

Quantitative Perspectives on Behavioral
Economics and Finance

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Multi-Market
Antitrust Economics

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FOREWORD

Heterodox Antitrust Economics

Preface to SCOTT GILBERT, *MULTI-MARKET ANTITRUST ECONOMICS*
(Palgrave Macmillan 2017)

I am delighted to welcome Scott Gilbert and *Multi-Market Antitrust Economics* to Palgrave Macmillan's series, *Quantitative Perspectives on Behavioral Economics and Finance*. Professor Gilbert's volume progressively elaborates antitrust economics from a basic model of monopoly to multi-market scenarios involving spillovers and mergers, and ultimately to broader economic domains such as international trade. His concluding chapter on natural monopoly foreshadows the application of antitrust economics to related legal domains, such as intellectual property¹ and industry-specific regulation.² The transition from single-firm to multi-market antitrust economics, combined with the promise of connections to the broader economy, echoes grander aspirations toward comprehensive, unitary treatments of antitrust and cognate branches of economics.³

Professor Gilbert's crisp tour of antitrust economics reflects the incorporation of economic thought into legal doctrine,⁴ a celebrated history traceable at least to the Supreme Court's adoption of the "rule of reason" in the *Standard Oil* decision of 1911.⁵ The Sherman Act of 1890, after all, had left the federal judiciary with an open-ended mandate to draw upon the common law and other sources of wisdom.⁶

In fixing the boundaries of antitrust liability, the Supreme Court has often overturned *per se* rules whose legal premises have come under theoretical and empirical attack. The ascendancy of case-specific economic

analysis in antitrust is perhaps most vividly portrayed in the rejection of *per se* rules and the application of the rule of reason to all vertical restraints: nonprice restraints,⁷ maximum resale price maintenance,⁸ and minimum resale price maintenance.⁹ Even practices nominally subject to *per se* condemnation reflect judicial ambivalence over the competitive consequences of antitrust. Normative ambiguity thus clouds the doctrinal clarity of concerted refusals to deal,¹⁰ predatory pricing,¹¹ the sharing of pricing information among horizontal competitors,¹² and tying arrangements.¹³

Doctrinal evolution in antitrust law reflects a burgeoning heterodoxy in economic thought that generalist judges have imported into federal courts. For half a century, economic thought associated with the University of Chicago has exerted enormous influence on antitrust.¹⁴ The impact of the “Chicago School” of antitrust economics was especially profound in the law of mergers¹⁵ and vertical restraints,¹⁶ doctrinal domains where the revival of the rule of reason led to a regime of *de facto* legality.¹⁷

Since the 1980s, a competing post-Chicago school of antitrust economics has emerged.¹⁸ The Chicago school “pre-dated . . . interest among economists” in “game-theoretic analysis of strategic behavior,” such as decisions anticipating “rivals’ likely reactions” to firm conduct.¹⁹ A competing school of post-Chicago antitrust thought gave rise to works identifying multi-market threats from tying arrangements²⁰ and the broadly anticompetitive potential of strategies to raise rivals’ costs.²¹ Post-Chicago scholarship challenges the preeminence of rationality-based, neoclassical thought in antitrust law and economics.²² A “Neo-Chicago” school of antitrust thought engages insights associated with post-Chicago analysis in an effort to reassert the primacy of formally rational decisionmaking.²³

A distinct body of *behavioral* antitrust economics has now entered the fray.²⁴ J. Thomas Rosch, Federal Trade Commissioner, has explicitly embraced the application of behavioral economics to antitrust enforcement.²⁵ Because behavioral economics directly challenges the assumption that economic actors are rational,²⁶ behavioral antitrust has drawn equal measures of ideologically motivated praise and condemnation. While some champions of behavioral antitrust predict that “*Homo economicus* will become extinct” and “the Chicago School’s antitrust dominance will come to a timely end,”²⁷ detractors declare a “behavioral irrelevance theorem” positing that “behavioral economics . . . fails to offer *any* clear policy implications for antitrust.”²⁸

In a field as dynamic and heterodox as antitrust, categorical pronouncements on economic methodology have no place.²⁹ Though

behavioral economics adopts a psychologically or even biologically informed approach to human and institutional conduct, it does not constitute a methodological, let alone ideological, nullification of the Chicago school's underpinnings in the neoclassical economics of rational expectations. Behavioral finance, for instance, integrates mathematical insights on abnormal markets with psychological evidence of cognitive biases and investor irrationality.³⁰ Antitrust economics should likewise strive to embrace diversity in methodology—a heterodox commitment that combines intellectual eclecticism, empirical rigor, and explanatory power.

The struggle among competing schools of antitrust thought reflects a parallel tension in finance, a cognate branch of economics that informs legal subjects related to antitrust, particularly the regulation of securities markets and financial institutions. Finance rests upon its own variant of the rational expectations hypothesis³¹—namely, the presence of rational, welfare-maximizing “agents [who] know . . . precisely” the “objective probability law describing” the relationship between risk and return and that embodiment of that relationship in asset prices.³² The expectation that excess return over a risk-free asset “should vary positively and proportionately to market volatility” represents the “first law of finance.”³³

The efficient market hypothesis posits that securities markets incorporate all information into security prices and that the rational pricing of securities prevents “most investors [from] achiev[ing] consistently superior rates of return.”³⁴ The commitment of efficient market hypothesis to rationality plays a role in mathematical finance that is analogous to that of the Chicago school in antitrust.³⁵ In practice, however, violations of market efficiency abound. The most serious challenges to the efficient market hypothesis include Fama and French’s “three-factor” model,³⁶ the low-volatility anomaly,³⁷ the equity premium puzzle,³⁸ and short-term price continuation anomalies such as momentum³⁹ and post-earnings announcement drift.⁴⁰

The intellectual equivalent of post-Chicago antitrust in mathematical finance addresses “‘efficiency-defying anomalies’ . . . such as market swings in the absence of new information and prolonged deviations from underlying asset values.”⁴¹ Critically, though, these anomalies do not have a clear causative etiology. Imperfections in financial information “can lead to the *appearance* of risk premiums or asset pricing anomalies.”⁴² Investors confronted “with valuation parameter uncertainty” may respond rationally by “pric[ing] stocks in a way that leads to the appearance of

deviations from market efficiency.”⁴³ Inconveniently, investor behavior and constrained rationality as competing theories “bear considerable mathematical resemblance to each other” and ultimately “explain similar evidence.”⁴⁴ It is ultimately “impossible to empirically distinguish between many irrational behavior theories and rational Bayesian models because their predictions are too similar.”⁴⁵

As with finance, so with antitrust. In its theoretical and empirical incarnations, antitrust economics should heed the lessons of antitrust doctrine as developed by the Supreme Court. No antitrust claim can survive a motion to dismiss,⁴⁶ let alone summary judgment⁴⁷ or a motion at trial for a directed verdict,⁴⁸ unless it presents facts that are at least as supportive of anticompetitive collusion as they would also support consciously parallel conduct or even wholly independent action.⁴⁹

Although antitrust doctrine does not demand “any particular kind of evidence,” it does insist that “the evidence [offered] be of such a quality that it makes collusion” or other anticompetitive behavior “a likely explanation of the activity” at issue.⁵⁰ Within such a legal framework, behavioral antitrust should strive to consider “the heterogeneity and variability of market behavior” in order to distinguish how the same “boundedly rational” conduct can generate “rational” but “anticompetitive” business practices alongside “beneficial, procompetitive” arrangements.⁵¹ In situations such as the application of the rule of reason to resale price maintenance,⁵² courts taking proper account of behavioral economics should “seek case-specific evidence that sheds light on the nature of” the conduct at issue “and its competitive effects, assigning liability only” when economic conduct, whether formally rational or only boundedly so, “is anticompetitive.”⁵³

Neoclassical economics, including the Chicago school of antitrust, has come under attack for its failure to reconcile the stylized decisionmaking of *homo economicus* with the actual behavior of *homo sapiens*.⁵⁴ For their part, many variants of behavioral economics rely heavily on their own “theories of Everyman . . . based mechanically on principles” that presumably bind all of humanity.⁵⁵ But even if “Every man is risk averse for gains” in theory, actual experience readily demonstrates that “every man (or woman) is not.”⁵⁶ Absent more nuanced treatment of actual conduct, purely theoretical behavioral economics offers “a rather blunt tool of analysis,” one incapable of “explain[ing] the way all actors make decisions in all contexts.”⁵⁷

Competing schools of thought, in antitrust and otherwise, thus fall short of capturing the full complexity of economic conduct:

A starlit or a moonlit dome disdains
 All that man is,
 All mere complexities,
 The fury and the mire of human veins.⁵⁸

In this environment, “antitrust law cannot, and should not, precisely replicate economists’ (sometimes conflicting) views.”⁵⁹ What antitrust economics can accomplish is at once more modest and more helpful. The laudable resort to economic theory in any of its guises, behavioral or otherwise, should never become “detached from economic fundamentals.”⁶⁰

This volume on antitrust economics and its broader series on behavioral economics therefore strive to speak of human conduct exactly as it is observed: “[N]othing extenuate/Nor set down in malice.”⁶¹ No less in economics than in other manifestations of the human imagination, “the monster and the sleeping queen . . . both have roots struck deep in your own mind.”⁶² We should therefore treat economics “neither [as] ‘a deadly magic and accursed,’ [n]or [as] ‘blest.’”⁶³ Instead, it suffices simply to recognize, “It is here.”⁶⁴

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NOTES

1. *See, e.g.*, *United States v. General Elec. Co.*, 272 U.S. 476 (1926); *FTC v. Actavis inc.*, 133 S. Ct. 2223 (2013); *cf. SCM Corp. v. Xerox Corp.*, 645 F.2d 1195 (2d Cir. 1981) (patent accumulation), *cert. denied*, 455 U.S. 1016 (1982). *See generally* U.S. Department of Justice & Federal Trade Comm’n, *Antitrust Guidelines for the Licensing of Intellectual Property*, 4 Trade Reg. Rep. ¶13,132 (1995); Louis Kaplow, *The Patent-Antitrust Intersection: A Reappraisal*, 97 Harv. L. Rev. 1813–1892 (1984).
2. *See, e.g.*, *Credit Suisse Secs. (USA) LLC v. Billing*, 551 U.S. 264 (2007); *United States v. National Ass’n of Secs. Dealers*, 422 U.S. 694 (1975); *Gordon v. NYSE*, 422 U.S. 659 (1975); *Otter Tail Power Co. v. United States*, 410 U.S. 365 (1973); *Silver v. NYSE*, 373 U.S. 341 (1963). Antitrust immunity for participation in legislative, judicial, and/or administrative proceedings raises comparable issues. *See, e.g.*, *Eastern R.R. Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U.S. 127 (1961); *United Mine Workers v. Pennington*, 381 U.S. 657 (1965); California

- Motor Transp. Co. v. Trucking Unlimited, 404 U.S. 508 (1972); Professional Real Estate Investors v. Columbia Pictures Indus., Inc., 508 U.S. 549 (1993); *In re* Union Oil Co., 138 F.T.C. 1 (2004).
3. *Compare* James Ming Chen, *Econophysics and Capital Asset Pricing: Splitting the Atom of Systematic Risk* 275–284 (2017) (describing the progression from firm-specific effects to comovement with broader market and economy-wide effects as “the baryonic ladder”) *with* R.H. Coase, *The Firm, The Market, and the Law* (1990).
 4. *See generally*, e.g., William E. Kovacic & Carl Shapiro, *Antitrust Policy: A Century of Economic and Legal Thinking*, 14 J. Econ. Persp. 43–60 (2000).
 5. *See* Standard Oil Co. v. United States, 221 U.S. 1, 60–66 (1911).
 6. *See*, e.g., *State Oil Co. v. Khan*, 522 U.S. 3, 20–21 (1997); *Business Electronics Corp. v. Sharp Electronics Corp.*, 485 U.S. 717, 732 (1988); *National Soc’y of Prof. Eng’rs v. United States*, 435 U.S. 679, 788 (1978); *Apex Hosiery Co. v. Leader*, 310 U.S. 469, 489 (1940).
 7. *See* *Continental T.V., Inc. v. GTE Sylvania, Inc.*, 433 U.S. 36, 58–59 (1977) (overruling *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365 (1967)).
 8. *See* *State Oil Co. v. Khan*, 522 U.S. at 22 (overruling *Albrecht v. Herald Co.*, 390 U.S. 145 (1968)).
 9. *See* *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 899 (2007) (overruling *Dr. Miles Med. Co. v. John D. Park & Sons Co.*, 220 U.S. 363 (1911)).
 10. *See* *Fashion Originators’ Guild of Am. v. FTC*, 312 U.S. 457 (1941); *Klor’s, Inc. v. Broadway-Hale Stores, Inc.*, 359 U.S. 207 (1959); *Northwest Wholesale Stationers, Inc. v. Pacific Stationery & Printing Co.*, 472 U.S. 284 (1985); *FTC v. Indian Federation of Dentists*, 476 U.S. 447 (1986).
 11. *See* *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993); *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co.*, 549 U.S. 312 (2007).
 12. *American Column & Lumber Co. v. United States*, 257 U.S. 377 (1921); *Maple Flooring Mfrs. Ass’n v. United States*, 268 U.S. 563 (1925); *United States v. Container Corp.*, 393 U.S. 333 (1969).
 13. *See* *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2 (1984); *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451 (1992).
 14. *See generally*, e.g., Leah Brannon & Douglas H. Ginsburg, *Antitrust Decisions of the U.S. Supreme Court, 1967 to 2007*, 3:2 *Competition Pol’y Int’l* 3–23 (Autumn 2007); William H. Page, *The Chicago School and the Evolution of Antitrust: Characterization, Antitrust Injury, and Evidentiary Sufficiency*, 75 Va. L. Rev. 1221–1308 (1989); Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. Pa. L. Rev. 925–948 (1979).

- Though opinions vary, the Chicago school is thought to have originated either with Aaron Director & Edward H. Levi, *Law and the Future: Trade Regulation*, 51 Nw. U. L. Rev. 281–296 (1956), or with Robert H. Bork: *The Antitrust Paradox: A Policy at War with Itself* (1978).
15. See *United States v. General Dynamics Corp.*, 415 U.S. 486 (1974).
 16. See cases cited *supra* notes 7–9.
 17. See generally Douglas H. Ginsburg, *Vertical Restraints: De Facto Legality Under the Rule of Reason*, 60 Antitrust L.J. 67–81 (1991).
 18. See generally Jonathan B. Baker, *A Preface to Post-Chicago Antitrust*, in *Post-Chicago Developments in Antitrust Law 60–75* (Antonio Cucinotta, Roberto Pardolesi & Roger J. Van den Bergh eds., 2002); Herbert J. Hovenkamp, *Antitrust Policy After Chicago*, 84 Mich. L. Rev. 213–284 (1985); Herbert J. Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 Colum. Bus. L. Rev. 258–337.
 19. Michael H. Riordan & Steven C. Salop, *Evaluating Vertical Mergers: A Post-Chicago Approach* 63 Antitrust L.J. 513–568, 518 (1995).
 20. See, e.g., Dennis W. Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33 Rand J. Econ. 194–220 (2002); Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 Am. Econ. Rev. 837–859 (1990); cf. B. Douglas Bernheim & Michael D. Whinston, *Exclusive Dealing*, 106 J. Pol. Econ. 64–103 (1998).
 21. See generally, e.g., Thomas G. Krattenmaker & Steven C. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power Over Price*, 96 Yale L.J. 209–293 (1986); Janusz A. Ordover, Garth Saloner & Steven C. Salop, *Equilibrium Vertical Foreclosure*, 80 Am. Econ. Rev. 127–142 (1990); Steven C. Salop & David T. Scheffman, *Cost-Raising Strategies*, 36 J. Indus. Econ. 19–34 (1987); Steven C. Salop & David T. Scheffman, *Raising Rivals' Costs*, 73 Am. Econ. Rev. 267–271 (1983).
 22. See generally, e.g., Christopher R. Leslie, *Rationality Analysis in Antitrust*, 158 U. Pa. L. Rev. 261–353 (2010).
 23. See generally *How the Chicago School Overshot the Mark: The Effect of Conservative Economic Analysis on U.S. Antitrust Policy* (Robert Pitofsky ed., 2008); Daniel A. Crane, *Chicago, Post-Chicago, and Neo-Chicago*, 76 U. Chi. L. Rev. 1911–1933 (2009); David S. Evans & A. Jorge Padilla, *Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach*, 72 U. Chi. L. Rev. 73–98 (2005).
 24. See generally, e.g., James C. Cooper & William E. Kovacic, *Behavioral Economics and Its Meaning for Antitrust Agency Decision Making*, 8 J.L. Econ. & Pol'y 779–800 (2012); Amanda P. Reeves & Maurice E. Stucke, *Behavioral Antitrust*, 86 Ind. L.J. 1527–1586 (2011); Maurice E. Stucke, *Behavioral Economists at the Gate: Antitrust in the Twenty-First Century*,

- 38 Loy. U. Chi. L.J. 513–591 (2007); Avishalom Tor & William J. Rinner, *Behavioral Antitrust: A New Approach to the Rule of Reason After Leegin*, 2011 U. Ill. L. Rev. 805–864.
25. See J. Thomas Rosch, *Behavioral Economics: Observations Regarding Issues That Lie Ahead* (June 9, 2010), available at <http://www.ftc.gov/speeches/rosch/100609viennaremarks.pdf>; J. Thomas Rosch, *Managing Irrationality: Some Observations on Behavioral Economics and the Creation of the Consumer Financial Protection Agency* (Jan. 6, 2010), available at <http://www.ftc.gov/speeches/rosch/100106financial-products.pdf>; J. Thomas Rosch, *Antitrust Law Enforcement: What to Do About the Current Economics Cacophony?*, available at <http://www.ftc.gov/speeches/rosch/090601bateswhite.pdf>.
26. See, e.g., Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 Stan. L. Rev. 1471–1550 (1998); Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 Cal. L. Rev. 1051–1144 (2000).
27. Thomas J. Horton, *The Coming Extinction of Homo Economicus and the Eclipse of the Chicago School of Antitrust: Applying Evolutionary Biology to Structural and Behavioral Antitrust Analyses*, 42 Loy. U. Chi. L.J. 469–522, 475 (2011).
28. Joshua D. Wright & Judd E. Stone II, *Misbehavioral Economics: The Case Against Behavioral Antitrust*, 33 Cardozo L. Rev. 1517–1553, 1526–1527 (2012); cf. Joshua D. Wright, *Abandoning Antitrust’s Chicago Obsession: The Case for Evidence-Based Antitrust*, 78 Antitrust L.J. 301–331, 313 (2011) (“[T]he burden of proof for demonstrating [a] greater understanding” of “both firm and consumer behavior . . . remains on behaviorist advocates, and there is little empirical support for that proposition . . .” (emphasis in original)).
29. Cf. *FCC v. RCA Communications, Inc.*, 346 U.S. 86, 97 (1943) (“Merely to assume that competition is bound to be of advantage, in an industry so regulated and so largely closed as is this one, is not enough.”); *Hawaii Tel. Co. v. FCC*, 498 U.S. 771, 776 (D.C. Cir. 1974) (same).
30. Compare James Ming Chen, *Postmodern Portfolio Theory: Navigating Abnormal Markets and Irrational Investors* (2016) with James Ming Chen, *Finance and the Behavioral Prospect: Risk, Exuberance, and Abnormal Markets* (2016).
31. See generally, e.g., Thomas J. Sargent, *Rational Expectations and Inflation* (1986); John F. Muth, *Rational Expectations and the Theory of Price Movements*, 29 *Econometrica* 315–335 (1961).
32. Larry G. Epstein & Tan Wang, *Intertemporal Asset Pricing Under Knightian Uncertainty*, 62 *Econometrica* 283–322, 283 (1994).

33. Evan W. Anderson, Eric Ghysels & Jennifer L. Juergens, *The Impact of Risk and Uncertainty on Expected Returns*, 94 J. Fin. Econ. 233–263, 233 (2009).
34. Richard A. Brealey, Stewart C. Myers & Franklin Allen, *Principles of Corporate Finance* 330 (10th ed. 2011); *accord* Amgen Inc. v. Connecticut Retirement Plans & Trust Funds 133 S. Ct. 1184, 1192 (2013).
35. *See generally, e.g.*, Eugene F. Fama, *The Behavior of Stock Market Prices*, 38 J. Bus. 34–105 (1965); Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, 25 J. Fin. 383–417 (1970); Eugene F. Fama, *Efficient Capital Markets II*, 46 J. Fin. 1475–1617 (1991); Lawrence H. Summers, *Does the Stock Market Rationally Reflect Fundamental Values?*, 41 J. Fin. 591–601 (1986).
36. *See* Eugene F. Fama & Kenneth R. French, *The Cross-Section of Expected Stock Returns*, 47 J. Fin. 426–465 (1992); Eugene F. Fama & Kenneth R. French, *Size and Book-to-Market Factors in Earnings and Returns*, 50 J. Fin. 131–155 (1995); *cf.* Kent D. Daniel & Sheridan Titman, *Evidence on the Characteristics of Cross-Sectional Variation in Stock Returns*, 52 J. Fin. 1–33 (1997).
37. *See, e.g.*, Malcolm Baker, Brendan Bradley & Jeffrey Wurgler, *Benchmarks as Limits to Arbitrage: Understanding the Low-Volatility Anomaly*, 67:1 Fin. Analysts J. 40–54 (Jan./Feb. 2011); Robert A. Haugen & A. James Heins, *Risk and the Rate of Return on Financial Assets: Some Old Wine in New Bottles*, 10 J. Fin. & Quant. Analysis 775–784 (1975); Andrew Ang, Robert J. Hodrick, Yuhang Xing & Xiaoyan Zhang, *The Cross-Section of Volatility and Expected Returns*, 61 J. Fin. 255–299 (2006); *cf.* Edward H. Bowman, *A Risk/Return Paradox for Strategic Management*, 21 Sloan Mgmt. Rev. 17–33 (1980); Edward H. Bowman, *Risk Seeking by Troubled Firms*, 23 Sloan Mgmt. Rev. 33–42 (1982).
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39. *See generally, e.g.*, Mark M. Carhart, *On Persistence in Mutual Fund Performance*, 562 J. Fin. 457–82 (1997); Louis K.C. Chan, Narasimhan Jegadeesh & Josef Lakonishok, *Momentum Strategies*, 51 J. Fin. 1681–1783 (1996); Tarun Chordia & Lakshmanan Shivakumar, *Earnings and Price Momentum*, 80 J. Fin. Econ. 627–656 (2006); Mark Grinblatt, Sheridan Titman & Russ Wermers, *Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior*, 85 Am. Econ. Rev. 1088–1105 (1995).

40. See generally, e.g., Jeffrey S. Abarbanell & Victor L. Bernard, *Tests of Analysts' Overreaction/Underreaction to Earnings Information as an Explanation for Anomalous Stock Price Behavior*, 47 J. Fin. 1181–1207 (1992); Guohua Jiang, Charles M.C. Lee & Yi Zhang, *Information Uncertainty and Expected Returns*, 10 Rev. Accounting Stud. 185–221 (2005).
41. *Halliburton Co. v. Erica P. John Fund, Inc.*, 134 S. Ct. 2398, 2421 (2014) (Thomas, J., concurring in the judgment) (quoting Donald C. Langevoort, *Taming the Animal Spirits of the Stock Markets: A Behavioral Approach to Securities Regulation*, 97 Nw. U. L. Rev. 135–188, 141 (2002)).
42. Jennifer Francis, Ryan Lafond, Per Olsson & Katherine Schipper, *Information Uncertainty and Post-Earnings-Announcement Drift*, 34 J. Bus. Fin. & Accounting 403–433, 404 (2007) (emphasis added).
43. *Id.*
44. Alon Brav & John B. Heaton, *Competing Theories of Financial Anomalies*, 15 Rev. Fin. Stud. 576–606, 589 (2002).
45. Francis, Lafond, Olsson & Schipper, *supra* note 42, at 406.
46. See *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544, 553–554 (2007); *Monsanto Co. v. Spray-Rite Serv. Corp.*, 465 U.S. 752, 764 (1984).
47. See *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586–87 (1986).
48. See *Theatre Enterprises, Inc. v. Paramount Film Distrib. Corp.*, 346 U.S. 537, 541–542 (1954).
49. See generally, e.g., Keith N. Hylton, *When Should a Case Be Dismissed? The Economics of Pleading and Summary Judgment Standards*, 16 Sup. Ct. Econ. Rev. 39–66 (2008).
50. Herbert J. Hovenkamp, *The Rationalization of Antitrust*, 116 Harv. L. Rev. 917–944, 925 (2003).
51. Avishalom Tor, *Understanding Behavioral Antitrust*, 92 Tex. L. Rev. 573–667, 663 (2014).
52. See *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 882 (2007).
53. Tor, *supra* note , at 660; see also Tor & Rinner, *supra* note 24, at 858–864.
54. See e.g., Richard H. Thaler, *From Homo Economicus to Homo Sapiens*, 14 J. Econ. Persp. 133–141 (2000).
55. Lola L. Lopes, *Between Hope and Fear: The Psychology of Risk*, 20 Advances Experimental Soc. Psych. 255–295, 283 (1987).
56. *Id.* at 268.
57. Chris Guthrie, *Prospect Theory, Risk Preference, and the Law*, 97 Nw. U. L. Rev. 1115–1163, 1163 (2003).

58. W.B. Yeats, *Byzantium*, in *Collected Poems* 335–336, 335 (Robert Mighall intro. 2016).
59. *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 914–915 (2007) (Breyer, J., dissenting).
60. Lu Zhang, *The Value Premium*, 60 *J. Fin.* 67–103, 69 (2005).
61. William Shakespeare, *Othello*, act V, sc. 2, *ll.* 351–352, in *The Oxford Shakespeare: The Complete Works* 819–853, 853 (Stanley Wells & Gary Taylor eds., 1986).
62. Stephen Vincent Benét, *John Brown’s Body* 336 (1990) (1st ed. 1928).
63. *Id.*
64. *Id.*

PROLOGUE

Some years ago I attended a 2-week “boot camp” program—introducing economists to the field of law—sponsored by George Mason University. Inspired by the presentations of law and economics luminaries like George Priest (Yale University) and Robert Cooter (University of California at Berkeley), I was also excited to learn about a growing group of legal scholars with graduate coursework in economics. Since then I have seen one area of law—involving lawsuits against business—from a first-hand perspective, as an economist providing opinions on economic loss. I have also attended antitrust conferences—including the Spring Meeting of the Antitrust Section of the American Bar Association (ABA), and the Hal White Antitrust Conference sponsored by Bates White LLC, and served as volunteer in some ABA Antitrust Law Committee activities.

Economic theory, of the sort I saw applied to law in the George Mason boot camp, is essential for understanding commercial law, but it competes for attention with notions and principles from law and other disciplines. Also, some of the economic theory I’ve hoped to see discussed in commercial cases has been absent. I realized that I wanted to see more extensively a multi-market or general equilibrium approach to the discussion of commercial law—particularly antitrust law where issues of market power and production efficiency can be insightfully recast from a multi-market or general equilibrium perspective. This longing, for a general equilibrium approach to some essential antitrust economic principles, inspired me to write this book.

This book explores antitrust issues—monopoly, price-fixing, mergers, and so on—from a multi-market or general equilibrium perspective. A

monopoly is a situation where there is only one supplier of some good or service to a community. More generally, a supplier of some good or service increases market concentration if its actions limit the ability of some other firms to act as independent suppliers of the same good or service. As a social issue, greater market concentration may lead to problems of equity or fairness in the distribution of income and goods across members of society, and also problems of economic inefficiency—whereby less income or goods are produced than could be produced in a more competitive environment. On the other hand, greater market concentration may have the opposite effect, achieving both equity and efficiency.

Introductory economics textbooks present a model of monopoly that focuses on a single market and the monopolist's anti-competitive effects on that market. This textbook model, the pure monopoly model, cannot describe or predict all the consequences of market concentration. To say more than is possible in the pure monopoly model of some good, additional goods can be introduced. Modern antitrust economics accommodates substitute goods, complement goods, and vertically linked goods. Consumer effects of market concentration depend on the existence of substitutes, complements, and vertical linkage. Research in the field often relies on sophisticated economic models, and there is a big gap between this sort of analysis and what one encounters in introductory texts on antitrust economics. This book attempts to bridge that gap, presenting simple yet formal models of monopoly and mergers that showcase multi-market effects. Readers with an antitrust interest will see nontechnical summaries and conclusions of results in each chapter and section, followed by more formal analysis aimed at the level of an upper-level undergraduate student or a graduate student. End-of-chapter problems underscore and extend key themes and results in the chapters.

The style of this book reflects the author's desire to explore some basic antitrust themes "from scratch," using formal but basic economic models, to achieve something like a select coverage of key themes from introductory textbook antitrust economics—from a perspective that a first year graduate student in economics might find appealing. The reader will find commentary on both classical and modern antitrust economics based on this exploratory exercise. This commentary will hopefully benefit the general economist and lawyer interested in antitrust. Noneconomists may find this book further proof of the economist's inability to reach an unambiguous conclusion: market concentration sometimes hurts consumers,

sometimes not. But specific contexts of each outcome are neatly conveyed via economic models, a variety of which appear in this book.

Antitrust economics has logical ties to the economics of industry regulation—via natural monopoly. These ties are essential for understanding some consumer effects of market concentration, and the latter chapters in this book touch on this theme, in the same style as the earlier chapters, as well as a discussion of monopoly, monopsony, and the theory of specialization and exchange. These latter excursions are related in their relative absence of unequal economic power, despite market concentration, in stark contrast to the classical monopoly model in which a single supplier exerts great power, but the typical consumer has negligible power. The economic analysis of market concentration should ultimately include some explicit account of economic power inequality, and hopefully this book hints at allied fields that may provide useful inspiration.¹

A reader that makes their way through this book will find that the models and analysis is in the style of conventional mainstream “western” or “neoclassical” economics, with profit-maximizing firms and utility-maximizing consumers. All models are static, with no uncertainty or risk. All decisions are short run. Every decision is rational. Even for mainstream economics, this leaves out a good deal, but treatment of dynamics, risk, or bounded rationality would exceed the scope of this brief volume.² The Foreword to this book, by James Ming Chen, assays a range of recent research developments, including dynamic models of vertical mergers’ effects, and models with limited information or bounded rationality, with the admonition to not confuse any formal economic model with reality.

The neoclassical economic models in this book, based on rational choice by firms and households, are the same sort of models advanced by the “Chicago School”—including Richard Posner and Robert Bork—for the study of market concentration’s effects on consumer welfare. The Chicago School has had a big impact on the court’s stance toward market concentration—particularly in the area of vertical mergers—contributing to a less aggressive posture toward big business in the last 30 years. But to invoke neoclassical models is not to take a stand with big business: such models offer a simple context in which to reason through possible effects of market concentration, and any shortcomings in the model’s assumptions can be addressed in more advanced treatments of the subject. It is perhaps the uncertainty, or doubt, about the evils of antitrust or anti-competitive behavior that presents a problem to courts and government agencies, after reading a tome on modern antitrust economics. Such doubt

is counter to nineteenth-century convictions of lawmakers that the days of robber barons must end, convictions which precipitated modern antitrust law. But doubt is healthy and transient in any given antitrust review or lawsuit, as an agency head or judge does eventually decide for or against a potentially anti-competitive business move.³

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NOTES

1. In a classic monopoly model, the monopoly firm gets revenue from households, and households get goods from firms. If every household has identical wealth, income, and ownership of the firm, any monopoly "power" of the firm over households is illusory: the households receive all economic profits as owners of the firm. More common is to suppose that the households buying the monopolist's goods have no ownership in the firm—a source of power inequality.
2. While preparing this book I volunteered as part of a group of American Bar Association's Antitrust Committee members, assembling a list of practically relevant recent research papers on antitrust economics. Journals in which such papers appeared, and which may be good places for the frontier-minded reader to explore, include *Review of Industrial Organization*, *Managerial and Decision Economics*, *Economic Inquiry*, *American Economic Review*, *The Review of Economic Studies*, *Rand Journal of Economics*, *Econometrica*, and *The Journal of Law and Economics*.
3. In the world of mergers, an antitrust agency head—of the Federal Trade Commission, for example—need not always make their way to a decision, as the would-be merging parties may withdraw their merger proposal. Similarly, in antitrust court cases the plaintiff—often the US Department of Justice—may drop the suit midstream.

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