

Nicolas Charbit
Carolina S. Malhado
Ellie Yang
Editors

Douglas H. Ginsburg

An Antitrust Professor
on the Bench
Liber Amicorum

Volume I

Alden F. Abbott, Margaret Artz, Anil Acar, Gary Born, Michelle M. Burtis, John DeQ. Briggs, Terry Calvani, James Cooper, Daniel Crane, Susan Creighton, David S. Evans, Eric M. Fraser, Jamillia P. Ferris, Damien Geradin, Ilene Knable Gotts, Gönenc Gürkaynak, John Harkrider, Joshua Hazan, Thu Hoang, Keith N. Hylton, Jonathan M. Jacobson, Bruce H. Kobayashi, Gregor Langus, Marina Lao, Vilen Lipatov, Ryan S. Maddock, Danielle Morris, Damien Neven, Barak Orbach, James F. Rill, Katarzyna Sadrak, Jana I. Seidl, Hal S. Scott, D. Daniel Sokol, Jacques Steenberg, Richard M. Steuer, Pablo Trevisán, Esra Uçtu, Nils Wahl, Joshua D. Wright

DOUGLAS H. GINSBURG

An Antitrust Professor on the Bench

Liber Amicorum - Volume I

Foreword by Joshua Wright

Editors

Nicolas Charbit
Carolina Malhado
Ellie Yang

All rights reserved. No photocopying: copyright licences do not apply.
The information provided in this publication is general and may not apply in a specific situation. Legal advice should always be sought before taking any legal action based on the information provided. The publisher accepts no responsibility for any acts or omissions contained herein. Enquiries concerning reproduction should be sent to the Institute of Competition Law, at the address below.

Copyright © 2018 by Institute of Competition Law
885 Avenue of the Americas, Suite 32G, NY 10001, USA
www.concurrences.com
book@concurrences.com

Printed in the United States
First Printing, February 2018
978-1-939007-62-9 (hardcover)
978-1-939007-63-6 (paperback)
978-1-939007-64-3 (e-book)

Cover and book design: Yves Buliard, www.yvesbuliard.fr
Layout implementation: Darlene Swanson, www.van-garde.com

Concurrences Books

Antitrust Liber Amicorum

Frédéric Jenny – Liber Amicorum (Vol. I-II)

Nicolas Charbit et al., 2018

Douglas H. Ginsburg – An Antitrust Professor on the Bench (Vol. I-II)

Nicolas Charbit et al., 2018

Wang Xiaoye, A Chinese Antitrust Tale

Nicolas Charbit et al., 2018

Ian S. Forrester, A Scott without Borders (Vol. I-II)

Sir. David Edward et al., 2015

William E. Kovacic: An Antitrust Tribute (Vol. I-II)

Nicolas Charbit et al. 2013-2014

Practical Law

Competition Digest – A Synthesis of EU and National Leading Cases, 3rd ed.

Frédéric Jenny, 2018

Choice - A New Standard for Competition Analysis?

Paul Nihoul et al., 2016

Grands arrêts du droit de la concurrence (Vol. I-II)

Laurence Idot, 2016

Les pratiques restrictives – L’application de l’article L. 442-6 C. com.

Erwann Kerguelen, 2015

A quoi sert la concurrence ?

Martine Behar-Touchais et al., 2014

Conference Proceedings

Antitrust in Emerging and Developing Countries – Vol II

Eleanor Fox, Harry First, 2016

Global Antitrust Law - Current Issues in Antitrust Law and Economics

Douglas Ginsburg, Joshua Wright, 2015

Antitrust in Emerging and Developing Countries – Vol. I

Eleanor Fox, Harry First, 2015

Competition Law on the Global Stage: David Gerber’s Global Competition Law in Perspective

David Gerber, 2014

PhD Theses

Buyer Power in EU Competition Law

Ignacio Herrera Anchustegui, 2017

Google, la presse et les journalistes

Guillaume Sire, 2015

L’Union européenne et le droit international des subventions

Loïc Wagner, 2015

All books are published in print and electronic formats.

Foreword

JOSHUA WRIGHT

It is our great honor and privilege to present this *Liber Amicorum* to Judge Douglas H. Ginsburg. I admit I also introduce this volume with some hesitation. For one usually introduces a volume such as this to mark the end of a distinguished career. And a distinguished career it has been. But as a significant beneficiary of Judge Ginsburg's scholarly endeavors at Scalia Law School, his guiding hand at the Global Antitrust Institute at George Mason University, and his friendship, I am particularly fond of the status quo.

Judge Ginsburg received a Bachelor of Science degree from Cornell University and his JD from the University of Chicago Law School. He then served as a clerk for Judge Carl McGowan on the D.C. Circuit and for Justice Thurgood Marshall on the Supreme Court. Following his clerkships, Judge Ginsburg began his career in academia at Harvard Law School in 1975.

Judge Ginsburg later became the Administrator of the Office of Information and Regulatory Affairs (OIRA) and then the Assistant Attorney General for the Antitrust Division of the Department of Justice. In 1987, he was nominated to the Supreme Court of the United States. Judge Ginsburg served on the D.C. Circuit Court of Appeals for more than 30 years, including as Chief Judge from 2001 to 2008. During this time, he also taught part-time at George Mason University School of Law. After taking senior status on the D.C. Circuit, Judge Ginsburg continued his career in academia teaching full time at NYU Law in 2012. He later returned to Scalia Law School at George Mason University, where he continues to serve as a

► [GO TO TABLE OF CONTENTS](#)

Professor of Law and as the Chairman of the International Advisory Board of the Global Antitrust Institute.

A robust and full *Liber Amicorum* could focus exclusively upon Judge Ginsburg’s impactful role as a jurist, or his contributions as legal scholar, or his commitment to public service, or his mentorship as a teacher. This challenge in fully capturing Judge Ginsburg’s contributions in such a volume is to explore these dimensions of achievement individually as well as to take this opportunity to reflect upon their interactions.

The essays in this *Liber Amicorum* take up this challenge admirably. Practitioners, economists, and legal scholars explore the multiple dimensions of the footprint Judge Ginsburg has left in antitrust’s landscape. Some explore in depth the impact Judge Ginsburg’s opinions and scholarship have had in specific areas of antitrust jurisprudence: horizontal restraints, the intersection of intellectual property rights and antitrust, and international antitrust. Others focus more broadly upon how we should think about Judge Ginsburg’s intellectual legacy and public service. The *Liber Amicorum* ties together these multiple dimensions of production and service to recognize and appreciate the full fruits of Judge Ginsburg’s labors in the domestic and global antitrust community.

Judge Ginsburg is remarkably generous with his time and his wisdom with colleagues, students, legal academics, clerks, and practitioners alike. He is a source of advice and counsel for those who need it, of substantive intellectual feedback for those who seek it, and of mentorship for those fortunate enough to cross his path. The beneficiaries of his generosity range from antitrust luminaries and agency leadership around the world to aspiring law students. I would be remiss if I did not acknowledge the tremendous intellectual and personal debt I owe Judge Ginsburg as a colleague, co-author, co-venturer, and friend. I intend to run that debt even deeper in the years to come as I further benefit from Judge Ginsburg’s continued dedication and commitment to his work. And so I hope selfishly – but no doubt joined by the international antitrust community that benefits from Judge Ginsburg’s insights and wisdom – this *Liber Amicorum* is necessarily incomplete and leaves room for contributions yet realized.

► [GO TO TABLE OF CONTENTS](#)

Contributors

Alden F. Abbott
The Heritage Foundation

Margaret Artz
WilmerHale

Anil Acar
ELIG, Attorneys-at-Law

Gary Born
WilmerHale

Michelle M. Burtis
CRA International

John DeQ. Briggs
Axinn

Terry Calvani
Freshfields Bruckhaus Deringer

James C. Cooper
George Mason University Antonin Scalia Law School

Daniel A. Crane
University of Michigan Law School

Susan A. Creighton
Wilson Sonsini Goodrich & Rosati

David S. Evans
Global Economics Group

Eric M. Fraser
Osborn Maledon

Jamillia P. Ferris
Wilson Sonsini Goodrich & Rosati

Damien Geradin
EUCLID Law

Hene Knable Gotts
Wachtell, Lipton, Rosen & Katz

Gönenç Gürkaynak
ELIG, Attorneys-at-Law

John D. Harkrider
Axinn

Joshua Hazan
Wachtell, Lipton, Rosen & Katz

Thu Hoang
Wilson Sonsini Goodrich & Rosati

Keith N. Hylton
Boston University School of Law

Jonathan M. Jacobson
Wilson Sonsini Goodrich & Rosati

Bruce H. Kobayashi
George Mason University Antonin Scalia Law School

Gregor Langus
European Commission

Marina Lao
Seton Hall University School of Law

Vilen Lipatov
Compass Lexecon

Ryan S. Maddock
Wilson Sonsini Goodrich & Rosati

Danielle Morris
WilmerHale

Damien Neven
Graduate Institute of International and Development Studies

Barak Orbach
University of Arizona James E. Rogers College of Law

James F. Rill
Baker Botts

Katarzyna Sadrak
EUCLID Law

Jana I. Seidl
Baker Botts

Hal S. Scott
Harvard Law School

D. Daniel Sokol
University of Florida Levin College of Law

Jacques Steenberg
Belgian Competition Authority

Richard M. Steuer
Mayer Brown

Pablo Trevisán
Comisión Nacional de Defensa de la Competencia

Esra Uçtu
ELIG, Attorneys-at-Law

Nils Wahl
Court of Justice of the European Union

Joshua D. Wright
George Mason University Antonin Scalia Law School

▶ [GO TO TABLE OF CONTENTS](#)

Table of Contents

Foreword.....	V
Contributors	VII
Table of Contents	IX
Douglas Ginsburg Biography.....	XIII

Part I: Tributes

Judge Douglas Ginsburg’s Distinguished Legacy: Prolific Scholar, Innovative Public Servant, and Pathbreaking Jurist	3
Alden F. Abbott	
An Antitrust Opera: Judge Ginsburg & The Three Tenors	19
Terry Calvani	
The Chicago Tradition and Judge Ginsburg	43
Eric M. Fraser, Barak Orbach, D. Daniel Sokol	
The Wisdom of Douglas Ginsburg and the Competition Versus Innovation Conflict	57
Keith N. Hylton	
The Contributions of Judge Douglas H. Ginsburg.....	65
Jonathan M. Jacobson	
Douglas H. Ginsburg: Antitrust’s Economic Ambassador.....	81
Joshua D. Wright	
Judge Ginsburg and Financial Regulation	95
Hal S. Scott	

[▶ GO TO TABLE OF CONTENTS](#)

Part II: New Frontiers of Antitrust

Distribution Innovation and Product Innovation113
Daniel A. Crane

Innovations Market Analysis: Twenty Years On.....129
Susan A. Creighton, Jamillia P. Ferris, Thu Hoang, Ryan S. Maddock

Concentrated Benefits and Dispersed Costs Rent-Seeking by
Incumbents Against Innovative and Disruptive Web Based Firms.....161
John D. Harkrider

Why the Dynamics of Competition for Online Platforms
Leads to Sleepless Nights, But not Sleepy Monopolies217
David S. Evans

Merger Control in High-Tech Markets257
Ilene Knable Gotts, Joshua Hazan

Why Have Antitrust?267
Richard M. Steuer

Part III: Complexities of Antitrust Rules Around the World

The Federal Arbitration Act’s Principle of Non-Discrimination289
Gary Born, Danielle Morris, Margaret Artz

Applying the Dynamic Competition Approach to Zero-Priced Markets307
Gönenç Gürkaynak, Esra Uçtu, Anıl Acar

The Effect of Optimal Penalties for Organizations Convicted of
Price Fixing in the Presence of Criminal Sanctions for Individuals.....333
Michelle M. Burtis, Bruce H. Kobayashi

Re-Designing the American Antitrust Machine Part I: Treble Damages,
Contribution and Claim Reduction357
John DeQ. Briggs

An Enquiry Meet for Profession Regulation:
Lessons from PolyGram393
James C. Cooper

▶ [GO TO TABLE OF CONTENTS](#)

The E.U. Competition Law Fining System: A Quantitative Review of the Commission Decisions Between 2000 and 2017.....	421
Damien Geradin, Katarzyna Sadrak	
Standards of Proofs in Sequential Merger Control Procedures	481
Gregor Langus, Vilen Lipatov, Damien Neven	
Erring on the Side of Antitrust Enforcement When in Doubt in Data-Driven Mergers	497
Marina Lao	
Global Convergence on Due Process Norms: Discussion and Recommendations	531
Jana I. Seidl, James F. Rill	
Interim Relief Measures in Competition Cases: A European Competition Authority’s Perspective	545
Prof. Em. Dr. Jacques Steenbergen	
Rebuilding the Argentine Antitrust House While Living in It: A View from the Trenches	561
Pablo Trevisán	
From Greek Olive Oil to Latvian Music: Is There Any Such Thing as Unfair Prices?.....	587
Nils Wahl	

Judge Douglas H. Ginsburg Biography

Career

Senior Circuit Judge Douglas H. Ginsburg was appointed to the United States Court of Appeals for the District of Columbia in 1986; he served as Chief Judge from 2001 to 2008. After receiving his B.S. from Cornell University in 1970, and his J.D. from the University of Chicago Law School in 1973, he clerked for Judge Carl McGowan on the D.C. Circuit and Justice Thurgood Marshall on the United States Supreme Court. Thereafter, Judge Ginsburg was a professor at the Harvard Law School, the Deputy Assistant and then Assistant Attorney General for the Antitrust Division of the Department of Justice, as well as the Administrator of the Office of Information and Regulatory Affairs in the Office of Management and Budget. Concurrent with his service as a federal judge, Judge Ginsburg has taught at the University of Chicago Law School and the New York University School of Law. Judge Ginsburg is currently a Professor of Law at the Antonin Scalia Law School, George Mason University, and a visiting professor at University College London, Faculty of Laws.

Judge Ginsburg is the Chairman of the International Advisory Board of the Global Antitrust Institute at the Antonin Scalia Law School, George Mason University. He also serves on the Advisory Boards of: Competition Policy International; the Harvard Journal of Law and Public Policy; the Journal of Competition Law and Economics; the Journal of Law, Economics and Policy; the Supreme Court Economic Review; the University of Chicago Law Review; The New York

► [GO TO TABLE OF CONTENTS](#)

University Journal of Law and Liberty; and, at University College London, both the Center for Law, Economics and Society and the Jevons Institute for Competition Law and Economics.

Education

Judge Ginsburg obtained his B.S. degree from Cornell University in 1970 and his J.D. from the University of Chicago Law School in 1973.

Publications

Books and Monographs

GLOBAL ANTITRUST ECONOMICS - CURRENT ISSUES IN ANTITRUST AND LAW AND ECONOMICS (with Joshua D. Wright; Institute of Competition Law March 21, 2016)

REGULATION OF THE ELECTRONIC MASS MEDIA: LAW AND POLICY FOR RADIO, TELEVISION, CABLE AND THE NEW VIDEO TECHNOLOGIES, SECOND EDITION (with M. Botein and M. Director; West, 1991)

1983 SUPPLEMENT TO REGULATION OF BROADCASTING: LAW AND POLICY TOWARDS RADIO, TELEVISION AND CABLE COMMUNICATIONS (with M. Director; West, 1983)

INTERSTATE BANKING, 9 HOFSTRA LAW REV. 1133-1371 (Special Issue 1981)

REGULATION OF BROADCASTING: LAW AND POLICY TOWARDS RADIO, TELEVISION AND GOVERNMENT, TECHNOLOGY, AND THE FUTURE OF THE AUTOMOBILE (editor, with W. Abernathy; McGraw-Hill, 1980)

ANTITRUST, UNCERTAINTY, AND TECHNOLOGICAL INNOVATION (National Academy of Engineering/National Research Council, 1980), reprinted at 24 ANTITRUST BULL. 635 (1980)

CABLE COMMUNICATIONS (West, 1979)

[▶ GO TO TABLE OF CONTENTS](#)

Articles and Book Chapters

Common Ownership (forthcoming 2018);

FRAND in India, in *COMPLICATIONS AND QUANDARIES IN THE ICT SECTOR: STANDARD ESSENTIAL PATENTS AND COMPETITION ISSUES* (Ashish Bharadwaj et al. eds., 2018) (with Joshua D. Wright, Bruce H. Kobayashi, and Koren W. Wong-Ervin) ;

The Department of Justice's Long-Awaited and Much Needed Course-Correction on FRAND-Assured Standard-Essential Patents, *COMP. POL'Y INT'L N. AM. COLUMN*, Nov. 2017 (with Koren W. Wong-Ervin);

The Economic Analysis of Antitrust Consents, in *Tribute to Henry Manne*, 2017 *EUROPEAN JOURNAL OF LAW AND ECONOMICS* (with Joshua Wright) (forthcoming);

Extraterritoriality and Intra-Territoriality in US Antitrust Law, 2017 *COMP. POL'Y INT'L.*, Sept. 28., 2017 (with Josh Hazan);

A Comparative And Economic Analysis Of The U.S. FTC's Complaint And The Korea FTC's Decision Against Qualcomm, 1 *ANTITRUST CHRONICLE*, Spring 2017 (with Koren Wong-Ervin, Anne Layne-Farrar et al.);

Extra-Jurisdictional Remedies Involving Patent Licensing, 12 *COMP. POL'Y INT'L.*, NO. 2, at 41 (2016) (with Joshua D. Wright, Bruce Kobayashi, and Koren W. Wong-Ervin);

Our Illiberal Administrative Law, 10 *N.Y.U. J. OF L. & LIBERTY* 475 (2016) (with Steven Menashi);

The FTC PAE Study: A Cautionary Tale About Making Unsupported Policy Recommendations, *AM. BAR ASS'N SECTION OF ANTITRUST L. INTELL. PROPERTY COMM. NEWSL.* (2016)(with Joshua D. Wright);

Monetary Penalties in China and Japan, *AM. BAR ASS'N SECTION OF ANTITRUST L. CARTEL & CRIMINAL PRACTICE NEWSL.* (2016)(with Joshua D. Wright, Bruce Kobayashi, Ariel Slonim, and Koren W. Wong-Ervin);

The Costs and Benefits of Antitrust Consents, *OECD COMPETITION COMM. DAF/COMP/WD(2016)81* (2016) (with Joshua D. Wright), available at: [https://one.oecd.org/document/DAF/COMP/WD\(2016\)81/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2016)81/en/pdf);

► [GO TO TABLE OF CONTENTS](#)

Goals of Antitrust: Welfare Trumps Choice, reprinted in CHOICE - A NEW STANDARD FOR COMPETITION LAW ANALYSIS? (P. Hihoul, N. Charbit, & E. Ramundo, eds., 2016);

In Memoriam: Justice Scalia's Antitrust Legacy, CONCURRENCES REVIEW, p.8 (2016);

'Excessive Royalty' Prohibitions and the Dangers of Punishing Vigorous Competition and Harming Incentives to Innovate, CPI ANTITRUST CHRONICLE, Vol. 4, No. 3, (2016) (with Joshua D. Wright, Bruce Kobayashi, and Koren W. Wong-Ervin);

Reverse Settlements in the European Union and the United States, in COMPETITION AND PATENT LAW IN THE PHARMACEUTICAL SECTOR: AN INTERNATIONAL PERSPECTIVE 125 (Giovanni Pitruzzella & Gabriella Muscolo eds., 2016) (with Damien Geradin and Graham Safty);

Product Hopping and the Limits of Antitrust: The Danger of Micromanaging Innovation, *Competition Policy International*, ANTITRUST BULLETIN, DECEMBER (2015) (with Joshua D. Wright and Koren W. Wong-Ervin);

The Troubling Use of Antitrust to Regulate FRAND Licensing, CPI ANTITRUST CHRONICLE, VOL. 10, NO.1 PP.2-8, (2015) (with Joshua D. Wright and Koren W. Wong-Ervin);

DOJ Has the Power to Crush Price-Fixers: Column, USA TODAY WEEKEND, MAY 29-31, (2015) (with Albert Foer);

Actavis and Multiple ANDA Entrants: Beyond the Temporary Duopoly, 29, ANTITRUST 89 (2015), NO. 2, SPRING (2015) (with Bruce Kobayashi, Joshua D. Wright and Joanna Tsai);

Bork's "Legislative Intent" and the Courts, 79 ANTITRUST L. J. 3 (2015);

Rational Basis with Economic Bite, 8 N.Y.U. J. OF L. & LIBERTY 1055 (2014) (with Steven Menashi);

Since Bork, 10 J. L. ECON. & POL'Y 599 (2014) (with Taylor M. Owings);

Enjoining Injunctions: The Case Against Antitrust Liability for Standard Essential Patent Holders Who Seek Injunctions, ANTITRUST SOURCE, Oct. 2014, at 1 (with Taylor M. Owings and Joshua D. Wright);

► [GO TO TABLE OF CONTENTS](#)

Patent Assertion Entities and Antitrust: A Competition Cure for a Litigation Disease, 79 ANTITRUST L. J. 501 (2014) (with Joshua D. Wright);

Resolving Conflicts between Competition and Other Values: The Roles of Courts and Other Institutions in the U.S. and the E.U., in EUROPEAN COMPETITION LAW ANNUAL 2012: PUBLIC POLICIES, REGULATION AND ECONOMIC DISTRESS (Philip Lowe & Mel Marquis eds., 2014) (with Daniel E. Haar);

Bork's "Legislative Intent" and the Courts, 79 ANTITRUST L.J. 941 (2014);

Whither Symmetry? Antitrust Analysis of Intellectual Property Rights at the FTC and DOJ, 9 COMP. POL'Y INT'L., No. 2, at 41 (2013) (with Joshua D. Wright);

Antitrust Settlements: The Culture of Consent, CONCURRENCES, No. 2–2013, at 56 (with Joshua D. Wright);

Antitrust Courts: Specialists versus Generalists, 36 FORDHAM INT'L. L.J. 788 (2013) (with Joshua D. Wright);

Dynamic Economics in Antitrust Analysis, 78 ANTITRUST L.J. 1 (2012) (with Joshua D. Wright);

Behavioral Law and Economics: Its Origins, Fatal Flaws, and Implications for Liberty, 106 NW. U. L. REV. 1033 (2012) (with Joshua D. Wright); *reprinted in* LAW AND ECONOMICS: PHILOSOPHICAL ISSUES AND FUNDAMENTAL QUESTIONS (Aristides N. Hatzis & Nicholas Mercurio eds., 2015);

The Role of Economic Analysis in Competition Law, in GETTING THE BALANCE RIGHT: INTELLECTUAL PROPERTY, COMPETITION LAW, AND ECONOMICS IN ASIA (Ian McEwin ed., 2011) (with Eric M. Fraser);

Originalism and Economic Analysis: Two Case Studies of Consistency and Coherence in Supreme Court Decision Making, 33 HARV. J. OF L. & PUBLIC POL'Y 217 (2010);

Antitrust Sanctions, 6 COMP. POL'Y INT'L, No. 2, at 3 (2010) (with Joshua D. Wright);

The Future of Behavioral Economics in Antitrust Jurisprudence, 6 COMP. POL'Y INT'L No. 1, at 89 (2010) (with Derek W. Moore);

The Costs and Benefits of Private and Public Antitrust Enforcement: An American Perspective, in COMPETITION LAW AND ECONOMICS: ADVANCES IN COMPETITION POLICY AND ANTITRUST ENFORCEMENT (Abel M. Mateus & Teresa Moreira, eds., 2010);

Rethinking Cartel Sanctions, 6 COMP. POL'Y INT'L (2010) (with Joshua Wright);

The Role of Economic Analysis in Competition Law, in GETTING THE BALANCE RIGHT: INTELLECTUAL PROPERTY, COMPETITION LAW, AND ECONOMICS IN ASIA (Ian McWein ed., 2010) (with Eric M. Fraser);

Appellate Courts and Independent Experts, 60 CASE WESTERN L. REV. 303 (2010);

The Prosecutor and Post-Conviction Claims of Innocence: DNA and Beyond?, 7 OHIO STATE J. OF CRIM. L. 771 (2010) (with Hyland Hunt);

The Future of Behavioral Economics in Antitrust Jurisprudence, 6 COMP. POL'Y INT'L 89 (2010) (with Derek W. Moore);

Originalism and Economic Analysis: Two Case Studies of Consistency and Coherence in Supreme Court Decision Making, 33 HARV. J. OF L. & PUB. POL'Y 217 (2010);

Nondelegation and the Unitary Executive, 12 U. PA. J. CONST. L. 251 (2010) (with Steven Menashi);

The Costs and Benefits of Private and Public Antitrust Enforcement - An American Perspective, in COMPETITION LAW AND ECONOMICS: ADVANCES IN COMPETITION POLICY ENFORCEMENT IN THE EU AND NORTH AMERICA (Abel M. Mateus & Teresa Moreira. eds., 2010);

Antitrust Decisions of the Supreme Court, 1967-2007, 3 COMP. POL'Y INT'L., No. 2, at 3 (2007) (with Leah Brannon);

Synthetic Competition, 16 MEDIA L. & POL'Y 1 (2006);

ARTICLE I, SECTION 1, LEGISLATIVE VESTING CLAUSE, in THE HERITAGE GUIDE TO THE CONSTITUTION (Edwin Meese, III ed.) (2005);

Comparing Antitrust Enforcement in the United States and Europe, 1 J. COMP. L. & ECON. 427 (2005);

► [GO TO TABLE OF CONTENTS](#)

Determinants of Private Antitrust Enforcement in the United States, Vol. 1, No. 2
COMP. POL. INT'L 29 (2005) (with L. Brannon);

On Constitutionalism, CATO SUPREME COURT REVIEW 7 (2003);

The Court En Banc: 1991-2002, 70 GEO. WASH. L. REV. 259 (2002) (with B.
Boynton);

International Antitrust: 2000 and Beyond, 68 ANTITRUST L.J. 571 (2000);

Multinational Merger Review: Lessons From Our Federalism, 68 ANTITRUST
L.J. 219 (2000) (with S. Angstreich);

Foreword: "An Open Letter to Vice President Gore," in ENVIRONMENTAL
GORE (J.A. Baden ed., 1995) ;

Legal Responses to Bounded Rationality in German Administration: Comment,
150 J. OF INSTITUTIONAL & THEORETICAL ECON. 163 (1994);

Blackmail: An Economic Analysis of the Law, 141 U. PA. L. REV. 1849 (1993)
(with P. Shechtman);

Nonprice Competition, 38 ANTITRUST BULL. 83 (1993);

*A Property Rights Analysis of the Inefficiency of Investment Decisions by Labor-
Managed Firms: Comment*, 148 J. OF INSTITUTIONAL AND THEORETICAL
ECON. 45 (1992);

Antitrust as Antimonopoly, REGULATION (Summer 1991);

Vertical Restraints: De Facto Legality Under the Rule of Reason, 60 ANTITRUST
L.J. 67 (1991);

The Court En Banc: 1981-1990, 59 GEO. WASH. L. REV. 1008 (1991) (with D.
Falk);

Rationalizing Antitrust: A Rejoinder to Professor Armentano 35 ANTITRUST
BULL. (1990), *reprinted in* 2 THE ANTITRUST IMPULSE 933 (Theodore P.
Kovaleff, ed., 1994);

The Appropriate Role of the Antitrust Enforcement Agencies, 9 CARDOZO L.
REV. 1277 (1988);

► [GO TO TABLE OF CONTENTS](#)

White House Review of Agency Rulemaking, 99 HARV. L. REV. 1075 (1986) (with C. DeMuth);

The Case Against Federal Intervention in the Market for Corporate Control, 4 BROOKINGS REV. 15 (Winter/Spring 1986), *reprinted at* 32 U. OF CHICAGO L. SCHOOL RECORD 14 (1986) (with J. Robinson);

The Future of Interstate Banking, 9 J. CORP. L. 655 (1984), *reprinted at* 26 CORP. PRAC. COMMENTATOR 469 (1985);

Rights of Excess: Cable and the First Amendment, 6 COMMUNICATIONS AND THE LAW 71 (1984);

Regulating Television Violence, NAE workshop mimeo (1983);

Interstate Banking: A Preview of the Issues, ABA BANKING J. (1983);

The New Illinois Bank Holding Company Act, 99 BANK L. J. 598 (1982);

Making Automobile Regulation Work: Policy Options and a Proposal, in D. GINSBURG & W. ABERNATHY, *supra* Books, *reprinted in* 2 HARV. J. L. & PUB. POL'Y 73 (1979);

Ernst Freund and the First Amendment Tradition: Afterword, 40 U. CHICAGO L. REV. 235 (1973)

Book Reviews

The Behavior of Federal Judges: A view from the D.C. Circuit, review by Lee Epstein, William Landes & Richard Posner, *The Behavioral of Federal Judges*, 97 JUDICATURE (No. 2, 2013);

Rationalism in Regulation, review of Richard Revesz & Michael Livermore, *Retaking Rationality: How Cost Benefit Analysis Can Better Protect the Environment and Our Health*, 110 MICH. L. REV. 877 (2010) (with Christopher C. DeMuth);

Competition Rules for the 21st Century: Principles from America's Experience, by Ky P. Ewing, 103 MICH. L. REV. (2004);

Money for Nothing: Politicians, Rent Extraction, and Political Extortion, by Fred S. McChesney, 97 MICH. L. REV. 6 (1999);

► [GO TO TABLE OF CONTENTS](#)

Power Without Responsibility: How Congress Abuses the People Through Delegation, by David Schoenbrod, REGULATION MAGAZINE No. 1 (1995);

Enterprise and American Law, by Herbert Hovenkamp, 75 PUBLIC CHOICE 396 (1993);

The Litigation Explosion, by Walter Olsen, 90 MICH. L. REV. 1609 (1992);

Regulation and Its Reform, Stephen Breyer, 20 HARV. J. LEGIS. 647 (1983);

Reluctant Regulators: The FCC and the Broadcast Audience, by Barry Cole & Mal Oettinger, 30 FED. COMMUNICATIONS L. J. 173 (1978)

Occasional Papers

Comment on the Canadian Competition Bureau's White Paper, "Big Data and Innovation: Implications for Competition Policy in Canada" (The Global Antitrust Institute, Antonin Scalia Law School, George Mason University, November 29, 2017)

Comment on the Japan Patent Office's Tentative Guidelines on Licensing Negotiations Involving SEPs (The Global Antitrust Institute, Antonin Scalia Law School, George Mason University, November 10, 2017);

Comment on the Proposed Revisions to the People's Republic of China Anti-Unfair Competition Law (The Global Antitrust Institute, George Mason University School of Law. March 19, 2017);

Comment on the U.S. Antitrust Agencies' Proposed Update of the Antitrust Guidelines for the Licensing of Intellectual Property (The Global Antitrust Institute, George Mason University School of Law. September 20, 2016);

Comment on the Proposed Revisions to the Guidelines of the Anti-Monopoly Commission of the State Council on Determining the Illegal Gains Generated from Monopoly Conduct and on Setting Fines (The Global Antitrust Institute, George Mason University School of Law. July 9, 2016);

Comment on the Japan Fair Trade Commission's Consultation on the Administrative Surcharge System (The Global Antitrust Institute, George Mason University School of Law. August 6, 2016);

► [GO TO TABLE OF CONTENTS](#)

Comment on the India Department of Industrial Policy and Promotion's Discussion Paper on Standard Essential Patents (The Global Antitrust Institute, George Mason University School of Law. March 31, 2016);

Comment on the Proposed Revisions to the People's Republic of China Anti-Unfair Competition Law (The Global Antitrust Institute, George Mason University School of Law. March 24, 2016);

Comment on National Development and Reform Commission's Draft Anti-Monopoly Guideline on Intellectual Property Abuse (The Global Antitrust Institute George Mason University School of Law. January 13, 2016);

Comment on the State Administration for Industry and Commerce Anti-Monopoly Guidelines on the Abuse of Intellectual Property Rights (The Global Antitrust Institute, George Mason University School of Law. January 11, 2016);

Comment on the Korea Fair Trade Commission's Amendment to its Review Guidelines on Unfair Exercise of Intellectual Property Rights (The Global Antitrust Institute, George Mason University School of Law. January 3, 2016);

Comment on the European Commission's Public Consultation on the Regulatory Environment for Platforms (The Global Antitrust Institute, George Mason School of Law. December 29, 2015);

Comment on the Questionnaire for the Revision of China's Anti-Monopoly Law, (The Global Antitrust Institute, George Mason University School of Law. December 10, 2015);

Comment to China's National Development and Reform Commission's (NDRC's) Anti-Monopoly Guide on Abuse Intellectual Property Rights, (The Global Antitrust Institute, George Mason University School of Law. November 12, 2015);

Comment on the Korea Fair Trade Commission's Revised Review Guidelines On Unfair Exercise of Intellectual Property Rights (The Global Antitrust Institute, George Mason University School of Law. October 5, 2015);

Comment on China's NDRC's Questionnaire on Intellectual Property Rights Misuse Antitrust Guidelines (The Global Antitrust Institute, George Mason University School of Law. September 30, 2015);

► [GO TO TABLE OF CONTENTS](#)

Comment on the Japan Fair Trade Commission's Draft Partial Amendment to the Guidelines for the Use of Intellectual Property Under the Antimonopoly Act (George Mason Legal Studies, Research Paper No. LS 15-13, 2015) (with Joshua D. Wright);

Comment on the Canadian Competition Bureau's Draft Updated Intellectual Property Enforcement Guidelines (George Mason Legal Studies, Research Paper No. LS 15-14, 2015) (with Joshua D. Wright);

Introduction to *R.H. Bork, Legislative Intent and the Policy of the Sherman Act*, 2 COMP. POL'Y INT'L 225 (2006); excerpted at *Judge Bork, Consumer Welfare, and Antitrust Law*, 31 HARV. J. L. & PUB. POL'Y 449 (2008);

Reflections of the Twenty-Fifth Anniversary of the Harvard Journal of Law & Public Policy, 25 HARV. J. L. & PUB. POL'Y 835 (2002);

Preface, First Amendment Law Handbook, 1997-98 Ed. (1997);

Introduction: Competitive Enterprise Institute, ANTITRUST READER (1997);

The Goals of Antitrust Revisited: Comment, 147 J. OF INSTITUTIONAL & THEORETICAL ECON. 24 (1991);

Introduction, Federal Spending and the Deficit: Is a Constitutional Remedy Necessary? 11 GEO. MASON L. REV. 115 (1989);

In Memoriam: Judge Carl McGowan, 56 GEO. WASH. L. REV. (1988);

The Reagan Administration's Legislative Initiative in Antitrust, 31 ANTITRUST BULL. 851 (1986)

Selected Presentations

Judge Richard Posner on Antitrust Remedies (ABA Section of Antitrust Law, Washington, DC, April 12, 2018);

International Antitrust Policy in the Trump Administration (Heritage Foundation, Washington, DC, January 23, 2018);

Extraterritorial Reach of Remedies (OECD Competition Committee, Paris, France, December 5, 2017)

Antitrust and the Economics of Vertical Restraints (Ministry of Industry and Informational Technology, Beijing, China, November 29, 2017);

The Legacy of Goldfarb v. Virginia (ABA Section of Antitrust Law, Washington, DC, March 29, 2017);

Speaker, China Competition Policy Forum – Implementation of Competition Policy in Supply-side Structural Reform (Beijing, China - October 27-28, 2016);

Is territoriality still meaningful?, New Frontiers of Antitrust, Paris, 7th International Concurrences Review Conference (June 13, 2016) (with Joshua Hazan);

Antitrust Policy to Benefit Companies and Consumers Alike, Forum for EU-US Legal Economic Affairs (Brussels, Belgium - April 12, 2016);

Antitrust in High-Tech Markets, Second Advanced Conference on Contemporary Competition Law Issues (Istanbul, Turkey - March 11, 2016);

FTC v. NC Dental Board, Where Administrative Law Meets Antitrust, ABA Section of Administrative Law and Regulatory Practice, Administrative Law Conference (Washington, DC - October 29, 2015);

Non-practicing Entities, Patent Assertion Entities, and Antitrust, 2015 Innovation and Competition Forum at the University of International Business and Economics (Beijing, China - October 12, 2015);

Hot Topics in Antitrust Law Competition and Global Economy, University of Chicago Alumni Law Society (Chicago, IL - April 13, 2015);

Discovery and Creation in the Common Law, Mont Pelerin Society (Lima, Peru – March 24, 2015

Speaker, *The United States Department of Justice (DOJ), Obama Administration Antitrust Policies: A Report Card*, Heritage Foundation (Washington, DC - January 29, 2015);

Regulating Competition in High Tech Industries, Federalist Society, Silicon Valley Chapter (Silicon Valley, CA - November 8, 2014);

Judicial Ethics & Election Law in the United States, (Mexico City - August 26, 2014);

► [GO TO TABLE OF CONTENTS](#)

Competition and the Administrative State, Transatlantic Legal Forum, Annual Conference (Hamburg, Germany - June 10, 2014);

Un autre regard, Cour de Cassation, 130ème anniversaire du Conseil supérieur de la magistrature, « la contribution des Conseils de Justice à la séparation des pouvoirs » (Paris, France - October 25, 2013);

Problems of Adjudication in Competition Law Cases, International League of Competition Law, Oxford Congress (Oxford, England - September 22, 2011);

DNA & Post-Conviction Exonerations, Federalist Society, Florida International University Student Chapter (Miami, FL - April 19, 2011);

Speaker, Federal Antimonopoly Service of Russia, Competition Development in Russia (Moscow, Russia - July 8-9, 2010);

Speaker, Cartel Sanctions and the Balance of Optimal Enforcement, University College London, Jevons Institute Advanced Training for Judges in Competition Law and Economics, (February 2010);

Presentations on “Private Enforcement” and “Market Dominance”; panels on *Conwood v. U.S. Tobacco* and *3M v. LaPage*’s, China Intellectual Property Training Centre, Private Enforcement of Antimonopoly Law in China and the US (Beijing, China - October 26-30, 2009).

Innovations Market Analysis: Twenty Years On

SUSAN A. CREIGHTON

JAMILLIA P. FERRIS

THU HOANG

RYAN S. MADDOCK*

Wilson Sonsini Goodrich & Rosati

Abstract

Concerns about innovation are often front-and-center in merger review and are regularly expressed by regulators, policy makers, and other stake-holders. However, the antitrust agencies have provided little guidance on how they define and examine innovation *markets* as distinct from a lessening of innovation competition in traditionally-defined product markets. It has been over 20 years since the FTC last explicitly addressed innovation markets in a policy statement and 13 years since then-Chairman Muris’s influential closing statement in Novazyme/Genzyme explained how mergers could enhance innovation. With a new administration beginning its work at the FTC and DOJ—and innovation concerns continuing to be an area of policy focus around the globe, it is the right time for a reexamination of innovation market analysis and the latest economic thinking. In this article, we review the FTC’s findings on innovation markets expressed in there 1996 report

* The authors practice antitrust law at Wilson Sonsini Goodrich & Rosati. The views expressed are their own, and not those of the firm or any firm client.

► [GO TO TABLE OF CONTENTS](#)

on competition policy in high-tech markets, the subsequent United States and European Union innovation markets cases, recent developments in economic literature about how mergers influence innovation, and ultimately argue that the time is ripe for agencies to clarify their thinking on this important issue.

I. Introduction

Megan Crowley was just fifteen months old when she was diagnosed with Pompe disease, a rare genetic disorder. Her doctors believed she would not live to see her sixth birthday. John Crowley, determined to save his daughter Megan, started a company called “Novazyme” that focused on developing a treatment for this fatal disease. Although Novazyme’s enzyme never made it to market, it became part of a company (Genzyme) that ultimately developed a treatment for Pompe disease that saved Megan’s life. Now, almost twenty years later, she is a junior at Notre Dame University (and an avid blogger),¹ and among those whose encouraging life stories were noted by President Trump during an address to a joint session of the United States Congress in early 2017.

The Crowleys’ story helps to illustrate the important real-world dimensions that can lie behind the seemingly-abstract innovation competition issues that can arise in antitrust merger reviews, such as those that were at issue in the Federal Trade Commission’s (FTC or Commission) 2004 review of Genzyme’s acquisition of Novazyme. At the time of the merger, Genzyme and Novazyme were the only two companies active in the development of an enzyme replacement therapy for Pompe disease. In closing the post-merger investigation of the transaction, a majority of the FTC’s commissioners determined that the merger was likely to increase the chances of the parties successfully and quickly developing a drug, “and thus patients’ lives [we]re more likely to be saved by this merger than to be put at risk.”² With the happy coda of Megan Crowley’s success, we now know that what seemed

1 Megan Crowley, HIGH HEELED WHEELS, <https://highheeledwheels.com>.

2 Timothy J. Muris, Chairman, Fed. Trade Comm’n, Statement in the Matter of Genzyme Corp. and Novazyme Pharm., Inc., FTC File No. 021-0026 (Jan. 13, 2004), <https://www.ftc.gov/system/files/attachments/press-releases/ftc-closes-its-investigation-genzyme-corporations-2001-acquisition-novazyme-pharmaceuticals-inc./murisgenzymestmt.pdf>.

▶ [GO TO TABLE OF CONTENTS](#)

like no more than a distant hope at the time of the FTC’s analysis ultimately became a life-saving reality.

With concerns about innovation competition playing a front-and-center role in the review of recent transactions both in the United States and the European Union, it is perhaps a good time to review antitrust law’s experience with analyzing innovation competition in the context of “innovation markets”—a concept first introduced into antitrust merger review in the mid-1990s, which was front and center in the FTC’s *Novazyme/Genzyme* review. The consideration of an “innovation market” was, and is, different from analysis of a merger’s effect on innovation *competition*. Harm to innovation competition is alleged when there is evidence that the merging firms’ drive to innovate or introduce new or improved products will be reduced, resulting in harm to a specific relevant product market.³ An analysis of innovation competition thus focuses on competitive harm in an identifiable *product* market.⁴ In contrast, the cases and doctrine which are the focus of this article examine merger challenges that specifically allege harm to *innovation or R&D* markets—that is, the proposed merger would reduce the number of entities engaged in a development or R&D activity, which in turn would harm competition.

This article will begin by discussing the FTC’s 1995 hearings and subsequent report titled, *Anticipating the 21st Century: Competition Policy in the New High-Tech, Global Marketplace* (1996 Report), which summarized the then-current economic understanding of issues relating to “innovation and the assessment of competitive effects” in innovation markets—an idea that was introduced into U.S. antitrust analysis in the *Antitrust Guidelines for the Licensing of Intellectual Property* (IP Guidelines) issued in 1995. *Second*, this article will discuss United States and European Union merger cases in which antitrust enforcers have found or appear to have considered competitive harm in innovation markets in sectors

3 Gilbert and Greene studied FTC and DOJ merger challenges from 2004-2014 and found that the agencies cited innovation concerns in approximately 34% of the challenges. The authors also found that the agencies are more likely to cite innovation concerns when challenging a merger in an R&D intensive industry. Richard J. Gilbert & Hillary Green, *Merging Innovation into Antitrust Agency Enforcement of the Clayton Act*, 83 GEO. WASH. L. REV. 1919 (2015).

4 Terrell McSweeney, Comm’r, Fed. Trade Comm’n, Competition Law: Keeping Pace in a Digital Age, Keynote Remarks at 16th Annual Loyola Antitrust Colloquium, at 3-5 (Apr. 15, 2016), https://www.ftc.gov/system/files/documents/public_statements/945343/mcsweeney_-_loyola_antitrust_colloquium_keynote_4-15-16.pdf (citing recent merger challenges examples of harm to innovation in merger analysis).

► [GO TO TABLE OF CONTENTS](#)

where R&D is secret (which is the case in most industries). *Third*, this article will examine how innovation market analysis is applied to pharmaceutical mergers, which is a special case because pharmaceutical manufacturers have uniquely transparent R&D pipelines. *Finally*, this article will examine recent economic analysis of innovation markets and argue that the time is ripe for the antitrust agencies to update the FTC’s 1996 Report in light of the agencies’ experience in applying innovation market analysis as well as economic learning gained in the twenty years since the report was issued.

II. The FTC’s 1996 Report

In late 1995, the FTC held twenty-three days of hearings “on whether there [had] been broad-based changes in the contemporary competitive environment that warrant[ed] any adjustments in competition and consumer protection policy[.]”⁵ During the extensive hearings, more than 100 witnesses testified on a broad range of topics. These witnesses were some of the most important antitrust thinkers of the day and included three future FTC Commissioners, Tim Muris, Bill Kovacic, and Tom Rosch, as well as Joseph Stiglitz, Steve Salop, Herbert Hovenkamp, and numerous other scholars, economists, and business leaders. The hearings resulted in the extensive, 304-page, 1996 Report.

One of the most influential chapters in the FTC’s report addressed “innovation and the assessment of competitive effects” and discussed innovation markets, their role in merger analysis, and how they differed from the “potential competition doctrine.”⁶ The IP Guidelines, when introducing the concept of innovation markets in 1995, defined an innovation market as “the research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development.”⁷ In a speech describing the IP Guidelines, then-Deputy Assistant Attorney General Richard Gilbert explained “[u]sing an innovation

5 U.S. FED. TRADE COMM’N, *ANTICIPATING THE 21ST CENTURY: COMPETITION POLICY IN THE NEW HIGH-TECH, GLOBAL MARKETPLACE*, Appendix B (1996) [hereinafter 1996 REPORT].

6 *See id.* ch. 7.

7 U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, *ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY* (1995), *reprinted in* 4 Trade Reg. Rep. (CCH) ¶ 13,132, <https://www.justice.gov/sites/default/files/atr/legacy/2006/04/27/0558.pdf> [IP GUIDELINES].

market to analyze competitive effects is appropriate if the competitive effects of an arrangement cannot be adequately analyzed in conventional product markets.”⁸

When the FTC issued the 1996 Report, the idea of an “innovation market” and the method by which to assess anticompetitive reductions in competition in such markets remained uncertain and controversial.⁹ In particular, as explained in the report, innovation market analysis is “somewhat unusual” because it requires consideration of anticompetitive conduct that “would take place in the current market in which innovation competition is occurring, but the anticompetitive effects would only become manifest in the future, and then only as ‘non-events,’ rather than ‘events.’”¹⁰ The FTC explained that these “non-events” could take several forms, the most obvious of which would be the loss of an innovation that would have occurred but-for the merger; however, competitive harm could also arise if the innovated product was inferior to the product that would have been introduced but-for the merger or if the innovated product was introduced later than it would have been in the non-merger world.¹¹ The report cautioned that when assessing competitive harm, antitrust analysis should focus on anticompetitive conduct and an assessment of the combined firm’s likely post-merger conduct.¹²

Further, the 1996 Report addressed two “basic categories of objections” to the analysis of innovation markets in antitrust cases: (a) whether there was a relationship between concentration and innovation, and (b) whether any firm could monopolize innovation. With respect to the first category, the FTC reported that several hearing participants concluded that there was insufficient economic evidence to determine that there was a correlation between market concentration and reductions in innovation and therefore antitrust “cannot predict with any confidence specific individual circumstances in which increased concentration would be likely to lead

8 Richard J. Gilbert, Deputy Assistant Att’y Gen., U.S. Dep’t of Justice, The 1995 Antitrust Guidelines for the Licensing of Intellectual Property: New Signposts for the Intersection of Intellectual Property and the Antitrust Laws, Address at the ABA Section of Antitrust Law Spring Meeting (Apr. 6, 1995), <https://www.justice.gov/atr/speech/1995-antitrust-guidelines-licensing-intellectual-property>.

9 1996 REPORT, *supra* note 5, ch. 7, at 1-2.

10 *Id.* at 14.

11 *Id.*

12 *Id.* at 15.

to competitive effects on innovation.”¹³ Richard T. Rapp, President of National Economic Research Associates, opined that “[a] decrease in the number of firms engaged in related or overlapping R&D projects does not reliably signal whether total R&D activity or innovation output in the market will either increase or decrease as a result.”¹⁴ Some experts at the hearings further argued that without robust economic theory behind agency enforcement actions, the FTC would risk harming innovation through over-enforcement.¹⁵ For example, it is unquestionably procompetitive if a merged firm could produce the same innovation for less investment than the two firms operating independently. Even though the total R&D dollars on the project decreased, consumers still receive the same innovation and the post-merger firm is free to use that excess capital in other procompetitive ways.¹⁶ In this example, a regulator may be tempted to simply look at the reduction in R&D expenditures and conclude that the proposed transaction harmed innovation, rather than evaluate whether the merger was actually pro-competitive through a more efficient allocation of R&D spending. With respect to the second objection, multiple witnesses argued that it is extremely difficult to monopolize innovation, and thus “the use of innovation market analysis to assess a merger’s competitive effects is unnecessary.”¹⁷ Witnesses argued that a firm’s attempts to monopolize innovation would fail because “there are likely many other technologies from which alternatives to current innovation efforts could develop” and that there was little evidence to support the theory that “research [was] being anticompetitively suppressed.”¹⁸

The FTC addressed both arguments but ultimately concluded that the agency should consider innovation markets where the facts dictate it. The FTC acknowledged that “it may be difficult to distinguish between procompetitive and anticompetitive combinations of innovation efforts” and further agreed that “antitrust enforcers should not equate R&D expenditures” with a “fail-safe measure” of a merger’s effect on innovation.¹⁹ Nonetheless, the report asserts that economics,

13 *Id.* at 16.

14 *Id.* at 17, n.51.

15 *Id.* at 17.

16 *Id.*

17 *Id.* at 20.

18 *Id.* at 20-21.

19 *Id.* at 19.

most notably Kenneth Arrow’s seminal work *Economic Welfare and the Allocation of Resources for Invention*,²⁰ had identified a number of specific circumstances where a monopolist would have a disincentive to invest in future innovation or would be incentivized to end or reduce current innovation efforts. In particular, this is the case if the innovation could result in a product that would likely “cannibalize sales of the monopolist’s current product.”²¹ The key to balancing concerns about under- and over-enforcement in innovation markets, the report argues, is “a careful, intense factual investigation” to determine whether reductions in R&D would generate procompetitive efficiencies or harm consumers through reductions in innovation.²²

The FTC also asserted that while there may be several situations where it is unlikely that a firm could monopolize innovation, there are other examples where a merger could significantly harm consumers and reduce innovation. To illustrate their argument, the FTC hypothesized a merger of two pharmaceutical firms:

[S]uppose a proposed merger would combine two innovation efforts competing toward the development of drugs for the same indication, and each innovation effort was within two years of FDA approval, with a third effort about seven years away from FDA approval. In such circumstances, the merged firm could slow innovation efforts for as much as five years before any other firm could catch up.²³

Several of the witnesses at the hearings argued that antitrust agencies should use the more-developed potential competition doctrine²⁴ to assess a merger’s impact on innovation—an argument the FTC rejected because it would likely lead to over-enforcement by assuming that the post-merger firm would eliminate or reduce

20 Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *ESSAYS IN THE THEORY OF RISK-BEARING* 144, 157 (3d ed. 1976).

21 1996 REPORT, *supra* note 5, ch. 7, at 19.

22 *Id.* at 20.

23 *Id.* at 21.

24 The report noted that there are two distinct iterations of the potential competition doctrine: (1) “actual potential competition,” which asks “whether a potential merger might prevent the deconcentration of already concentrated market,” and (2) “perceived potential competition,” which “focuses on whether a potential merger might eliminate a “perceived potential entrant” whose presence already has a procompetitive effect on the market.” However, the FTC focused its analysis on arguments related only to actual potential competition. *Id.* at 23.

one of the parties' innovation efforts.²⁵ For example, a post-merger firm could have the incentive to continue both firms' pre-merger innovation efforts or could combine those efforts but actually increase their R&D investments or, through the consolidation, increase the likelihood that their investment will yield a marketable product.²⁶ Potential competition analysis does not consider either of these alternatives because it addresses an *existing* product rather than a *future* product improvement or an entirely new product. Questions about how a merger will impact a firm's incentives to innovate are inherently fact-specific and, the FTC argued, require their own unique analytical doctrine.²⁷

Lastly, the FTC offered guidance on how and when agencies should employ the innovation market analysis. *First*, the report noted that a merger is only likely to generate innovation market concerns where there are a "very small number of innovation competitors."²⁸ Referencing the IP Guidelines, the 1996 Report noted that it may be advisable to determine that the presence of a certain number of competitors creates a safe harbor where agencies will assume that the merger will not harm the innovation market.²⁹ *Second*, the FTC tackled how exactly antitrust law should define an innovation market. The report explained that some commentators have argued that agencies should look to "specialized assets" to determine whether different firms' innovation efforts are substitutable.³⁰ However, the Commission ultimately concluded that even this analysis required the identification of an ultimate goods market. Thus, the FTC concluded that the IP Guidelines' focus on "research and development directed to particular new or improved goods

25 *Id.* at 27-29.

26 For example, the actual potential competition doctrine does not "reveal whether the merged firm would have increased abilities or incentives to eliminate the existing widget innovation effort. It might or it might not, depending on facts such as the size of its market share in the current widget market (which would indicate the extent to which it was already earning monopoly profits) and the likely competitive significance of the improvement targeted by the widget innovation effort." *Id.* at 37.

27 *Id.* at 32.

28 *Id.* at 33.

29 However, the report also cautioned that "the usual caveats should apply -- that is, extraordinary circumstances might warrant a challenge even in "safe harbor" circumstances, and the secrecy of R&D might preclude an application of the safe harbor criteria." *Id.*

30 *Id.* at 34.

or processes' seem[ed] most useful."³¹ *Third*, the FTC addressed and rejected arguments that the innovation market analysis should only apply to unilateral effects theories and explained that while unilateral effects issues were substantially more likely, "coordinated interaction regarding innovation is clearly not impossible."³² *Fourth*, the agency provided guidance on how to apply the 1992 *Horizontal Merger Guidelines* entry analysis in the context of an innovation market; that is, whether entry would be "timely, likely, and sufficient,"³³ and thus could alleviate any anticompetitive concerns. The Commission noted that there was insufficient research into what incentivizes firms to invest in new innovation efforts to adopt "general standards specifically tailored to entry into innovation markets[.]"³⁴ Nonetheless, the FTC stated that in markets where innovation is "typically secret and unobservable," there is no reason to expect entry to mitigate anticompetitive effects because neither the potential entrants nor the post-merger incumbent can observe the other's innovation efforts, and thus those efforts will not alter their incentives or behavior. However, in markets where competitors can observe each other's R&D efforts, as in pharmaceutical markets, the entry analysis should ask whether there are firms that have:

- (1) "core competencies" (and the ability to acquire specialized assets) that give them the ability to enter into competing R&D efforts, and (2) the incentive to enter into competing R&D in response to post-merger reductions in innovation efforts.³⁵

31 The report further noted that "in asking whether a firm possessed 'specialized assets,' one would need to ask: 'specialized assets necessary to produce what types of goods?'" *Id.*

32 *Id.* at 35 ("For example, effective punishment may be available if the parties are in repeat relationships or if there is an ability to punish in a goods market. Therefore, although the agencies may find that anticompetitive effects are primarily unilateral, the possibility of coordinated interaction should not be ruled out until there has been a factual analysis of the particular situation.").

33 The 1992 Merger Guidelines instruct agencies to determine whether "entry would be timely, likely, and sufficient in its magnitude, character and scope to deter or counteract the competitive effects of concern." U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES § 3.0 (1992, rev. 1997), *reprinted in* 4 Trade Reg. Rep. (CCH) ¶ 20,573-9 to -11.

34 1996 REPORT, *supra* note 5, ch. 7, at 38.

35 *Id.* at 39.

Finally, the FTC noted that mergers could produce efficiencies by allowing the post-merger firm to reduce duplicative R&D efforts but cautioned against classifying reductions in procompetitive research efforts as efficiencies.³⁶

III. Innovation Market Cases Involving Non-Public R&D

While merger challenges that allege harm involving innovation markets are relatively uncommon, there have been a few such cases, both in the United States and the European Union. For the most part, the analyses in these cases have tracked the FTC's suggestions in the 1996 Report. Certain of these cases, described below, involved R&D that are not observable in the marketplace but arise in highly concentrated markets that require specialized assets to compete and possess exceptionally high barriers to entry.³⁷

1. ZF Friedrichshafen / General Motors

Among the earliest of the innovation market cases (which in fact preceded the 1996 Report) was the U.S. Department of Justice (DOJ) challenge in 1993 to the proposed merger of ZF Friedrichshafen, AG (ZF) and the Allison Transmission Division (Allison) of General Motors Corporation.³⁸ The DOJ alleged that the transaction would harm price competition in the markets for automatic transmissions for transit buses and heavy refuse route trucks. In addition, the DOJ asserted that the merger would harm competition in the market for “technological innovation in the design, development, and production of medium and heavy automatic transmission for commercial and military vehicles (Innovation Market).”³⁹ The

36 *Id.* at 39-40.

37 The 1996 Report noted the different entry analysis called for based on whether R&D efforts are secret or observable. Benjamin Kern, an economist who authored an innovation market study, described later in this article, also has distinguished between innovation market cases involving “unobservable” versus “observable” R&D. See Benjamin R. Kern, *Innovation Markets, Future Markets, or Potential Competition: How Should Competition Authorities Account for Innovation Competition in Merger Reviews?*, 37 *WORLD COMPETITION: L. & ECON. REV.* 173 (2014).

38 Complaint, *United States v. Gen. Motors Corp.* (D. Del. 1993) (No. 93-530).

39 *Id.* at 6, 9-10.

complaint further alleged that the two firms had a history of vigorously competing on innovation; specifically, Allison made substantial investments to improve its existing products and to develop a new line of transmissions in response to ZF's entry into the U.S. market.⁴⁰ Moreover, the DOJ asserted that entry was unlikely because a firm would need, "among other things, a full scale automatic transmission production facility" to successfully compete in the Innovation Market. Finally, the DOJ asserted that the parties had a combined 89% share of that market.⁴¹ The parties abandoned the transaction after the DOJ filed its complaint.

Although the case pre-dates the 1996 Report, the DOJ complaint is consistent with the analysis that the FTC recommended. In particular, the DOJ alleged high concentration in the Innovation Market, the need for specialized assets to compete, and that timely and effective entry to mitigate the loss of innovation competition was unlikely. In fact, the 1996 Report cited to this case as an example of where the specialized assets requirement was built into the innovation market analysis. Finally, although the complaint did not expressly address efficiency issues, the DOJ appeared to imply that the deal would not generate substantial efficiencies by highlighting evidence that ZF proposed the merger for the specific purpose of eliminating the threat of competition from Allison.⁴²

2. Lockheed Martin / Northrop Grumman

A few years later, in 1998, the DOJ sought to enjoin the proposed acquisition of Northrop Grumman Corporation (Northrop) by Lockheed Martin Corporation (Lockheed). Both firms are manufacturers of military electronics systems and aircrafts and their only other meaningful competitor was Boeing. The complaint alleged that the transaction would result in the elimination of horizontal competition in specific product markets as well as vertical foreclosure.⁴³ But the complaint also

40 *Id.* at 11-13 (arguing that the merger "would result in the elimination of competition in the Innovation Market and harm 'purchasers of automatic transmissions' through the loss of the fruits of the innovation").

41 The complaint used "the number of units produced worldwide" as a proxy for market share in the Innovation Market because of "the importance of production and customer experience in the innovation process." *Id.* at 12-13.

42 The DOJ alleged that ZF chose to acquire Allison "to counter the attack of Ally [Allison] against the European market and the rest of the world." *Id.* at 11.

43 Complaint at 1-4, *United States v. Lockheed Martin Corp.* (D.D.C. 1998) (No. 1:98-CV-00731(EGS)).

made clear that DOJ was concerned about the loss of innovation competition, stating that with respect to high performance fixed-wing military aircraft

[t]he loss of Northrop as an independent entity will reduce the number of companies to which the DoD [Department of Defense] can turn to design, develop, and produce high performance fixed-wing military aircraft from three to two. The DoD relies on a competitive process to develop and produce aircraft for our nation’s military defenses Competition is vital to maximize both the innovative ideas associated with each military aircraft program, as well as the quality of the processes used to turn innovative ideas into cost-effective, technically sound, and efficiently produced aircraft. The acquisition will lessen competition at all phases of the process that DoD employs to procure military aircraft, including the early phases where many innovative ideas are born.⁴⁴

While the complaint identified specific product markets and concerned the loss of price and innovation competition, the DOJ appeared most focused on the loss of defense technology innovation generally. In a subsequent speech, John M. Nannes, then-Deputy Assistant Attorney General of the Antitrust Division, explained that, in the context of defense markets it is “very easy to articulate the ways in which a decline in innovation could have an adverse effect . . . reduction in the pace of innovation could literally have life-and-death implications for our servicemen and women.”⁴⁵ Nannes also indicated that, after a fact-intensive review, the DOJ concluded that in defense markets “technological breakthroughs have often been made, not by the dominant supplier of military systems, but by niche players or leading firms working outside their main areas of specialization,” and thus one competitor was not enough to ensure a competitive market—even when that market was “characterized by lumpy purchases and high research-and-develop expenditures.”⁴⁶

Likewise, Constance K. Robinson, then-Director of Operations and Merger Enforcement at the DOJ, noted that “while the complaint alleged significant price effects, [it is] fair to say the principal driver of [the DOJ’s] challenge was the

44 *Id.* at 26-27.

45 John M. Nannes, Deputy Assistant Att’y Gen., U.S. Dep’t of Justice, Address at the National Institute on Representing High Technology Companies: Antitrust in an Era of High-Tech Innovation (Oct. 22, 1998), <https://www.justice.gov/atr/speech/antitrust-era-high-tech-innovation>.

46 *Id.*

merger's effect on innovation.⁴⁷ Specifically, Robinson noted three distinct reasons that the DOJ was concerned about the merger's impact on innovation. *First*, the Pentagon's acquisition cycle creates a situation where "most of the critical competitive events occur at a very early stage, when costs and prices are extremely uncertain," and thus it is beneficial to have several firms attempting an innovation.⁴⁸ *Second*, "innovation is often achieved in response to external military threats that change rapidly and are unpredictable, requiring that we maintain a number of firms with the capability of innovating to meet future national security challenges."⁴⁹ *Third*, the nation's defense requires firms to undertake risky and "cutting-edge innovations," and entrenched incumbents are less likely to take those risks absent considerable innovation competition.⁵⁰ To underscore her point, Robinson noted that in 1990 there were eight U.S. military aircraft companies and by 1999 that number had dropped to three, two of which were attempting to merge.⁵¹

The DOJ may not have explicitly used the innovation market analysis with respect to any single product market; however, the competitive concerns enumerated in the complaint track with the analytical framework the FTC laid out in the 1996 Report. Unsurprisingly, the development of defense technology requires specialized assets including "advanced technology, skilled engineers, testing facilities, and specialized equipment."⁵² The complaint also noted that the product markets were characterized by high barriers to entry and few market incumbents.

3. Applied Materials / Tokyo Electron

Innovation markets were also center stage in the DOJ's announcement on April 27, 2015 that Applied Materials, Inc. (Applied Materials) and Tokyo Electron Ltd. (Tokyo Electron) had abandoned their plans to merge after the DOJ rejected their remedy proposal. At the time, Applied Materials and Tokyo Electron were the first

47 Constance K. Robinson, Dir. of Operations & Merger Enf't, U.S. Dep't of Justice, Address before the American Bar Association 12-13 (June 10, 1999), <https://www.justice.gov/atr/file/518626/download>.

48 *Id.* at 13.

49 *Id.*

50 *Id.*

51 *Id.* at 13-14.

52 Complaint at 23, *United States v. Lockheed Martin Corp.* (D.D.C. 1998) (No. 1:98CV00731(EGS)).

and fourth largest manufacturers of semiconductor manufacturing equipment, respectively.⁵³ The parties had publicly stated that they were not concerned about regulatory clearance because their businesses were highly complementary with only a few overlapping product lines.⁵⁴ Where the parties directly competed, combined shares were estimated to be unproblematic.⁵⁵ In fact, at least two competition agencies, the German *Bundeskartellamt* and Competition Commission Singapore, agreed that the transaction did not raise significant competition concerns and cleared the transaction.

53 BUNDESKARTELLAMT, Case Summary: Clearance of Merger between Tokyo Electron and Applied Materials (Nov. 24, 2014), http://www.bundeskartellamt.de/SharedDocs/Entscheidung/EN/Fallberichte/Fusionskontrolle/2014/B5-138-13.pdf?__blob=publicationFile&v=2.

54 Financial News Release, Applied Materials, Applied Materials and Tokyo Electron to Combine, Creating a New Global Innovator to Serve the Semiconductor and Display Industries, (Sep. 24, 2013), <http://investors.appliedmaterials.com/phoenix.zhtml?c=112059&p=irol-newsArticle&ID=1857330&highlight> (“This combination, which has been unanimously approved by the Boards of Directors of both companies, brings together complementary leading technologies and products to create an expanded set of capabilities in precision materials engineering and patterning that are strategically important for customers.”); TOKYO ELECTRON, Investor Relations: FY2015 Earnings Release Conference Q&A, <http://www.tel.com/ir/library/report/2015/fy2015q4.htm> (“There is little overlap with Applied Materials in our product mix so we did not expect this business combination to fall under antitrust regulations. However, it seems that regulators also looked at products under development which are not subject to competition, and this was beyond our expectations.”); *see also* BUNDESKARTELLAMT, *supra* note 53 (noting that “[t]here are only overlaps in the activities of Tokyo Electron and Applied Materials on nine individual markets” and only closely examining the dielectric etch (including bump) market where it found no competitive concern); COMPETITION COMMISSION SINGAPORE, *Grounds of Decision Issued by the Competition Commission of Singapore: In relation to the notification for decision of the proposed merger between Applied Materials, Inc. and Tokyo Electron Limited pursuant to section 57 of the Competition Act* (Sept. 23, 2014), <https://www.ccs.gov.sg/~media/custom/ccs/files/public%20register%20and%20consultation/public%20consultation%20items/proposed%20merger%20between%20applied%20materials%20inc%20and/grounds20of20decision20proposed20merger-20between20applied20materials20and20tokyo20electronpublic202320sept2014.ashx> (noting overlap in seven markets where only one—i.e., dielectric etch (including bump)—had sales in Singapore and finding that the transaction will not lead to competition concerns).

55 Doyle, Barlow & Mazard PLLC, *Mergers that Diminish Innovation Present Deal Risk*, ANTITRUST LAWYER BLOG (May 7, 2015), <https://www.antitrustlawyerblog.com/2015/05/mergers-that-raise-future-competition-concerns-present-deal-risk.html>; Yigal Grayeff, *Applied Materials optimistic that deal will be approved*, SEEKINGALPHA (Sep. 25, 2013), <https://seekingalpha.com/news/1297612-applied-materials-optimistic-that-deal-will-be-approved> (Executive Chairman Mike Splinter stating that “[w]here we actually compete, there is very, very little overlap.”); Pallavi Guniganti, *DoJ causes Applied/Tokyo deal collapse on innovation markets*, GLOBAL COMPETITION REVIEW (Apr. 27, 2015), <http://globalcompetitionreview.com/article/1062071/doj-causes-applied-tokyo-deal-collapse-on-innovation-worries> (noting that Applied Materials CFO stated that the parties spent a lot of time looking at their overlaps, which were nominal).

▶ GO TO TABLE OF CONTENTS

The DOJ, however, stated that the transaction “would have combined the two largest competitors with the necessary know-how, resources and ability to develop and supply high-volume non-lithography semiconductor manufacturing equipment.”⁵⁶ The DOJ found that the parties’ undisclosed remedy proposal was “insufficient to protect competition and future innovation”⁵⁷ for the “development of equipment for next-generation semiconductors.”⁵⁸ The parties “strongly disagreed with the DOJ’s conclusions” stating that the merger was more likely to accelerate innovation, through the combination of complementary research and development, rather than slow it down.⁵⁹

Without a published complaint, it is unclear whether the DOJ followed the approach articulated in the 1996 Report. While the market for future innovation in semiconductor manufacturing equipment requires specialized assets and has potentially high barriers to entry, the industry was not concentrated.⁶⁰ The merged entity would have had less than a 30% share of the worldwide market for such equipment.⁶¹

56 Press Release, U.S. Dep’t of Justice, Applied Materials Inc. and Tokyo Electron Ltd. Abandon Merger Plans After Justice Department Rejected Their Proposed Remedy (Apr. 27, 2015), <https://www.justice.gov/opa/pr/applied-materials-inc-and-tokyo-electron-ltd-abandon-merger-plans-after-justice-department>.

57 *Hearing on Oversight of the Enforcement of the Antitrust Laws Before the Subcomm. on Antitrust, Competition Policy & Consumer Rights Comm. on the Judiciary U.S. S.* (March 9, 2016) (statement by Bill Baer, Assistant Att’y Gen., U.S. Dep’t of Justice, Antitrust Div.), <https://www.justice.gov/opa/file/831686/download> (“For example, two of the largest makers of semiconductor manufacturing equipment, Applied Materials Inc. and Tokyo Electron Ltd., abandoned their \$10 billion merger after we rejected settlement offers that were insufficient to protect competition and future innovation for the development of machinery used to make the memory and logic chips that power smartphones, tablets, computers, and many other products.”).

58 Press Release, *supra* note 56 (“The semiconductor industry is critically important to the American economy, and the proposed remedy would not have replaced the competition eliminated by the merger, particularly with respect to the development of equipment for next-generation semiconductors.”).

59 Guniganti, *supra* note 55.

60 Notably, the Competition Commission Singapore found that “barriers to entry are not insurmountable but significant resources and time would have to be invested by any new potential entrant before they can be considered a significant competitive constraint.” COMPETITION COMMISSION SINGAPORE, *supra* note 54.

61 COMPETITION COMMISSION SINGAPORE, *supra* note 3; Press Release Gartner Inc., Worldwide Semiconductor Manufacturing Equipment Spending Declined 16% in 2012, According to Final Results (Apr. 22, 2013), <http://www.gartner.com/newsroom/id/2441915>.

4. Dow / Dupont

The European Commission (EC), for its part, appears to have relied on an innovation market analysis in its challenge to the merger between The Dow Chemical Company (Dow) and E. I. du Pont de Nemours and Company (DuPont). In addition to finding horizontal overlaps for existing products, the EC also found that the merger would reduce “innovation competition for pesticides.”⁶² Before approving the transaction in March of 2017, the EC imposed divestiture remedies, including the divestiture of DuPont’s global R&D organization.

The EC alleged that that there were only five manufacturers who were globally active throughout the entire R&D process for the innovation of pesticides, both to improve existing products and to develop new active ingredients.⁶³ With respect to the parties’ incentive to reduce innovation post-merger, the EC found that Dow’s and DuPont’s pipelines competed head-to-head in a number of herbicide, insecticide, and fungicide innovation areas, and that post-merger, the combined entity would “have an incentive to discontinue some of these costly development efforts.” The EC also concluded that the merger would harm innovation competition by removing the parties’ incentive to develop new pesticides. The EC’s press release mentioned that it had found “specific evidence” to this effect, and also that the merged entity would have a lower ability to innovate than Dow and DuPont separately. The press release also noted that the parties would have reduced R&D spending post-merger, which may have been a factor in that conclusion.

The EC’s decision in this case closely tracks the 1996 Report in a number of ways. For example, the press release noted that there were “very high barriers to entry” in the industry; it is almost certain that those barriers involve at least some specialized assets. Interestingly, the EC also alleged that, in addition to the merging parties, there were three other global innovation competitors as well as some smaller ones—a number high enough that it could arguably trigger the 1996 Report’s suggested safe harbor of four or more independent and closely substitutable innovation efforts. However, without more information than what is available in

62 European Commission Press Release IP/17/772, Mergers: Commission clears merger between Dow and DuPont, subject to conditions (Mar. 27, 2017), http://europa.eu/rapid/press-release_IP-17-772_en.htm.

63 *Id.*

the press release,⁶⁴ it is impossible to determine whether the EC deviated from 1996 Report's contention that innovation markets are generally only problematic when there are very few competitors, or if there was some unique characteristic about this innovation market or the two parties in this case.

5. Transparent R&D: Spotlight on Innovation Markets in Pharmaceutical Mergers

The cases described above arose in a variety of industries, but all involved R&D pipelines that were largely secret and undisclosed. In the pharmaceutical industry, by contrast, product pipelines are generally observable because companies must register certain clinical trials with the FDA on ClinicalTrials.gov (which is a public registry and clinical results database). Moreover, many pharmaceutical companies publish their pipeline development efforts on their company website and, for public companies, in annual reports. This identifiability of R&D competition in the pharmaceutical industry has allowed the FTC to more thoroughly evaluate competition in innovation markets than in other industries.

Here again it is important to remain mindful of the distinction between “innovation” or “research and development” competition in the context of a current or future product market and harm to competition in an innovation or R&D market. The FTC has alleged harm to actual competition or potential future competition that would likely result in higher prices in a current or future product market in many pharmaceutical cases.⁶⁵ However, the three cases described below—i.e., (1) the

64 The EC has yet to publish a full decision in this case.

65 *See, e.g.*, Complaint, Glaxo Wellcome plc & SmithKline Beecham plc, F.T.C. No. 01-0088 (Dec. 15, 2000) (alleging likelihood of price increases by eliminating a potential entrant as well as reduction in product innovation in the markets for topical prescription herpes antivirals, prophylactic herpes vaccines, and topoisomerase I inhibitors for the treatment of ovarian, non-SCLC, colorectal, other solid tumor cancers, drugs for treatment of IBS, and triptan drugs for treatment of migraine headaches); Complaint, Amgen Inc. & Immunex Corp., F.T.C. No. 021-0059 (Sept. 3, 2002) (alleging harm to competition by eliminating potential competition in the TNF inhibitor and IL-1 inhibitor product markets as well as by reducing innovation competition in the research, development, and commercialization of TNF inhibitor and IL-1 inhibitor products); Complaint, Pfizer Inc. & Warner-Lambert Company, F.T.C. No. 001-0059 (July 27, 2000) (alleging that the reduction of four companies to three that are involved in human clinical testing of EGFR-tk inhibitors for the treatment of cancer increases the likelihood of reducing the number of drugs reaching the market and thus resulting in higher prices for consumers); Complaint at 2, Novartis AG & GlaxoSmithKline, F.T.C. No. 141-0141 (Apr. 8, 2015) (alleging that the elimination of future competition between GSK and Novartis in the development and sale of BRAF-inhibitors and MEK-inhibitors would likely result in higher

FTC’s consent decree with respect to the merger of Ciba-Geigy Limited (Ciba-Geigy or Ciba) and Sandoz Inc. (Sandoz) to form Novartis, (2) the FTC’s review of Genzyme’s acquisition of Novazyme, and (3) the EC’s decision regarding Novartis’ acquisition of GlaxoSmithKline plc’s oncology business—specifically consider harm to an innovation or R&D market.

Before considering these cases, it is worth reviewing the application of potential competition analysis in the context of pharmaceutical mergers. In a potential competition case, either (a) one party is in the market and the other is a likely and timely entrant, or (b) both parties are likely and timely entrants in the same future market. The U.S. antitrust agencies have generally considered entry within two to three years to be timely. Companies that have submitted a new drug application (NDA) or biologics license application (BLA) filing for a drug will be considered timely, as will companies in Phase III of development.⁶⁶ Products in Phase I or II of development often fall well outside of this range but are sometimes considered by the FTC as within the relevant product market.⁶⁷ The likelihood of a product in development obtaining approval from the Food and Drug Administration (FDA), which is a prerequisite to market entry, is also dependent upon the phase of the clinical trials. During the period 2006-2015, the average approval rates by clinical trial phase were as follows: Phase I to approval, 9.6%; Phase II to approval, 15.3%;

prices and reduce choices for cancer treatments although not explicitly alleging innovation markets); Complaint, Valeant Pharm. Int’l, Inc., F.T.C. No. 151-0236 (Feb. 8, 2017) (alleging elimination of actual competition in relevant markets for GP buttons used to produce lenses for orthokeratology, scleral, and general vision correction as well as the ability of the merged firm to exercise market power in the market for GP buttons, including by increasing prices and decreasing innovation). *See also* Analysis to Aid Public Comment, Ciba-Geigy Limited, et al., 62 Fed. Reg. 409, 411 (Jan. 3, 1997) (alleging harm to potential innovation competition and not a reduction in price competition in the future product markets).

66 *See* BIO, BIOMEDTRACKER & AMPLION, CLINICAL DEVELOPMENT SUCCESS RATES 2006-2015, at 12 (June 2016), <https://www.bio.org/sites/default/files/Clinical%20Development%20Success%20Rates%202006-2015%20-%20BIO,%20Biomedtracker,%20Amplion%202016.pdf> (noting that the average filing to approval time is 1.6 years); FDAREview.org, The Drug Development and Approval Process (2016), (citing Dimasi, Hansen, and Grabowski (2003)), http://www.fdareview.org/03_drug_development.php; U.S. FOOD & DRUG ADMIN., The Drug Development Process, Step 3: Clinical Research (2017), <https://www.fda.gov/forpatients/approvals/drugs/ucm405622.htm>.

67 *See, e.g.*, Complaint, Amgen Inc. & Immunex Corp., F.T.C. No. 021-0059 (Sept. 3, 2002) (including Amgen’s TNF inhibitor in late Phase II trials as a potential competitor to Immunex’s Enbrel and including Immunex’s Phase I IL-1 inhibitor product as a potential competitor to Amgen’s Kineret).

Phase III to approval, 49.6%; and NDA/BLA filing to approval, 85.3%.⁶⁸ While success rates for products in development vary by indication, these statistics suggest that products in Phase I and Phase II are not sufficiently likely to enter the market.

6. Ciba-Geigy/Sandoz

In 1997 the FTC challenged the merger of Ciba-Geigy and Sandoz, alleging likely harm to (a) potential competition in the future product markets for HSV-tk gene therapy for the treatment of cancer, HSV-tk gene therapy for the treatment of graft versus host disease, gene therapy for the treatment of hemophilia, and chemoresistance gene therapy; and (b) competition in the R&D market for gene therapy technology with respect to the four specific gene therapy products listed above.⁶⁹ In each of the relevant future markets, Ciba (including Chiron, in which Ciba owned a 46.5% interest) and Sandoz were the only two companies capable of developing the product and in or near clinical development.⁷⁰ In addition, the FTC alleged harm to competition in the innovation market for gene therapy generally because the firms were among the “few entities capable of commercially developing gene therapy products.”⁷¹

Unlike in other pharmaceutical merger consent decrees, the FTC did not allege that the transaction was likely to result in a price increase, even where it alleged harm to future markets for specific gene therapy products. Rather, the FTC focused on the ability of competitors to enter the market, particularly given IP barriers. The FTC did not require divestiture of the R&D assets, recognizing among other things, that a divestiture would “create substantial disruption in the parties’ research

68 BIO, BIOMEDTRACKER & AMPLION, *supra* note 66, at 9.

69 Complaint, Ciba-Geigy Limited, et al., F.T.C. No. 961-0055 (Mar. 24, 1997); *see also* Analysis to Aid Public Comment, Ciba-Geigy Limited, et al., 62 Fed. Reg. 409, 410 (Jan. 3, 1997) (stating “[t]he proposed complaint alleges that therapy technology and the research and development of gene therapies constitute relevant markets in which to analyze the effects of the proposed merger.”).

70 In the relevant product market for chemoresistance gene therapy, a third company was found capable of commercially developing a MDR-1 gene therapy for the treatment of chemoresistance, but only Ciba and Sandoz were found capable of developing an MRP gene therapy for the treatment of chemoresistance. *See* Analysis to Aid Public Comment, Ciba-Geigy Limited, et al., 62 Fed. Reg. 409, 410 (Jan. 3, 1997).

71 Complaint at 5, Ciba-Geigy Limited, et al., F.T.C. No. 961-0055 (Mar. 24, 1997).

and development efforts.⁷² Instead, as part of the consent, the parties agreed (a) to license specific gene therapy technology and patent rights to Rhone-Poulenc in order to position Rhone-Poulenc to compete against the combined firm, and (b) to grant all gene therapy researchers and developers non-exclusive licenses to certain essential gene therapy technologies to address concerns with the overall gene therapy R&D market.

7. Genzyme/Novazyme

The FTC initiated an investigation into Genzyme’s \$120 million acquisition of Novazyme shortly after the transaction closed in September 2001. The transaction remains distinctive in a number of ways. To begin with, it is the only instance, to our knowledge, in which an agency has applied an innovation market analysis to a *consummated* merger—and, hence, had any record regarding how the merging parties actually behaved with respect to their overlapping R&D efforts. In addition, it also appears to be the only innovation market case involving *only* an R&D overlap (rather than a merger involving harm to both R&D and actual or future product markets).

This case was also notable in that it involved a merger to monopoly—Genzyme and Novazyme were the only two companies engaged in early-stage research and development of enzyme-replacement therapy (ERT) for Pompe disease, a rare inherited neuromuscular disorder that typically was fatal and which had no known treatment at the time of the merger. Genzyme previously had acquired two other Pompe R&D programs: Pharming in 1998 and Synpac in 2000. By 2002, Genzyme had discontinued the development of the Pharming and Synpac enzymes, which were in Phase II clinical trials, because of production scale issues, leaving Genzyme’s internal ERT program and Novazyme’s ERT program, as the only ongoing R&D programs for Pompe disease at the time of the merger.

Finally, the *Novazyme/Genzyme* investigation resulted in a more complete record with respect to the agency’s factual and legal analysis than is true in most other innovation market cases. The FTC stated that its investigation centered on “how the transaction would affect the pace and scope of research into pharmaceutical

72 Analysis to Aid Public Comment, Ciba-Geigy Limited, et al., 62 Fed. Reg. 409, 411 (Jan. 3, 1997).

products for [Pompe’s disease].”⁷³ Specifically, the agency considered whether the post-merger firm would have a lower incentive to quickly develop the treatment and that consumers would miss out on multiple treatment options and face higher prices when a Pompe treatment became available.

In its 3-1-1 decision, the FTC concluded that the merger should not be challenged. Chairman Muris, as part of the majority, issued a long separate statement concluding that “on balance, rather than put patients at risk through diminished competition, the merger more likely created benefits that will save patients’ lives.”⁷⁴ He drew on the 1996 Report and argued that while innovation markets are worthy of antitrust scrutiny, the FTC had been properly “cautious” in applying that analysis because “economic theory and empirical investigations have not established a general causal relationship between innovation and competition.”⁷⁵ The key, as explained in the 1996 Report, is a “careful, intense factual investigation is necessary” to “distinguish between procompetitive and anticompetitive combinations of innovation efforts.”⁷⁶

According to Chairman Muris, the FTC staff’s thorough factual investigation had “properly focused on how the transaction would affect the pace and scope of research,” including “whether Genzyme and Novazyme would have engaged in a ‘race to market’ absent the merger” and whether “the merger might influence the [further development of the] ‘Novazyme program’ if Genzyme’s internal program [to develop a treatment] succeeds.”⁷⁷ Muris went on to note his conclusion that the investigation uncovered “no evidence that the merger reduced R&D spending on either the Genzyme or the Novazyme program or slowed progress along either of the R&D paths.”⁷⁸ To the contrary, he found that there were “strong reasons to believe that the merger will benefit patients” and that “we are without a basis for concluding that the merger is likely to result in net harm to patients.

73 Muris, *supra* note 2, at 1.

74 *Id.*

75 *Id.* at 2-3 (quoting the 1996 REPORT, *supra* note 5, ch. 7 at 16).

76 *Id.* at 2-3 (quoting the 1996 REPORT, *supra* note 5, ch. 7, at 18, 20).

77 *Id.* at 1, 11, 13.

78 *Id.* at 17.

On balance, the merger is likely to be procompetitive, and thus patients' lives are more likely to be saved by this merger than to be put at risk."⁷⁹

Finally, Chairman Muris rejected the position, taken by Commissioner Mozelle Thompson in dissent, that the presumption of anticompetitive effects that attaches to a merger to monopoly in product markets should be applied to innovation market analysis. Stating that he strongly disagreed with the dissent's "suggest[ion] that the Commission has found evidence that the merger already has caused, or is likely to cause, anticompetitive effects," Chairman Muris emphasized that "the adoption of presumptions without economic foundation would constitute a major step backward in antitrust law."⁸⁰

8. Novartis / GlaxoSmithKline Oncology Business

While the FTC has not publicly analyzed the effect of a pharmaceutical merger on an innovation market since *Genzyme/Novazyme*, the EC in 2015 conducted an innovation market analysis of a pharmaceutical merger between Novartis and GlaxoSmithKline plc (GSK) whereby Novartis acquired GSK's oncology business.⁸¹ In its decision concerning the merger, the EC analyzed two future market overlaps and an innovation market related to Novartis' and GSK's BRAF and MEK inhibitors, which are targeted therapies that inhibit specific proteins involved in cell reproduction.⁸²

First, the EC analyzed the future product market for pipeline targeted therapies for the treatment of advanced melanoma.⁸³ GSK had received approval from the European Medicines Agency (EMA) to sell its BRAF inhibitor, Tafenlar, and its MEK inhibitor, Mekinist, as a monotherapy for the treatment of unresectable or metastatic melanoma with a BRAF V600 mutation. GSK was conducting Phase III clinical trials of Tafenlar and Mekinist in combination for the same indication.⁸⁴

79 *Id.* at 20.

80 *Id.* at 22, 25.

81 See EUROPEAN COMMISSION, Decision in Case M.7275: Novartis AG & GlaxoSmithKline Oncology Business (Jan. 28, 2015).

82 *Id.* ¶ 11.

83 *Id.* ¶ 33.

84 *Id.* ¶¶ 38-40.

Novartis was conducting Phase III trials for (i) its B-Raf inhibitor, LGX818, as a monotherapy for the treatment of B-Raf mutated advanced melanoma, (ii) its MEK inhibitor, MEK162, as a monotherapy for the treatment of N-Ras mutated advanced melanoma, and (iii) LGX818 and MEK162 in combination for the treatment of B-Raf advanced melanoma. Roche was the only other company with a B-Raf inhibitor or MEK inhibitor on the market or in Phase III clinical trials.⁸⁵ The EC found that the transaction would “lead to a reduction of potential competition on the market for B-Raf and MEK inhibitors used in combination [or as a monotherapy] for advanced melanoma . . . by reducing the number of available B-Raf and MEK inhibitors from three to two.”⁸⁶

Second, the EC analyzed the future product market for pipeline targeted therapies for the treatment of ovarian cancer.⁸⁷ GSK’s Mekinist and Novartis’ MEK162 were in Phase III clinical trials for a rare type of ovarian cancer called low-grade serous carcinoma.⁸⁸ The EC found that the only other competitor was AstraZeneca’s MEK inhibitors, Selumetinib, which was in Phase II and concluded that the combination would “restrict competition through non-coordinate effects.”⁸⁹

Third, the EC analyzed the market for innovation competition with respect to the development of the parties’ MEK and B-Raf inhibitors for other therapeutic uses. GSK and Novartis had Phase I and Phase II clinical trials involving “the potential use of their MEK and B-Raf inhibitors, either as monotherapies or in combination, in a number of other types of cancer, notably colorectal cancer, nonsmall-cell lung cancer (NSCLC) and advanced melanoma brain metastases.”⁹⁰ The EC recognized that “the effects of a concentration on competition in innovation . . . may not be sufficiently assessed by restricting the assessment to actual or potential competition in existing product markets.”⁹¹ The EC noted that “[r]educed competition in innovation is likely to reduce the number of new products that will be developed

85 *Id.* ¶¶ 48-52.

86 *Id.* ¶ 57.

87 *Id.* ¶ 72.

88 *Id.* ¶ 62.

89 *Id.* ¶¶ 81-83.

90 *Id.* ¶ 84.

91 *Id.* ¶ 89.

for the same product market,” which would have the effect of (a) reducing competition and causing higher prices in future product markets and (b) reducing the variety of therapies available to physicians and patients who may respond better to different drug products.⁹²

The EC provided guidance on defining the relevant innovation market—i.e., competing clinical research should be identified by the mechanism of action of the pipeline products concerns, the therapeutic use for which clinical trials are being conducted, and the phase of the clinical trials.⁹³ The EC defined the relevant innovation market as “the development of MEK and B-Raf inhibitors for the treatment of colorectal cancer, NSCLC and advanced melanoma brain metastases.”⁹⁴ The EC’s competitive assessment focused on “whether after the Transaction there [would] be a sufficient number of remaining clinical research programs,” finding Roche to be the only company with the capability to compete with the parties’ clinical research programs for the use of BRAf and MEK inhibitors to treat colorectal cancer, NSCLC, and advanced melanoma brain metastases.⁹⁵ The EC expressed concern that Novartis had the incentive to prioritize the clinical research of GSK’s Tafinar and Mekinist for other types of cancer and reduce the R&D efforts related to Novartis’ LGX818 and MEK162 therapies or abandon such efforts altogether.⁹⁶ The EC determined that the transaction was likely to result in a reduction in the variety of B-Raf and MEK therapies available to physicians and patients as well as the lessening of competition in the future markets for use of these products in colorectal cancer, NSCLC, and advanced melanoma brain metastases.⁹⁷ In order to remedy the EC’s concerns, Novartis agreed to return its rights to MEK162 to its owner Array BioPharma and divest LGX818 to Array.⁹⁸

The FTC also required Novartis to divest its rights and assets related to LGX818 and MEK162 to Array. The FTC, however, did not separately allege an innovation

92 *Id.* ¶ 110.

93 *Id.* ¶¶ 90, 94.

94 *Id.* ¶ 94.

95 *Id.* ¶¶ 102-104.

96 *Id.* ¶ 106.

97 *Id.* ¶ 113.

98 *Id.* ¶¶ 279-282.

market. Instead, in its complaint, the FTC alleged relevant product markets for (i) the development and sale of BRAF inhibitors used to treat cancer, and (ii) the development and sale of MEK inhibitors used to treat cancer.⁹⁹ The complaint further alleged harm to future competition in these relevant product markets.¹⁰⁰ While the FTC only alleged harm to future competition for BRAF and MEK inhibitors generally as well as for treatment of metastatic melanoma patients, the FTC noted that the transaction “would also likely reduce the development of BRAF and MEK inhibitors to treat other types of cancer, because GSK and Novartis are currently developing their respective BRAF and MEK inhibitors for several of the same indications beyond melanoma,” including for ovarian cancer, colorectal cancer, and NSCLC.¹⁰¹ Coupled with the fact that both parties’ products were in early clinical trials (i.e., Phase I or Phase II) for colorectal cancer and NSCLC, at least in Europe, this suggests that, even though not specifically articulated in its complaint, the FTC considered harm to an R&D or innovation market as well as to a specific product market.

IV. Economic Literature

In the FTC’s 1996 Report, the agency stressed that there were still several outstanding questions related to the economic theory of innovation markets.¹⁰² Economic thinking on how mergers can impact a firm’s incentive to innovate has not stagnated in the over two decades since the FTC issued that report; indeed, recent economic work, either empirically or through invocation of other considerations, suggests that perhaps there is a relationship between concentration and innovation—although the nature of and how to measure that relationship remains an open question.

99 Complaint at 2, Novartis AG & GlaxoSmithKline, F.T.C. No. 141-0141 (Apr. 8, 2015).

100 *Id.* at 3.

101 Analysis of Agreement Containing Consent Orders to Aid Public Comment, Novartis AG, 80 Fed. Reg. 11202, 11204 (Mar. 2, 2015).

102 See e.g. 1996 REPORT, *supra* note 5, ch. 7, at 38 (“Before general standards specifically tailored to entry into innovation markets are framed, additional research into the mechanisms that induce firms to enter into new innovation efforts would be desirable.”).

1. Grabowski and Kyle

Grabowski and Kyle published a paper in 2008 discussing the results of their empirical study on the relationship between pharmaceutical mergers and innovation.¹⁰³ The study used a database of more than 4,500 firms engaging in pharmaceutical R&D between 1990 and 2007, and measured R&D outcomes in terms of advancement through the various phases of drug research and market launch.¹⁰⁴ The study found that the effect of the firm size on innovation varied across development stages. The effect of size on success probabilities for firms that did not undergo a merger was relatively small for drugs in Phase I and Phase II, but there was a strong positive relationship between size and performance in Phase III—suggesting that large firms may be better equipped to shepherd a drug through Phase III.¹⁰⁵ The study also found that non-merging, very large firms, defined as firms with more than fifty projects, launched approximately 60% more of their Phase III projects than small firms, defined as firms with fewer than 5 projects per year.¹⁰⁶ As the authors recognized, these two results only showed correlation, not causation, which led them to suggest two alternative causes for the correlation between size and success at Phase III R&D: “The higher probabilities of success for phase III for the largest-scale firms are consistent with their comparative advantage at later stages of the R&D process hypothesis . . . or alternatively, with the hypothesis that large firms are better at weeding out unlikely successes earlier in the process[.]”¹⁰⁷

Interestingly, the study further found that projects initiated after a merger were much more likely to advance from each stage of development. For example, the authors determined that merging small firms were approximately 50% more likely to proceed through Phase III than their non-merging counterparts.¹⁰⁸ The difference, while not as profound, is apparent regardless of the size of the firm or the stage of

103 Henry Grabowski & Margaret Kyle, *Mergers and Alliances in Pharmaceuticals: Effects on Innovation and R&D Productivity*, in *THE ECONOMICS OF CORPORATE GOVERNANCE AND MERGERS* 262 (Klaus Gulgler & Burcin Yurtoglu eds., 2008).

104 *Id.* at 274.

105 *Id.* at 276, 280.

106 *Id.* at 280.

107 *Id.*

108 *Id.* at 279 fig.11.4.

development—all other things being equal, post-merger firms are more likely to proceed to the next stage in development.¹⁰⁹ The authors inferred from this finding that there was “a benefit to merging that is independent of size alone” and suggested that further research was necessary to identify what the benefit was.¹¹⁰

Grabowski and Kyle concluded that the results of their study were consistent with the results of studies on alliances between small biotech firms and larger pharmaceutical entities.¹¹¹ Studies of such alliances showed a positive correlation between a firm’s experience in clinical development and the probability of successful outcomes. As the authors summarized, these results bolster the existing alliance literature and suggest “that very small firms with only a few projects in their R&D portfolio can gain the most benefits from mergers with more experienced firms in developing new drug indications.”¹¹²

2. Comanor and Scherer

Subsequently, a 2012 study on the effect of pharmaceutical mergers between large firms on innovation published by Comanor and Scherer appears to contradict Grabowski and Kyle’s finding that there is positive correlation between mergers and successful development.¹¹³ Comanor and Scherer argued that because technological innovation, including in the pharmaceutical industry, is characterized by uncertainty, progress is best achieved “when there is widespread dispersion of R&D initiatives both across companies and within them through the exploration of multiple technical paths.”¹¹⁴ They argue that “pursuing more sequential approaches to research and development often leads to foregone payoffs during the period of probable delay.”¹¹⁵

109 *See id.* at 277-79 figs.11.2, 11.3 & 11.4.

110 *Id.* at 282.

111 *Id.* at 283.

112 *Id.*

113 William S. Comanor & F.M. Scherer, *Merger and Innovation in the Pharmaceutical Industry* (Am. Antitrust Inst. Working Paper No. 12-05, 2012), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2190201.

114 *Id.* at 5.

115 *Id.* at 9.

Comanor and Scherer described an economic model estimating a profit maximizing degree of parallelism in R&D efforts but noted that in actuality large pharmaceutical companies were not engaged in this theoretical degree of parallel innovation.¹¹⁶ The authors explored a number of explanations for this deviation, including that companies failed to “appreciate the full merits of parallel paths and or view[ed] parallelism as a form of wasteful ‘duplication.’”¹¹⁷ They argued that this perceived “duplication” could result in post-merger portfolio-pruning and cost-cutting.¹¹⁸ The paper then introduced the finding of Comanor and Scherer’s study that following mergers between large pharmaceutical companies, the number of independent sources of R&D initiatives were reduced—*i.e.*, there were fewer instances of different firms pursuing parallel R&D paths towards the treatment of the same disease state regardless of whether such instances were too few or too many.¹¹⁹ The paper also cited to another economic study showing that following mergers between large pharmaceutical companies, the number of new drug approvals may have decreased rather than increase and argued such lessening of innovative diversity “mostly likely” caused the reduction in innovation.¹²⁰

The paper also argued that niche biotech companies have more expertise at the initial R&D stage, but would require the support of large pharmaceutical companies to complete the clinical trial process and bring the product to market.¹²¹ Accordingly, mergers between large pharmaceutical companies would reduce the number of larger pharmaceutical firms that smaller, niche firms can partner with to carry the R&D effort through to approval, thus resulting in the loss of new products.¹²² Ultimately the authors acknowledged that their conclusions were “suggestive rather than definitive” but stated that their analysis at least provided support for “the hypothesis that recent pharmaceutical mergers contributed to an observed decline in the rate of pharmaceutical innovation.”¹²³

116 *Id.* at 11.

117 *Id.*

118 *Id.* at 12.

119 *Id.* at 14.

120 *Id.* at 14-15.

121 *Id.* at 15.

122 *Id.* at 16.

123 *Id.* at 21.

3. Kern

Two years later, Benjamin R. Kern published an article considering the same question that the FTC asked in its 1996 Report: whether competition authorities should examine innovation competition through the lens of innovation markets, future markets, or potential competition.¹²⁴ After reviewing these three theories and the cases where they had been applied, Kern addressed what he perceives as the “shortcomings” of the innovation market analysis and proposed potential revisions. Specifically, he pointed to three critiques that have been raised against the innovation market analysis: (1) agencies struggle to identify competitors in innovation markets because “R&D activities are often subject to secrecy”; (2) the lack of a robust theoretical basis to conclude that market concentration impacts firms’ incentives to innovate; and (3) the “missing theoretical basis” for the presumption that more innovation competition leads to more innovation.¹²⁵

Kern proposed four components of a revised approach to addressing and evaluating innovation markets. *First*, he argued that in cases where R&D is “unobservable,” antitrust agencies should focus their analysis on whether the innovation in question requires “specialized assets” and that if an agency cannot identify any such assets then “the investigation should cease.”¹²⁶ *Second*, he supported then-Chairman Muris’ statement in *Genzyme/Novazyme* that agencies should undertake a fact-specific analysis about the parties’ ability and incentives to innovate and ask how the proposed transaction alters those factors.¹²⁷ By insisting on a fact-intensive analysis, Kern argued, agencies will not be bound by the “ambiguous interrelationship between ‘market concentration’ and innovation.”¹²⁸ *Third*, he argued that agencies should adopt a “weak” presumption that the reduction of innovation competition will harm innovation outcomes because that will shift the burden to the merging parties to demonstrate merger-specific efficiencies.¹²⁹ To support this presumption, Dr. Kern pointed to “evolutionary” economics’ suggestion that

124 Kern, *supra* note 37.

125 *Id.* at 195-204.

126 *Id.* at 204.

127 *Id.* at 205.

128 *Id.*

129 *Id.*

innovation is inherently uncertain and different firms will invariably approach their R&D programs differently. Consequently, an increase in the number of firms attempting an innovation, and thus an increase in the number of approaches to achieve that innovation, should increase the likelihood that consumers benefit from the market's attempt to innovate.¹³⁰ *Fourth*, to avoid an overly restrictive merger regime, Kern argued that any revised framework should acknowledge that mergers could generate substantial innovation efficiencies.¹³¹

4. Haucap and Stiebale

Most recently, Haucap and Stiebale published a paper in 2016 discussing the effect of mergers on innovation in R&D-intensive industries; in particular, their study sought to determine how a merger impacted innovation by the post-merger firm's rivals.¹³² They noted that while existing economic research has largely found a negative correlation between mergers and innovation by the merged firms, there had been little research on the effect of a merger on innovation by non-merging competitors.¹³³ The authors argued that in addition to questions about how a merger will impact the post-merger firm's incentive to innovate, merger analysis should consider the merger's effect on innovation by non-merging competitors or the analysis risks underestimating harm to innovation.¹³⁴

Haucap and Stiebale examined all pharmaceutical mergers reported on the EC's website between 1991 and 2007 and analyzed how those mergers impacted market-wide innovation. The authors primarily looked at the number of patents granted¹³⁵ per year to measure innovation because this metric is readily available, unaffected by the "accounting manipulations" that can skew self-reported R&D expenditures,

130 *Id.*

131 *Id.* at 206.

132 Justus Haucap & Joel Stiebale, *How Mergers Affect Innovation: Theory and Evidence from the Pharmaceutical Industry* (Dusseldorf Inst. for Competition Econ., Discussion Paper No. 218, 2016), http://www.dice.hhu.de/fileadmin/redaktion/Fakultaeten/Wirtschaftswissenschaftliche_Fakultaet/DICE/Discussion_Paper/218_Haucap_Stiebale.pdf.

133 *Id.* at 3, 5-6.

134 *Id.* at 26.

135 The authors noted that while they only looked at granted patents they chose to "date them back to the application year," because that is the most effective way to measure a merger's impact on innovation. *Id.* at 13.

and is a “well-established indicator of innovation.”¹³⁶ However, the authors acknowledged that even this metric is imperfect because not every innovation leads to a patent and firms are not uniformly aggressive in seeking patents. To improve their results and account for these nuances, the authors also examined R&D expenditures as a secondary data set.

Haucap and Stiebale found that both the post-merger firm and their rivals had substantial reductions in innovation directly following the transaction. Specifically, the authors found that post-merger firms’ innovation output decreased by 20% in the four years following the consolidation when compared to their pre-merger output.¹³⁷ In addition, the study concluded that rival firms’ innovation decreased by 16% after the merger—indicating that mergers can have a substantial impact on the innovation incentives of non-merging parties.¹³⁸ The study also determined that mergers have negatively impacted the size of firms’ patent stocks¹³⁹ and found that “in the absence of a merger, the cumulative patent [portfolio] of merged entities would be 30% higher and those of competitors would be about 5% higher” than they were four years post-merger.¹⁴⁰

The authors observed several other trends that indicate consolidation has a negative impact on innovation for both the post-merger firm and its competitive rivals. Specifically, they determined that the post-merger firm’s innovation output is 30% lower than other similarly situated firms, while its competitors’ output is 7% lower, and that both the post-merger firm and its competitors reduce R&D expenditures while increasing profits after the transaction.¹⁴¹

Like Comanor and Scherer, Haucap and Stiebale concluded that mergers decrease the post-merger firm’s innovation output. However, their results suggest that a merger can also impact rivals’ innovation output. The authors ended their paper by urging agencies to examine how merger will impact the entire market’s innovation incentives because “[f]ocusing only on the merged entity’s innovation

136 *Id.* at 11-13.

137 *Id.* at 20.

138 *Id.*

139 The authors define “patent stock” as the number of patents a firm holds. *Id.* at 15.

140 *Id.* at 20-21, fig.1.

141 *Id.* at 21.

activities may well underestimate the negative effects that mergers can have on innovation.”¹⁴²

By focusing on rivals’ innovation output, Haucap and Stiebale highlighted yet another facet of innovation market analysis, but certainly many questions remain, including the applicability of the studies and their conclusions outside of the pharmaceutical context.

V. Conclusion

Twenty-one years have passed since the FTC’s report on innovation markets. Given the antitrust agencies’ experience in a number of cases involving innovation markets since that time, and the ongoing legal and economic thinking on these issues, it would seem that it is appropriate for the FTC to revisit and update its analysis in this area.

As the late FTC Commissioner Rosch once noted, economics does not appear to have yet concluded under what circumstances it is “better to lock scientists from competing firms in a room and let intellectual fermentation occur,” rather than to prevent such combinations from going forward.¹⁴³ As Megan Crowley’s story reminds us, however, a great deal often may be at stake in the proposed combination of R&D efforts, and it is important that we make every effort to get our antitrust analysis right, even as we may need to remain humble about the current state of our understanding regarding the challenging issues often raised by these combinations.

142 *Id.* at 26.

143 J. Thomas Rosch, Comm’r, Fed. Trade Comm’n, Remarks at the ABA Antitrust Intellectual Property Conference: Antitrust Regulation of Innovation Markets (Feb. 5, 2009), https://www.ftc.gov/sites/default/files/documents/public_statements/antitrust-regulation-innovation-markets/090205innovationspeech.pdf.

Concurrences Review

Concurrences is a print and online quarterly peer reviewed journal dedicated to EU and national competitions laws. It has been launched in 2004 as the flagship of the Institute of Competition Law in order to provide a forum for academics, practitioners and enforcers. The Institute's influence and expertise has garnered interviews with such figures as Christine Lagarde, Emmanuel Macron, Mario Monti and Margarethe Vestager.

CONTENTS

More than 15,000 articles, print and/or online. Quarterly issues provide current coverage with contributions from the EU or national or foreign countries thanks to more than 1,200 authors in Europe and abroad. Approximately 35 % of the contributions are published in English, 65 % in French, as the official language of the General Court of justice of the EU; all contributions have English abstracts.

FORMAT

In order to balance academic contributions with opinions or legal practice notes, Concurrences provides its insight and analysis in a number of formats:

- Forewords: Opinions by leading academics or enforcers
 - Interviews: Interviews of antitrust experts
 - On-Topics: 4 to 6 short papers on hot issues
 - Law & Economics: Short papers written by economists for a legal audience
 - Articles: Long academic papers
 - Case Summaries: Case commentary on EU and French case law
 - Legal Practice: Short papers for in-house counsels
 - International: Medium size papers on international policies
 - Books Review: Summaries of recent antitrust books
 - Articles Review: Summaries of leading articles published in 45 antitrust journals
-

BOARDS

The Scientific Committee is headed by Laurence Idot, Professor at Panthéon Assas University. The International Committee is headed by Frederic Jenny, OECD Competition Committee Chairman. Boards members include Bill Kovacic, Bruno Lasserre, Howard Shelanski, Isabelle de Silva, Richard Whish, Wouter Wils, etc.

ONLINE VERSION

Concurrences website provides all articles published since its inception, in addition to selected articles published online only in the electronic supplement (around 40%).

WRITE FOR CONCURRENCES

Concurrences welcome spontaneous contributions. Except in rare circumstances, the journal accepts only unpublished articles, whatever the form and nature of the contribution. The Editorial Board checks the form of the proposals, and then submits these to the Scientific Committee. Selection of the papers is conditional to a peer review by at least two members of the Committee. Within a month, the Committee assesses whether the draft article can be published and notifies the author.

e-Competitions Bulletin

CASE LAW DATABASE

e-Competitions is the only online resource that provides consistent coverage of antitrust cases from 55 jurisdictions, organized into a searchable database structure. e-Competitions concentrates on cases summaries taking into account that in the context of a continuing growing number of sources there is a need for factual information, i.e., case law.

- 12,000 case summaries
- 2,600 authors
- 55 countries covered
- 24,000 subscribers

SOPHISTICATED EDITORIAL AND IT ENRICHMENT

e-Competitions is structured as a database. The editors make a sophisticated technical and legal work on all articles by tagging these with key words, drafting abstracts and writing html code to increase Google ranking. There is a team of antitrust lawyers – PhD and judges clerks - and a team of IT experts. e-Competitions makes comparative law possible. Thanks to this expert editorial work, it is possible to search and compare cases.

PRESTIGIOUS BOARDS

e-Competitions draws upon highly distinguished editors, all leading experts in national or international antitrust. Advisory Board Members include: Sir Christopher Bellamy, Ioanis Lianos (UCL), Eleanor Fox (NYU), Damien Gérardin (Tilburg University), Frédéric Jenny (OECD), Jacqueline Riffault-Silk (Cour de cassation), Wouter Wils (DG COMP), etc.

LEADING PARTNERS

- Association of European Competition Law Judges: The AECLJ is a forum for judges of national Courts specializing in antitrust case law. Members timely feed e-Competitions with just released cases.
- Academics partners: Antitrust research centres from leading universities write regularly in e-Competitions: University College London, King's College London, Queen Mary University, etc.
- Law firms: Global law firms and antitrust niche firms write detailed cases summaries specifically for e-Competitions: Allen & Overy, Cleary Gottlieb, Jones Day, Norton Rose Fulbright, Skadden Arps, White & Case, etc.

The Institute of Competition Law

The Institute of Competition Law is a publishing company, founded in 2004 by Dr. Nicolas Charbit, based in Paris and New-York. The Institute cultivates scholarship and discussion about antitrust issues through publications and conferences. Each publication and event is supervised by editorial boards and scientific or steering committees to ensure independence, objectivity, and academic rigor. Thanks to this management, the Institute has become one of the few think tanks in Europe to have significant influence on antitrust policies.

AIM

The Institute focuses government, business and academic attention on a broad range of subjects which concern competition laws, regulations and related economics.

BOARDS

To maintain its unique focus, the Institute relies upon highly distinguished editors, all leading experts in national or international antitrust: Bill Kovacic, Mario Monti, Eleanor Fox, Barry Hawk, Laurence Idot, Frédéric Jenny, etc.

AUTHORS

3,800 authors, from 55 jurisdictions.

PARTNERS

- Universities: University College London, King's College London, Queen Mary University, Paris Sorbonne Panthéon-Assas, etc.
 - Law firms: Allen & Overy, Cleary Gottlieb Steen & Hamilton, DLA Piper, Hogan Lovells, Jones Day, Norton Rose Fulbright, Skadden Arps, White & Case, etc.
-

EVENTS

More than 250 events since 2004 in Brussels, London, New York, Paris, Singapore, Hong Kong, Milan, Moscow and Washington, DC.

ONLINE VERSION

Concurrences website provides all articles published since its inception.

PUBLICATIONS

The Institute publishes Concurrences Review, a print and online quarterly peer-reviewed journal dedicated to EU and national competitions laws. e-Competitions is a bi-monthly antitrust news bulletin covering 55 countries. The e-Competitions database contains over 12,000 case summaries from 2,600 authors.
