including Euribor, Yen LIBOR, TIBOR, ISDAfix, Foreign Exchange WM/Reuters Fixing and FX Futures, Platts Brent and WTI Oil Benchmarks, and the LBMA Gold, Silver, Platinum and Palladium Fixings, and bond markets including US Treasuries, SSA Bonds, Agencies Bonds, Variable Rate Demand Obligations, VIX, among others.** Worked on manipulations and conspiracies of most major financial benchmarks, auction settings, bond issuance, and secondary markets for bonds and VRDOs currently under investigation around the world.
- **Manipulations and Conspiracies in Precious and Non-Precious Metals Benchmarks, various Energy Products.** Worked on manipulations and conspiracies in various metals markets involving the setting of financial benchmarks in Gold, Silver, Platinum, Palladium, Aluminum, Zinc, Copper, and London Metal Exchange warehousing disruptions on Aluminum, Zinc, Copper, among others. Developed empirical approaches to assist in addressing causation, artificiality, intent, and likelihood of collusion and damages.
- **Collusion and Manipulation of US Treasuries Auctions.** Developed empirical and economic analyses to detect possible bid rigging in US Treasuries auctions and its effect on the secondary, when issued and futures markets.

- **Collusion, Manipulation and Fraud in Specific Bond Markets.** Developed empirical and economic analyses to detect possible rigging in bonds markets around the world as the expert economist for competition authorities. Expert testimony being developed.
- **Collusion and Manipulation in Sovereign, Supranational, and Agency Bond Markets.** Developed empirical and economic analyses to detect collusion and manipulation in SSA markets, and estimated damages.
- **Collusion and Manipulation involving Spoofing in Spot and Futures Markets for Various Commodities.** Developed empirical analyses to assist in the detection and identification of spoofing in commodities markets and estimate damages.
- **Analyses and Testimony of Liability and Damages Assessment in Alleged Breach of Contract Due to Change in Commodities Benchmark for Scrap Metal.** Developed empirical and economic analyses to address a impact on transactions due to a change in scrap metal index underlying contracts. Testified on behalf of defendant in arbitration.
- **Collusion and Manipulation of Variable Rate Demand Obligations (VRDOs).** Developed analyses of artificiality of rates resetting and alleged collusive and manipulative conduct by large Remarketing Agents.
- **Collusion and Manipulation of Volatility Indices (VIX).** Developed empirical analyses consistent with collusion, manipulation and artificiality in the VIX Settlement Procedure.
- **Manipulations of Stock Prices.** Developed empirical approaches to determine whether an alleged revenue management episode in the computer industry materially affected the stock price of the company.
- **Alleged Manipulations of Hedge Funds Accounts.** Developed empirical approaches to estimate the likelihood that the observed patterns in trading and in profits by a specific trader were the result of a manipulation to maximize profits of specific accounts to the detriment of others.
- **Alleged Conspiracy between Brokers and Dealers of Major Financial Institutions.** Estimated but-for transaction prices in an alleged conspiracy between brokers and dealers of a major financial institution. Evaluated execution quality when compared to unsuspected benchmarks. Estimated allegedly illegal profits and consumers' disadvantage. Developed analyses of liability.
- **Commodities Futures Contracts Alleged Manipulations.** Developed empirical approaches to determine whether commodities futures prices of various precious metals were manipulated. Defined relevant markets, estimated price artificiality, addressed causation and market power. Studied floor and electronic trading, and where price discovery took place. Linked analyses to cash markets and related commodities. Estimated but-for trading, allegedly illegal profits, and potential damages.

- **Alleged Fraud Related to Delay in Delivering Shorted Securities.** Conducted empirical analyses to assist in determining whether defendant's conduct was consistent with SEC's allegations of purported delay in delivering shorted securities to profit from illicit additional interest earned.
- **The Economics and Regulation of the Portuguese Retail Payments System.** Co-authored report analyzing how the Portuguese payment system operates and how regulatory interventions, especially those involving controls, would likely affect the interest of the various stakeholders in the system including consumers, merchants, banks, schemes, and infrastructure providers.
- **Credit Ratings and Risk.** Analyzed the evolution of structured finance ratings during the eruption of the recent financial crisis in the United States. Timed these changes with various measures of increased risk in the market and disclosures of exposures to this risk by major financial institutions.
- **Valuation of Structured Finance Securities During the 2007-2009 Financial Crisis.** Analyzed econometric models and assumptions used to value structured finance securities, namely RMBS and CDOs, during the eruption of the financial crisis. Evaluated models' sensitivities to stress scenarios and calibrations. Developed models for RMBS expected cumulative losses based on corporate default models, and tested model implications on mortgages correlations, crossed-pool correlations, and volatility of house price growth and of cumulative losses against actual and forecasted data.
- **Profitability Analyses of Special Purpose Vehicles.** Developed empirical analysis to estimate the profitability of various Special Purpose Vehicles after extracting the effects of taxes and other benefits, in comparison with foreign investments.
- **Risk Assessment in the Financial Crisis.** Developed and implemented a sophisticated Markov Regime Switching Model to identify the evolution of risk in ABX indices from 2007 through 2009, which allowed for five different states of variable intensity and volatility. Applied various measures of relative risk in the literature to the financial crisis to assist in determine how early was subprime risk identifiable by the market.
- **Analysis of Disclosures during the Subprime Mortgages Crisis.** Matched companies' disclosures of information related to the exposure of particular assets to the evolution of risk in the market place to assist in determining whether public disclosures were timely made.
- **Valuation of Expropriated Assets in the Oil Industry.** Provided testimony on an international arbitration matter on the value of expropriated assets belonging to a publicly traded oil services company with headquarters in Texas, whose assets were expropriated by Venezuela.
- **Valuation of Utilities Assets.** Provided expert testimony on the valuation of a utilities company, containing a fairness opinion and addressing robustness and appropriateness of various valuation methods employed during a merger and acquisition process. Addressed issues related to material adverse change with respect to the acquisition.

- **Valuation in the Pharmaceutical and Biotechnology Industries.** Opined on the price offered by a major pharmaceutical company in the acquisition of a leading biotechnology company. Used discounted cash flow models, multiple models and event studies. Assisted in the estimation of the value of the biotechnology R&D pipeline.
- **Stock and Indices Options Valuation.** Opined on the valuation of stock and indices options by a financial institution in Europe.
- **Section 10b-5 Securities Litigation.** Used event studies to estimate the effect of alleged fraud on companies' stock prices and the economic value of the effect. Estimated alleged damages.
- **Insider Trading.** Analyzed the materiality of the gain allegedly obtained through insider trading. Evaluated stock and bond prices reactions to the allegedly private and illegally obtained information. Determined the extent to which such information had previously been known and assimilated by the market.
- **Testing for Market Efficiency.** Implemented a variety of statistical tests for market efficiency of particular securities during the financial crisis and compared results with those prior to the crisis. Assessed and explained changes and the appropriateness of the assumption of market efficiency.
- **Analysis of Credit Default Swaps.** Analyzed the information content of credit default swaps and to assist in determining the material impact of having only quote data available rather than final transaction prices for market participants in general.
- **Stock Options Backdating and Spring Loading.** Developed various empirical screens to determine whether patterns observed in stock price excess returns related to alleged stock options backdating and spring loading were statistically anomalous. Studied the materiality of these events.
- **Trading in Major Stock Exchanges.** Assisted in determined whether brokers and dealers in a major stock exchange illegally profited from not crossing buying and selling orders. Estimated allegedly illegal profits and consumers' disadvantage.
- **Materiality of Disclosures Related to Conspiracies.** Investigated whether the disclosure of an alleged conspiracy between members of the same industry materially affected stock prices of the companies in the same industry and the transaction price of a merger.
- **Material Adverse Change in Connection with Merger Agreements.** Determined materiality of the stock price response to information not disclosed prior to an acquisition, information which may have affected the acquisition decision itself had it previously been known.

Other

- **Drug Recalls.** Estimated damages associated with the recall of major blockbuster drugs.
- **Asbestos.** Estimated damages associated with construction workers' exposure to asbestos.

- **Macroeconomic Effects of Airport Expansion.** Assisted in the estimation of the macroeconomic and sectorial specific impacts of the expansion of the Lisbon airport into the Portuguese economy.
- **Postal Services Modeling.** Developed a new econometric model to predict demand for the United States Postal Service. Model results assisted management on decisions related to pricing and product innovations.
- **Patent infringement in Medical Devices.** Estimated lost profits due to alleged patent infringement in the medical device industry.

PUBLICATIONS AND MANUSCRIPTS

Conspiracies, Manipulations, Information Exchanges, Empirical Screens, Pricing Algorithms, Antitrust and Financial Regulation

“The Future of Cartel Deterrence and Detection,” with Albert D. Metz, *Competition Policy International Antitrust Journal*, January 2019.

“Big Data, Artificial Intelligence and Antitrust: What’s New and What is Not?” with Albert D. Metz, *Competition Policy International, Antitrust Chronicle*, July 2018.

“Recent Financial Sector Conspiracies and Manipulations: How to Prevent Future Similar Conduct?” *Competition Policy International, Antitrust Chronicle*, June 2016 (1).

“Antitrust Compliance 2.0: The Use of Structural Analysis and Empirical Screens to Detect Collusion and Corruption in Bidding Procurement Processes,” with Elizabeth Prewitt, *Competition Policy International, Antitrust Chronicle*, June 2015 (2).

“Comments on ICE Benchmark Administration’s Position Paper of 20 October 2014: LIBOR Reform,” with Albert D. Metz, December 18, 2014.

“Recent Successes of Screens for Conspiracies and Manipulations: Why Are There Still Skeptics?” *Competition Policy International, Antitrust Chronicle*, October 2014 (2), forthcoming.

“Are Silver Prices Being Fixed?” with Albert D. Metz, Working Paper, October 2014.

“Are Gold Prices Being Fixed?” with Albert D. Metz, Working Paper, February 2014.

“Roundtable on *Ex Officio* Cartel Investigations and the Use of Screens to Detect Cartels, A Paper by Rosa M. Abrantes-Metz,” prepared for the Directorate for Financial and Enterprise Affairs, Competition Committee, Organization for Economic Cooperation and Development, for discussion at its meeting held on October 31st, 2013, OECD, Paris.

“Aluminum Market Dislocation: Evidence, Incentives and Reform,” September 18, 2013, Working Paper, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2328902.

“Proactive vs. Reactive Anti-Cartel Policy: The Role of Empirical Screens,” Working Paper, June 2013, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2284740.

“Principles for Financial Benchmarks: Comments on the OICU-IOSCO Consultation Report on Financial Benchmarks,” May 15, 2013, available at <http://www.iosco.org/library/pubdocs/409/pdf/Rosa%20M.%20Abrantes%20Metz.pdf>.

“The Determinants of Cartel Duration,” with John M. Connor and Albert D. Metz, Working Paper, April 2013, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2263782.

“Enhancing Financial Benchmarks: Comments on the OICU-IOSCO Consultation Report on Financial Benchmarks,” with David S. Evans, Working Paper, February 10, 2013, available at <http://www.iosco.org/library/pubdocs/399/pdf/Prof.%20Rosa%20Abrantes%20-%20Metz%20NYU.pdf>.

“Revolution in Manipulation Law: The New CFTC Rules and the Urgent Need for Economic and Empirical Analyses,” with Gabriel Rauterberg and Andrew Verstein, *University of Pennsylvania Journal of Business Law*, 15(2), 357-418, 2013, also available at <https://www.law.upenn.edu/live/files/1806-verstein15upajbusl3572013pdf>.

“Regional Competition Center for Latin America Presents: Guidelines on Exchanges of Information Among Competitors,” *Competition Policy International Latin America Column*, January 17, 2013.

“Will The Wheatley Recommendations Fix LIBOR?” with David S. Evans, *Competition Policy International, Antitrust Chronicle*, November 2012 (2), refer also to <http://blogs.law.harvard.edu/corpgov/2013/01/04/replacing-the-libor-with-a-transparent-and-reliable-index/#comments>.

“Antitrust Guidelines for Horizontal Exchanges of Information among Competitors for the Regional Competition Center for Latin America,” October 2013.

“Replacing LIBOR with a Transparent and Reliable Index of Interbank Lending: Comments on the Wheatley Review of Libor Initial Discussion Paper,” with David S. Evans, Working Paper, September 6, 2012, available at http://cdn.hm-treasury.gov.uk/condoc_wheatley_review_responses_1.pdf

“Lessons from Libor for Detection and Deterrence of Cartel Wrongdoing,” with Daniel D. Sokol, *Harvard Business Law Review Online*, vol 3, pp 10-16, available at <http://www.hblr.org/2012/10/the-lessons-from-libor-for-detection-and-deterrence-of-cartel-wrongdoing/>.

“How Should the LIBOR be Reformed?” *Competition Policy International, Antitrust Chronicle*, July 2012 (1).

“Interview: Update on ‘Screens for Conspiracies and Their Multiple Applications,’” *Competition Policy International, Antitrust Journal*, June 8(1), 2012.

“A Short Note on Manipulation, Speculation and Crude Oil Prices,” Mimeo, April 2012.

“How Far Can Screens Go in Detecting Explicit Collusion? New Evidence From the Libor Setting,” with Albert D. Metz, *Competition Policy International Antitrust Chronicle*, March (1) 2012.

“Why and How to Use Empirical Screens in Antitrust Compliance?” *Competition Policy International Antitrust Chronicle*, February (1) 2012.

“Defending Against Allegations of Fraud and Manipulation: The Role of the Economist under the New CFTC Rules,” Working Paper, December 2011.

“Design and Implementation of Screens and Their Use by Defendants,” *Competition Policy International Antitrust Chronicle*, September (2) 2011.

“Libor Litigation and the Role of Screening: The Need for Enhanced Compliance Programs,” *Competition Policy International Antitrust Chronicle*, July (2), 2011.

“LIBOR Manipulation?” with Michael Kraten, Albert D. Metz and Gim Seow, *Journal of Banking and Finance*, 36, 136-150, 2012, *List of Most Download Journal of Banking and Finance Articles*, 2012, first draft dated August 4, 2008 and available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1201389.

“Tracking the Libor Rate,” with George G. Judge and Sofia B. Villas-Boas, *Applied Economics Letters*, 18, 893-899, 2011.

“Investigating the Libor Rate,” with Sofia B. Villas-Boas, Working Paper, July 2010, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1646600.

“Screens for Conspiracies and Their Multiple Applications - Extended,” with Patrick Bajari, *Competition Policy International Journal*, 6(2), Autumn 2010.

“The Power of Screens to Trigger Investigations,” *Securities Litigation Report*, Vol. 10, No. 10, November 2010.

“Enhancing Compliance Programs through Antitrust Screening,” with Patrick Bajari and Joseph E. Murphy, *The Antitrust Counselor*, 4(5), September 2010.

“Antitrust Screening: Making Compliance Programs Robust,” with Patrick Bajari and Joseph E. Murphy, Working Paper, July 2010.

“Economic Expert Testimony in Conspiracy Cases Under Federal Antitrust Laws,” with Dina O. Aguilar, Mark Frankena, Kostis Hatzitaskos and David Scheffman, Working Paper, February 2010 (in “Proof of Conspiracy Under Federal Antitrust Laws,: ABA editions, 2010).

“Screens for Conspiracies and their Multiple Applications,” with Patrick Bajari, *The Antitrust Magazine*, 24(1), Fall 2009.

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“Is the Market Being Fooled? An Error-Based Test for Manipulation,” with Sumanth Addanki, available at http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=339863, 2007, revise and resubmit.

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“Why a Reduction of Health Care Costs *per se* May be a Misleading Policy Objective,” *Competition Policy International, Antitrust Chronicle*, July (2), 2012.

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“Pharmaceutical Development Phases: A Duration Analysis,” with Chris P. Adams and Albert D. Metz, *Journal of Pharmaceutical Finance, Economics & Policy*, 14, 19–42, 2006.

Monetary and Financial Economics, Theoretical Econometrics, Other Applied Econometrics and, Other Antitrust and Regulation of Financial Markets

“Is Financial Regulation Appropriately Dealing With Systemic Risk? Are We Really Fixing Existing Problems or Creating New Ones?” January 2014, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2381180.

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“The Economics and Regulation of The Portuguese Retail Payments System,” with David S. Evans, September 2013.

“What’s to be done with Rating Agencies? Understanding the Problem to Find a Solution,” with Kristiyana T. Teodosieva, *The Exchange, American Bar Association*, September 2013, also available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2288195.

“Testing Equalities of Variances for Paired Time Series at Selected Frequencies: An application to Sovereign Credit Default Swaps,” with Albert D. Metz, August 2011.

“The Use of the Event Study Methodology in International Arbitration Damages Assessments,” with Santiago Dellepiane, *Journal of International Arbitration*, 28(4), 327-342, 2011.

“The Information Content of Credit Default Swap Prices,” with Cathy Niden, *Derivatives Litigation Reporter*, 14(18), July 2008.

“The Effect of Entry on Prices and Costs in Mobile Telephony,” with Pedro Pereira, http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=339863, Working Paper 2008, revise and resubmit.

“Before and After the EMU: Monetary Policy and Welfare Changes,” *Journal of International Money and Finance*, forthcoming.

“Before and After the EMU: Financial Integration, Monetary Policy and Welfare Changes,” PhD Dissertation in Economics, University of Chicago, June 2002.

The European Monetary Union—Could there be any ‘Winners’ and ‘Losers’?” Manuscript, University of Chicago, July 2001.

“An Evaluation of the Macroeconomic Stability of the European Monetary Union, and an Original Decomposition of its Business Cycles into Real and Monetary Components,” Manuscript, University of Chicago, June 1999.

Book Contributions

Co-author of the chapter on “Antitrust Corporate Governance and Compliance,” with Daniel Sokol, *The Handbook of Antitrust Economics*, Chapter 23, 2015, 586-618.

Co-author of a chapter on the “Role of Event Studies in International Arbitration Cases”, forthcoming in the second book of the *Foro de Arbitraje en Materia de Inversión*, Sonia Rodríguez Jiménez and Herfried Wöss (eds.), *Instituto de Investigaciones Jurídicas, Universidad Nacional Autónoma de México*, México, September 2013, <http://biblio.juridicas.unam.mx/libros/libro.htm?l=3386>.

Co-drafter of the chapter on “Restraints of Trade,” Volume on “2010 Annual Review of Antitrust Law Developments,” *American Bar Association Editions*, March 2011.

Co-drafter of the chapter on “The Role of the Economic Expert in Conspiracy Cases,” included in the Volume on “Proof of Conspiracy under Antitrust Federal Laws,” *American Bar Association Editions*, April 2010.

Ongoing Research

“The Multiple Applications of Screens in Finance: Manipulations, Conspiracies, Insider Trading, FCPA Violations, and Other Fraud.”

“Credit Ratings, Market Implied Ratings and Litigation,” with Albert D. Metz.

“Stress-testing RMBS Expected Losses using Structural Models.”

“Testing Correlations at Elected Frequencies: An Application to Portfolio Selection,” with Albert D. Metz.

“New Findings on Cartel Duration,” with John M. Connor and Albert D. Metz.

“Screens for Conspiracies and Motions to Dismiss after *Twombly*,” with Donald Klawiter.

“Benefits to Society from Health Care Spending: A Simple International Comparison.”

“How to Detect and Defend Allegations of Manipulation in Energy Markets under the New FTC Rule.”

“Using an Event Study to Value Pharmaceutical and Biotechnology R&D Pipelines.”

“Financial Contagion & Crisis: A Markov Regime Switching Application.”

“Detecting Collusion in Survey Data,” with Albert D. Metz.

Selected Opinion Articles

“Time to rethink deficient market structures,” *Financial Times*, April 11, 2016, available at <http://www.ft.com/content/f95648f8-d499-11e5-829b-8564e7528e54>.

“Stress Tests Won’t Prevent the Next Financial Crisis: Expected losses under invented scenarios tell us little about risk and reality,” *The Wall Street Journal*, March 18 2014, available at <http://online.wsj.com/news/articles/SB10001424052702303704304579380961631198726>.

“Time is nigh to rethink the role of benchmarks: New indices should reflect lessons learnt from recent scandals,” *Financial Times*, January 10, 2013, available at <http://www.ft.com/intl/cms/s/0/222f4230-79ec-11e3-8211-00144feabdc0.html#axzz2rTDaZS6s>.

“How to Keep Banks from Rigging Gold Prices,” *Bloomberg*, December 19, 2013, available at <http://www.bloomberg.com/news/2013-12-19/how-to-keep-banks-from-rigging-gold-prices.html>.

“Banks’ Role in Metal Trade Deserves Scrutiny,” *Bloomberg*, July 31, 2013, available at <http://www.bloomberg.com/news/2013-07-31/banks-role-in-metal-trade-deserves-scrutiny.html>.

“How to Use Statistics to Seek Out Criminals,” *Bloomberg*, February 26, 2013, available at <http://www.bloomberg.com/news/2013-02-26/how-to-use-statistics-to-seek-out-criminals.html>.

“Should New Financial Products be Regulated by an FDA-like Agency? 8 Reasons Why Not,” May 16, 2012, available at <http://www.globaleconomicsgroup.com/financial-regulation/should-new-financial-products-be-regulated-by-an-fda-like-agency-8-reasons-why-not/>.

“Credit Rating Agencies, the Financial Crisis, and Regulation,” April 18, 2012, available at <http://www.globaleconomicsgroup.com/financial-regulation/credit-rating-agencies-the-financial-crisis-and-regulation/>.

“The Complexity and Challenges of Proposed Swap Regulations,” April 4, 2012, available at <http://www.globaleconomicsgroup.com/financial-regulation/the-complexity-and-challenges-of-proposed-swaps-regulations/>.

“Screens and the Alleged Libor Conspiracy and Manipulation,” March 21, 2012, available at <http://www.globaleconomicsgroup.com/financial-regulation/screens-and-the-alleged-libor-conspiracy-and-manipulation/>.

“Has the Libor-Alleged Conspiracy and Manipulation Inspired the New CFTC Regulations?” March 7, 2012, available at <http://www.globaleconomicsgroup.com/financial-regulation/has-the-libor-alleged-conspiracy-and-manipulation-inspired-the-new-cftc-regulations/>.

SELECTED PRESENTATIONS

Conspiracies, Manipulations, Fraud, Screens, Pricing Algorithms and Regulation

“Estimating Price Impact Due to Manipulation,” Federal Energy Regulatory Commission, Washington, DC, April 2019.

“Pricing Algorithms and Collusion,” Panel Discussion, Federal Trade Commission’s Hearings on Competition, Washington DC, November 2018.

“Beyond Leniency: What else can be done to detect and deter collusion?” Presentation to the NYSBA Executive Committee, New York, May 16, 2018.

“Negotiating Cartel Fines and Civil Settlements,” American Bar Association, Antitrust Section Spring Meetings, Panel discussion with Adam Hemlock, Rachel Adcox, Jeff Martino and Hollis Salzman, Washington D.C, April 11, 2018.

“The Role of Market Power in the Digital Economy,” NYSBA Annual Meetings, Panel discussion with Eric Hochstadt, Kellie Lerner, Nicholas Gaglio, and Pat DeGraba, New York, January 25, 2018.

“Comments on “Collusion on Markets with Syndication” by Hatfield, Kominers, Lowery and Barry,” 2018 Next Generation of Antitrust Scholars Conference, NYU Law School, New York, January 26, 2018.

“Embracing Change: Innovation in the Practice and Enforcement of Competition Law,” Panel discussion at the Canadian Bar Association Fall Meetings, Antitrust Section, Ottawa, October 2017.

“Collusion and Manipulation in Gold Markets: Additional Developments,” Invited Speaker to Gold and Mines Conference, New York, May 5, 2017.

“Screens for Conspiracies and Manipulations: My Most Recent Ongoing Research,” Competition Law & Policy Seminar Series, U.S Department of Justice Seminar Series, Washington, DC, April 2017.

“How to Develop and Implement Screens for Conspiracies,” Philippines Competition Authority, February 2017.

“Screens for Cartels and Antitrust Compliance Training,” Macmillan Publishers, Required Antitrust training for Senior Management and Staff, New York, January 2017.

“Screens for Conspiracies and Their Recent Successes,” Canadian Bar Association, scheduled for December 2016.

“Collusion and Manipulation in Gold Markets: Latest Developments,” Invited Speaker to Gold and Mines Conference, London, scheduled for November 2016.

“Using Screenings to Detect Conspiracies in Commodities Markets,” Federal Energy Regulatory Commission, Washington, DC, November 2015.

“Using Screens to Detect Conspiracies and Manipulations,” Invited Speaker at the University of British Columbia Summer Conference on Industrial Organization, Vancouver, Canada, July 2016.

“Screens for Conspiracies and Bid-Rigging Detection,” Guest Speaker at OECD Conference, Mexico City, Mexico, April 2016.

“Evolution of Market Reference Rates: Libor, Euribor, IBR,” Guest Speaker at The Colombian Banking Association (Asobancaria), 18th Treasury Management Congress, Colombia, scheduled for January 29, 2016.

“The Use of Screens in Cartel Detection,” Guest Speaker at the Hong-Kong Competition Authority, October 26, 2015, Hong-Kong.

“Screens for Conspiracies and Manipulations,” Conference Keynote Speaker, Hong-Kong Economic Association Annual Meeting, October 24, 2015, Hong-Kong.

“Using Screens to Complement Leniency Programs,” Panel discussion at the Portuguese Competition Authority Annual Meeting on Competition Economics, Lisbon, Portugal, October 22, 2015.

“Screens for Conspiracies and Manipulations: Recent Successes,” Seminar at the US Department of Justice, Antitrust Division, New York, October 15, 2015.

“London Gold Fixing Conspiracy and Manipulation,” Invited Keynote Speaker at the Mines and Money upcoming conference in Hong-Kong, scheduled for March 2015.

“Exchange Rates, Manipulation and Reform,” Invited Keynote Speaker at the Fourth Annual Workshop on “Financial Determinants of Exchange Rates,” organized by the European Central Bank, the Dutch Central Bank and the Bank of Italy, Amsterdam, The Netherlands, scheduled for December 2014.

“Screens: Multiple Uses and Successes,” Presentation at the Competition Markets Authority, United Kingdom, September 11, 2014.

“Problem Markets: Collusion and Manipulation in Financial Benchmarks,” Presentation at the CCP Annual Conference, University of East Anglia, United Kingdom, June 12-13 2014.

“Financial Benchmarks: Collusion, Manipulation, Screening and Reform,” Financial Conduct Authority, London, United Kingdom, June 11 and September 10, 2014.

“Financial Benchmarks, Collusion and Reform,” Dutch Competition Law Conference, New York (through video conference), April 24, 2014.

“Empirical Screening of Markets: Detection, Deterrence and Defense,” American Bar Association, Business Section Spring Meetings, Panel Discussion with David Rosenfield, Vincent Briganti, D. Loren Washburn, and Harvey Westbrook, Los Angeles, April 12, 2014.

“Looming Temptation: Antitrust and Benchmark Pricing,” American Bar Association, Antitrust Section Spring Meetings, Panel discussion with Henry McFarland, William Rooney and Elizabeth Prewitt, Washington D.C, March 26, 2014.

“Manipulating Benchmarks: Antitrust Concerns about Coordination vs. Oversight of Unilateral Conduct,” at CRA Annual Brussels Conference, Economic Developments in European Competition Law. Panel discussion with Christopher Woolard, FCA, Miguel de-la-Mano, EC, and Cristina Caffarra, CRA, Brussels, Belgium, December 11, 2013.

“Commodities Manipulations and Conspiracies: Empirical Evidence,” Chief Economist Team, European Commission, Brussels, December 10, 2013.

“Screens for Conspiracies and Dawn Raids,” Competition Authority for Peru, Lima, Peru, November 19, 2013.

“Screens for Conspiracies and their Role in Effective Anti-Cartel Policy,” Organization for Economic Cooperation and Development (OECD) Roundtable Discussion on “Ex-Officio Cartel Investigations and the Use of Screens to Detect Cartels,” Paris, France, October 30, 2013; Supporting materials available at <http://www.oecd.org/competition/exofficio-cartel-investigations.htm>.

“Screens for Conspiracies and Antitrust Enforcement: Detection without Leniency” Annual National Association of Attorneys General Antitrust Section, Hartford, Connecticut, September 26, 2013.

“LIBOR, Screens for Conspiracies, Manipulations and Fraud: Lessons for an Effective Anti-Fraud Program,” Presentation to the Securities and Exchange Commission, Washington D.C., August 6, 2013.

“Proactive versus Reactive Cartel Detection Policy: The Role of Screening,” 8th European Summer School and Conference in Competition and Regulation, Corfu, Greece, July 6, 2013.

“LIBOR, Euribor, TIBOR and Other Financial Benchmarks: Detection, Antitrust and Reform,” Portuguese Competition Authority, Lisbon, Portugal, June 20, 2013.

“Briefing Room on Screens for Conspiracies,” Panel discussions with David Evans, Antonio Capobianco, Carlos Mena Labarthe, Carlos Ragazzo, Danny Sokol, Donald Klawiter and Kai Hueschelrath, Competition Policy International, May 2013.

“The Economics of Collusion and Damages,” Romanian Competition Authority, Bucharest, Romania, April 23, 2013.

“Benchmarks: Maintaining Integrity and Reliability,” Panel discussion with David Lawton, Jim Rosenthal, Nick Collier and David Eichhorn, CFTC International Regulators Meeting, Florida, March 2013.

“LIBOR, Screening and Reform,” Public Lecture, University College London, February 2013.

“Financial Benchmarks Reform,” IOSCO, FSA, CFTC and other International Regulators Meeting, London & Washington, DC, February 2013. Summary of Washington, D.C. Roundtable available at <http://www.sifma.org/members/hearings.aspx?id=8589942209>, and video available at <http://www.youtube.com/watch?v=duUODyMdnsE&feature=youtu.be>.

“LIBOR, Screening and Reform,” European Commission, Brussels, December 6, 2012, available http://ec.europa.eu/internal_market/economic_analysis/docs/presentations/121206_libor-screening-reform_en.pdf.

“Screens in the Detection of Illegal Behavior,” Romanian Competition Authority, Bucharest, Romania, December 5, 2012.

“The LIBOR Conspiracy & Manipulation: Screening as a Tool to Detect Illegal Behavior,” World Bank Seminar, Washington, D.C., November 29, 2012.

“The Effective Use of Economics in Competition Enforcement,” Panel Presentation with Pierluigi Sabbatini, Fiorenzo Bovenzi, Arvid Fredenberg and Kai Hüscherlath, Polish Competition Authority, Warsaw, Poland, November 22, 2012, available at http://www.uokik.gov.pl/news.php?news_id=10116.

“Recent Benchmarks Manipulation Scandals and Need for Deterrent Sanction Regimes,” IOSCO, EMC Annual Meeting, November 19, 2012, Santiago, Chile.

“Economic Tools & Cartel Detection: Screens & Applications,” Mexican Antitrust Bar Association, November 15, 2012, Mexico City, Mexico.

“Empirical Screens to Detect and Defend Conspiracies and Manipulations,” Panel discussion, CIDE, November 15, 2012, Mexico City, Mexico.

“What To Do About LIBOR: A Special Webinar Series,” Panel Discussion with David S. Evans, Miguel de-la-Mano and Michael Barr, Competition Policy International, November 8, 2012, available at <https://www.competitionpolicyinternational.com/what-to-do-about-libor-a-special-cpi-webinar/>.

“Making markets work for sustainable economic growth and economic recovery: The role of competition policy,” Panel discussion, World Bank, Washington, D.C., November 5, 2012.

“The Determinants of Cartel Duration,” Seminar in Economics, Michigan University, October 12, 2012.

“Finance, Regulation, and Ethics: Lessons from the LIBOR Scandal”, with Margaret Levenstein, Michael Barr and David Mayer, Ross School of Business, Michigan University, October 11, 2012.

“Antitrust Guidelines for Horizontal Collaborations among Competitors for Central and South American Countries,” Regional Center for Competition in Latin America, First Conference, Santo Domingo, Dominican Republic, September 20, 2012.

“Credit Ratings Agencies, Antitrust and Regulation,” Joint with Lawrence White, Competition Policy International, June 2012.

“21st Century Antitrust Compliance: Beyond the Basics,” panel discussion, joint with Alicia Downey, Theodore Banks, Joseph Murphy and Eric Morehead, American Bar Association, Antitrust Section Spring Meetings, Washington D.C., March 2012.

“Beyond Leniency: Empirical Methods of Cartel Detection,” with Donald Klawiter, D. Daniel Sokol, Carlos Mena and Carlos Ragazzo, American Bar Association Brown Bag Series, December 15, 2011.

“The Use of Economic Screens in Antitrust Litigation: The Case of the London Interbank Offered Rate,” Afternoon Speaker Series, New York University Law School. New York, November 2011.

“Alleged Libor Conspiracy and Manipulation: The Role of Screens,” Executive Committee of the New York State Bar’s Antitrust Law Section, New York, October 2011.

“Screens for Conspiracies and Manipulations and Their Multiple Applications,” Portuguese Competition Authority, Lisbon, Portugal, June 2011.

“Competition Compliance: Up Your Game, Add to the Bottom Line, and Be a Corporate Star,” Joint with Theodore Banks, Brian Henry and Joseph Murphy, Corporate Counsel Committee, Canadian Bar Association, June 2011.

“Empirical Methods for Conspiracies and Manipulations,” Executive Committee of the New York State Bar’s Antitrust Law Section, New York, December 2010.

“Screening for Conspiracies,” French Competition Authority, Paris, France; German Competition Authority, Bonn, Germany, October 2010.

“Screening Devices for Detecting Collusion,” Presentation and Panel Discussion with Christina Hummer and Maarten Janssen, Austrian Federal Competition Authority, Vienna, Austria, October 2010.

“Conspiracies Detection and Empirical Screens,” ZEW Conference on Quantitative Analysis in Competition Assessments, Mannheim, Germany, October 2010.

“Screening for a Libor Conspiracy and Manipulation,” Microeconomics Lunch Seminar, Department of Economics, Leonard N. Stern School of Business, New York University, May 2010.

“Cartel Detection, Leniency Programs and the Latin America Experience,” Joint with Carlos Mena-Labarthe, November 2009.

“Econometrics and Antitrust,” Joint with David S. Evans, Competition Policy International, November 2009.

“Legal and Economic Analysis of Collusion,” Joint with Patrick Bajari, Competition Policy International, June 2009.

“The Determinants of Cartel Duration,” International Industrial Organization Conference, Boston, April 2009.

“On Detecting Agents’ Influence in Market Data Outcomes,” International Industrial Organization Conference, Boston, April 2009.

“The Empirical Detection of Conspiracies and Manipulations,” Bureau of Economics, Federal Trade Commission, Washington D.C., September 2008.

“Globalization, Cartel Formation and Detection,” Knowledge Globalization Annual Conference, Boston, April 2008.

“Detecting Conspiracies and Manipulations,” Sawyer Business School, Suffolk University, Boston, December 2007.

“How to Spot Cheaters? Empirical Methods to Detect Conspiracies and Manipulations,” Instituto Superior de Economia e Gestão, Lisbon, Portugal, July 2007.

“Is the Market being Fooled? An Error-Based Screen for Manipulation,” First Meeting of the Portuguese Economic Journal, Ponta Delgada, Portugal, July 2007.

“A Variance Screen for Collusion,” Portuguese Competition Authority, Lisbon, Portugal, June 2005.

Pharmaceuticals and Health Care

“Is there too much Innovation? Benefits to Society from Technological Progress and its Contribution to Health Care Costs,” International Industrial Organization Conference, Vancouver, Canada, May 2010.

“The Determinants of Pharmaceutical Review, Success and Duration,” International Industrial Organization Conference, Virginia, May 2008.

“Assessing the Prospects of Drugs in the Pipeline,” A Medical Affairs Leadership Conference: The Good, the Bad, and the Emerging, sponsored by Scientific Advantage, New Jersey, May 2008.

“Bringing Drugs to Market: Which Ones? How Fast? What Value?” The Center for Business Intelligence, January 2008.

“Pharmaceutical Development Phases: A Duration Analysis,” Portuguese Authority for Competition, Lisbon, Portugal, November 2005; Federal Trade Commission, Washington D.C.,

March 2003; Congressional Budget Office, Washington, D.C., March 2003; International Industrial Organization Conference, Boston, April 2003; North American Summer Meetings of the Econometric Society, Chicago, June 2003.

Monetary and Financial Economics

“Before and After the EMU: Financial Integration, Monetary Policy and Welfare Changes,” The University of Chicago, Chicago, May 2002; Board of Governors of the Federal Reserve System, Washington, D.C., February 2002; European Central Bank, Frankfurt am Main, Germany, February 2002; Federal Reserve Bank of St. Louis, St. Louis, February 2002; Bank of England, London, England, January 2002.

“The European Monetary Union – Could there be any ‘Winners’ and ‘Losers’?” The University of Western Australia, Perth, Australia, November 2001; Board of Governors of the Federal Reserve System, Washington, D.C., May 2001; The University of Chicago, Chicago, November 2000.

“The European Monetary Union and its Consequences for Financial Markets,” Banco Bozano Simonsen, Rio-de-Janeiro, Brazil, September 1998.

SELECTED MEDIA COVERAGE

Interviews

“Traffic Ticket App Seeks Nearly \$20 Million In Anti-Trust Case Against Florida Bar,” *WLRN Miami, South Florida*, September 11, 2018, available at <https://www.wlrn.org/post/traffic-ticket-app-seeks-nearly-20-million-anti-trust-case-against-florida-bar>.

“Crypto Coin Tether Defies Logic on Kraken’s Market, Raising Red Flags,” Interview for *Bloomberg*, June 30, 2018, available at <https://www.bloomberg.com/graphics/2018-tether-kraken-trades/>.

“We’ve Uncovered Patterns of Gold Price Manipulation,” interview for *Small Capp Power*, May 2017, available at <https://smallcappower.com/videos/videos-top-stories/gold-price-manipulation/>.

“Two member firms resign from silver price fixing,” published at Chief Investment Officer, March 8, 2017, available at <https://www.ai-cio.com/news/two-member-firms-resign-from-silver-price-fixing/>.

“Deutsche buckles but gold-rigging lawsuit goes ahead” Interview for *BNN TV*, Canada, December 2016, available at <http://www.bnn.ca/video/deutsche-buckles-but-gold-rigging-lawsuit-goes-ahead~1012389>.

“DRW Defends CFTC Claim It Banged the Close, Day After Day,” Interview for *Bloomberg*, December 1, 2016, available at <https://www.bloomberg.com/news/articles/2016-12-01/cftc-seeks-first-win-in-decade-in-drw-banging-the-close-case>.

“An Insider’s Take on Gold Manipulation,” published October 6, 2016, *Kitco*, available at <http://www.kitco.com/news/2016-10-06/Anyone-Who-Traded-Gold-in-Last-Decade-Affected-Key-Player-Speaks.html>.

“Can a Leopard Change Spots?” published July 2016, *The Trade*, Issue 48, pp. 65-71.

“The Financial Detective,” published November 20, 2015, *Calcalist*, pp 8-11, also available at <http://www.calcalist.co.il/markets/articles/0,7340,L-3673861,00.html>.

“Probe Widens Into Treasury Debt Auctions: Justice Department and CFTC ask banks for information tied to government debt sales” published November 4, 2015, *The Wall Street Journal*, also available at <http://www.wsj.com/articles/probe-widens-into-treasury-debt-auctions-1446596472>.

“Abrantes-Metz: economics can proactively detect cartels,” published October 22, 2015, *GCR News*, available at http://globalcompetitionreview.com/news/article/39701/abrantes-metz-economics-proactively-detect-cartels/?utm_source=Law%20Business%20Research&utm_medium=email&utm_campaign=6309279_GCR%20Briefing&dm_i=1KSF,3R89R,9GQ7X0,DIXEY,1.

“Primary Dealers Rigged Treasury Auctions, Investor Lawsuit Says,” published September 17, 2015, *Bloomberg*, available at <http://www.bloomberg.com/news/articles/2015-09-17/primary-dealers-rigged-treasury-auctions-investor-lawsuit-says>.

“Here’s why drugmakers are held in low esteem,” published on August 28, 2015, *Los Angeles Time*, available at <http://www.latimes.com/business/la-fi-lazarus-20150828-column.html>.

“BP Manipulated Texas Natural Gas Market in 2008, Judge Says: FERC administrative law judge says scheme took place after earlier market manipulation,” published August 13, 2015, *The Wall Street Journal*, also available at <http://www.wsj.com/articles/bp-manipulated-texas-natural-gas-market-in-2008-judge-says-1439498413>.

“BP Finds Itself at Odds With Regulators Again: British company awaits decision in manipulation case brought by FERC; jurisdiction is a question,” published July 15, 2015, *The Wall Street Journal*, also available at <http://www.wsj.com/articles/bp-finds-itself-at-odds-with-regulators-again-1436980213>.

“Manipulation Researcher Finds “Very Sharp Movements” in Silver Prices,” published July 9, 2015, *Kitco News*, available at <http://www.kitco.com/news/2015-07-09/Manipulation-Researcher-Finds-Very-Sharp-Movements-in-Silver-Prices.html>.

“First Gold Manipulation, Now Silver? - Lead Researcher In Libor Case” published July 9, 2015, *Kitco News*, available at <http://www.kitco.com/news/video/show/Kitco-News/1018/2015-07-09/First-Gold-Manipulation-Now-Silver---Lead-Researcher-In-Libor-Case>.

Interview to *Reuters TV* on Fraud and Corruption in the Financial Sector, aired on May 28, 2015.

“Investigators probe \$500 trillion interest rates swap market,” published May 21, 2015, *Financial Times*, also available at <http://www.ft.com/intl/cms/s/0/8822b8dc-ffac-11e4-8c46-00144feabdc0.html#axzz3anUbH6Jb>.

“DOJ Clamps Down on Currency Manipulation by Banks,” Live interview for *Bloomberg TV*, aired May 20, 2015, available at <http://www.bloomberg.com/news/videos/2015-05-20/doj-clamps-down-on-currency-manipulation-by-banks>.

“Barclays to pay 115 million to settle ISDAfix manipulation case,” published May 20, 2015, *Bloomberg*, available at <http://www.bloomberg.com/news/articles/2015-05-20/barclays-to-pay-115-million-to-settle-isdafix-manipulation-case>.

“The Fall of Deutsche Bank,” Interview to *ZDF TV* in Germany, aired February 2015, <http://www.zdf.de/ZDFmediathek#/hauptnavigation/startseite>.

“Gold Manipulation Probe at US Banks,” live interview to *BNN TV*, Canada, aired February 27, 2015, available at <http://www.bnn.ca/Video/player.aspx?vid=560313>.

“End of gold fix heralds shift for London,” published November 12, 2014, *Financial Times*.

“Research shows scale of regulatory revolving door,” published December 8, 2014, interview to *Risk Magazine*, also available at http://www.risk.net/operational-risk-and-regulation/feature/2385237/research-shows-scale-of-regulatory-revolving-door?utm_content=buffercde6a&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer.

“Rigged Markets,” Interview to BBC Radio, aired February 2015, also available at http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/23_09_14_fo4_riggedmarkets.pdf.

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Associate Member, American Bar Association.

Member of the Econometric Society, the American Economic Association and Industrial Organization Society.

Fellowships from Fundação Calouste Gulbenkian, Portugal, 1999-2002; the Portuguese Government – PRAXIS XXI, 1995-1999; and Luso-American Foundation for Development, Portugal, 1995-1999. Scholarship from Universitat Pompeu Fabra, Ph.D Program, Spain, 1995-1996.

OTHER

Referee, *Journal of Political Economy*, *RAND Journal*, *The Review of Industrial Organization*, the *International Journal of Industrial Organization*, *Southern Economic Journal* and the *Journal of Law, Economics and Organization*, *Journal of Banking and Finance*, among others.

Member, Editorial Advisory Board, *The Antitrust Chronicle*, *Competition Policy International*.

Editor of the Monthly Cartel Column “From Collusion to Competition,” *Competition Policy International*.