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***Journal of Competition Law and
Economics, Forthcoming***

**George Mason University Law and Economics
Research Paper Series**

09-54

This paper can be downloaded without charge from the Social Science
Research Network at http://ssrn.com/abstract_id=1490849

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If an economist finds something . . . that he does not understand, he looks for a monopoly explanation. And as in this field we are rather ignorant, the number of un-understandable practices tends to be rather large, and the reliance on monopoly explanations frequent.”¹

And you kill what you fear/And you fear what you don’t understand.”²

I. INTRODUCTION

In 1998, the Department of Justice and a number of states brought suit against Microsoft for various alleged violations of the antitrust laws involving the operating system and browser markets.³ Even before that landmark antitrust intervention into the operating system market, antitrust scholars, practitioners and enforcers thoroughly debated the optimal design of competition policy and enforcement in what is often described as the “New Economy” – characterized by innovation, dynamic competition, multi-sided platforms, the potential for network effects and lock-in, and novel business models or marketing techniques. Much has changed in the monopolization landscape since the *Microsoft* decision over a decade ago: the United States Department of Justice has held hearings on the appropriate scope of Section 2 and issued a Report (and then repudiated it); the European Commission has risen as a leader in single firm conduct enforcement by bringing

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¹ Ronald Coase, *Industrial Organization: A Proposal for Research*, in 3 POLICY ISSUES AND RESEARCH OPPORTUNITIES IN INDUSTRIAL ORGANIZATION 59, 67 (Victor Fuchs ed. 1972).

² Tony Banks, Phil Collins & Mike Rutherford, “Duke’s Travels,” performed by Genesis (Hit and Run Publishing, 1980)

³ See generally William H. Page & John E. Lopatka, THE MICROSOFT CASE: ANTITRUST, HIGH TECHNOLOGY, AND CONSUMER WELFARE (Chicago Press 2007).

abuse of dominance actions and assessing heavy fines against firms including Qualcomm, Intel and Microsoft; China has passed its own antitrust law and become an important stakeholder in debates over the future of international antitrust.

In the United States, the changed landscape has resulted in a new enforcement approach that is remarkably direct and honest in identifying its targets, honing in on high-tech markets and innovative industries. Indeed, large firms in markets involving innovation, intellectual property, standard setting, or the possibility of network effects have been put on notice with Google becoming the most discussed potential antitrust target, bandied about by techies, bloggers, and business writers.⁴ This is not without adequate cause. Consider the “warning shot” fired in Google’s general direction by Assistant Attorney General Varney. Analogizing the need for antitrust enforcement to the Department of Justice’s successful monopolization suit against Microsoft in the 1990s, Varney remarked:

Microsoft is so last century. They are not the problem. I think we’re going to continually see a problem potentially with Google, who I think so far has acquired a monopoly in internet, online advertising lawfully. I do not think that they have done anything other than be a spectacular and innovative company I think that this is a classic area to explore how do you apply [sic] section 2 in a highly innovative, highly networked, not terribly competitive environment

Now I think you’re going to see the same repeat of Microsoft, there will be companies that will begin to allege that Google is discriminating, that it is not allowing their products to interoperate with the Google products, and I think that we ought to have learned from the Microsoft experience, what the right standards

⁴ See, e.g., Steve Lohr, *Google, Zen Master of Market*, N.Y. TIMES, May 17, 2009, available at <http://www.nytimes.com/2008/07/07/technology/07google.html?pagewanted=print>; Steve Lohr & Miguel Helft, *New Mood in Antitrust May Target Google*, N.Y. TIMES, May 17, 2009, available at <http://www.nytimes.com/2009/05/18/technology/companies/18antitrust.html>; Daniel Lyons, *They Might Be a Little Evil: Why Google Faces Antitrust Scrutiny*, NEWSWEEK, May 23, 2009, available at <http://www.newsweek.com/id/198855>; Farhad Manjoo, *The Case Against the Case Against Google – The Department of Justice Should Take a Hint From the Microsoft Suit: No More Antitrust Actions Against Tech Companies*, SLATE, July 28, 2009, <http://www.slate.com/id/2223755>; Declan McCullagh, *In D.C. Antitrust Circles, How Google Became the Hunted*, CNET NEWS, Sept. 9, 2008, available at http://news.cnet.com/8301-13578_3-10036948-38.html; Declan McCullagh, *On Antitrust, is Google the Next Microsoft*, ZDNET NEWS, July 23, 2007, http://news.zdnet.com/2100-9588_22-152610.html; James Rowley, *Antitrust Pick Varney Saw Google as New Microsoft*, BLOOMBERG.COM, Feb. 17, 2009, <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aG9B5.J3B11w>; Posting of Erick Schonfeld to TechCrunch, <http://www.techcrunch.com/> (May 11, 2009); Fred Vogelstein, *Why is Obama’s Top Antitrust Cop Gunning for Google?*, WIRED, July, 20, 2009, http://www.wired.com/techbiz/it/magazine/17-08/mf_googlopoly; WSJ Law Blog, <http://blogs.wsj.com/law/> (May 8, 2009, 9:22 EST).

are, and the problem that we had with Microsoft, I think, as a government we went in too late.⁵

Like Microsoft before it, Google has become the paradigmatic potential antitrust defendant in the context of the new approach taking aim at successful firms in the New Economy. There has been much debate in the antitrust community over the merits of this new approach.⁶ In some ways, these debates bring back to the surface unresolved questions concerning the substantive merits of antitrust enforcement actions against Microsoft – and whether an appropriate lesson to be drawn from the *Microsoft* case is that vigorous and systematic intervention into innovative industries is an improvement relative to the status quo or other feasible policy alternatives from a consumer welfare perspective.⁷

The new approach does offer some certainty and clarity to firms in innovative industries: they have been duly warned. Whatever the merits of full disclosure of the potential antitrust exposure facing firms in the New Economy, this new approach certainly lacks humility. This approach, of course, has a variety of advocates and has been presented to a variety of degrees. Unfortunately, now Assistant Attorney General Varney has articulated one extreme and provocative variant of this new approach in an earlier speech in which she declared that “there is no such thing as a false positive.”⁸ Varney’s statement further suggests that enforcement decisions will proceed without regard to the cost to consumers of mistakenly wielding the antitrust hammer against innovative firms, suggesting that “the more people in the bars start rejecting this idea of false positives the better off we’re going to be.”⁹ Less than a year after the Supreme Court reinforced that error costs were a central component of monopolization doctrine, the soon to be chief antitrust enforcer in the United States offered a dramatically different view of the role that antitrust errors should play in future enforcement decisions.¹⁰

Things have also changed in the web-based economy. As is to be expected in dynamic markets, it would have been difficult to predict in 1998 the challenge that Linux would pose to Microsoft, the growth of Google, the commercial success of the iPod, and many other welfare-enhancing innovations over the last decade. But despite these apparent changes in the legal and economic environment, the antitrust

⁵ Christine Varney, Remarks Before the American Antitrust Institute (Feb. 11, 2008), available at <http://www.antitrustinstitute.org/Archives/Varney.ashx>.

⁶ See, e.g., <http://blogs.wsj.com/deals/2009/05/12/putting-the-anti-back-into-antitrust-enforcement/>; <http://www.forbes.com/2009/05/18/christine-varney-antitrust-opinions-columnists-law.html>

⁷ See, e.g., Page & Lopatka, *supra* note 3.

⁸ Christine Varney, Remarks Before the American Antitrust Institute (Feb. 11, 2008), available at <http://www.antitrustinstitute.org/Archives/Varney.ashx>.

⁹ *Id.*

¹⁰ *Pac. Bel. Tel. Co. v. Linkline Commc’ns, Inc.*, 129 S. Ct. 1109, 1113-14 (2009) (“Recognizing a price-squeeze claim where the defendant’s retail price remains above cost would invite the precise harm we sought to avoid in *Brooke Group*: Firms might raise their retail prices or refrain from aggressive price competition to avoid potential antitrust liability” and finding it “most troubling [that] firms that seek to avoid price squeeze liability will have no safe harbor for their pricing practices.”)

community finds itself facing the same debate that raged before and after the *Microsoft* wars: what is the appropriate role of antitrust, and monopolization law in particular, in the New Economy? Much has been written on this topic, with virtually every conceivable policy position taken in some form or another. Some have argued that the economy moves too fast for antitrust remedies to be fully effective.¹¹ Indeed, this is one of the few clear lessons of the *Microsoft* litigation and its aftermath.¹² Others have argued that antitrust rules simply should not apply where innovation and dynamic competition are at stake because of the potentially chilling effects on innovation.¹³ Still others have argued that anticompetitive abuses are even more likely to stifle innovation and harm consumers in the modern economy, and thus antitrust enforcers should be especially active in these markets.¹⁴

In this paper, which offers an opportunity to reflect on Frank Easterbrook's seminal work on the *Limits of Antitrust*, we address this question but bring to battle two weapons that have been underutilized in the debate but that are at the core of Easterbrook's work: economic theory and evidence. The first weapon is the error-cost framework which owes its intellectual foundation to Easterbrook's article, and we claim, contrary to some recent critics and agency authorities, is crucial to identifying optimal antitrust rules in the New Economy. The error-cost framework is one of the most influential contributions to antitrust law and economics in large part because it paved the way for the incorporation of the powerful tools of decision-theory, or error-cost analysis, into the optimal design of antitrust rules. The second weapon is the benefit of hindsight and historical evidence. Unfortunately, the debate over optimal antitrust policy, particularly with respect to monopolization, has increasingly turned away from an evidence-based approach in favor of rhetorically pleasing but economically wrongheaded approaches which conflate the activity level of enforcers with successful enforcement.¹⁵

The error-cost framework in antitrust originates with Easterbrook's seminal analysis, itself built on twin premises: first, that false positives are more costly than false negatives because self-correction mechanisms mitigate the latter but not the

¹¹ Robert W. Crandall & Clifford Winston, *Does Antitrust Policy Improve Consumer Welfare? Assessing the Evidence* 17 J. ECON. PERSP. 3 (2003).

¹² William H. Page & Seldon J. Childers, *Measuring Compliance with Compulsory Licensing Remedies in the American Microsoft Case*, 76 ANTITRUST L.J. 239 (2009); William H. Page, *Mandatory Contracting Remedies in the American and European Microsoft Cases*, 75 ANTITRUST L.J. 787 (2008); William H. Page & Seldon J. Childers, *Software Development as an Antitrust Remedy: Lessons from the Enforcement of the Microsoft Communications Protocol Licensing Requirement*, 14 MICH. TELECOMM. & TECH. L. REV. 77 (2008).

¹³ Daniel F. Spulber, *Unlocking Technology: Antitrust and Innovation*, 4(4) J. COMP. L. & ECON. 915 (2008).

¹⁴ See, e.g., Carl Shapiro, *Exclusivity In Network Industries*, 7 GEO. MASON L. REV. 673, 674-75 (1999).

¹⁵ This conflation of activity level with success has come from a number of sources, including President Obama. See Barack Obama, Senator, Statement to the American Antitrust Institute (Nov. 5, 2009), available at http://www.antitrustinstitute.org/archives/files/aa-i-%20Presidential%20campaign%20-%20Obama%209-07_092720071759.pdf (promising to "reinvigorating antitrust enforcement" and asserting that the activity level of enforcement during the Bush administration caused negative consequences for consumers).

former, and second, that errors of both types are inevitable because distinguishing pro-competitive conduct from anti-competitive conduct is an inherently difficult task in a single-firm context.¹⁶ At its core, the error-cost framework is a simple but powerful analytical tool that requires inputs from state of the art economic theory and empirical evidence regarding the competitive consequences of various types of business conduct and produces outputs in the form of legal rules. While legal scholars typically avoid rigorous attempts to work through the available economic theory and evidence when discussing the optimal design of legal rules, economists frequently fail to assess their analyses in a realistic institutional setting and avoid incorporating the social costs of erroneous enforcement decisions into their analyses and recommendations for legal rules.

The error-cost framework lies at the heart of modern economic and legal debates surrounding the appropriate scope of monopolization law and other areas of antitrust. Proponents of the “new” and more interventionist approach to antitrust enforcement argue that modern monopolization jurisprudence overweighs both the incidence and magnitude of false positives relative to false negatives. In addition to the new chief antitrust enforcer at the Department of Justice, Federal Trade Commissioners and leading antitrust scholars in the United States and Europe have lamented the evolution of antitrust rules that, in their view, systematically under-deter anticompetitive behavior because of the incorporation of the “error-cost” framework and concerns about false positives into Sherman Act jurisprudence.¹⁷

Taken together, these developments (and others) portend a movement away from error-cost analysis, impelled by the belief that antitrust intervention is essentially costless from a consumer welfare perspective. This belief stands in stark contrast to Easterbrook’s approach of assuming that errors are an inevitable and core feature of the antitrust enterprise. The new approach implies that over-deterrence is not a concern that should motivate either enforcement decisions or the design of liability rules. Indeed, advocates of the new approach have suggested that error cost concerns are antiquated in the New Economy, and that false positives are no longer a concept capable of contributing to the antitrust policy debates.

In Part II, we revisit Easterbrook’s classic article, the error-cost framework, its development and contributions to antitrust over the past 25 years, and its implications for antitrust when applied to industries characterized by innovation, network effects and dynamic competition.

In Part III, we discuss the historical link between innovation and antitrust error, or more precisely, between technological change and false positives. Importantly, as we discuss, we note that the problems posed by innovation for antitrust analysis are not confined to high-tech products, but also occur in the context

¹⁶ Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1 (1984).

¹⁷ See, e.g., Varney, *supra* note 5; J. Thomas Rosch, Thoughts on the Withdrawal of the Section 2 Report, available at: <http://ftc.gov/speeches/rosch/090625roschibareport.pdf>.

of more mundane (and omnipresent) business processes. We provide historical examples of this positive association between product and business innovation followed by antitrust intervention that reduced efficiency and harmed consumers by objective economic standards.

Part IV concludes by challenging the conventional wisdom that the error cost approach implies that the rule of reason should apply to most forms of business conduct rather than per se rules. While we agree that per se rules should not apply to cases involving product or business innovation, broadly defined, we argue that the error cost approach should not require generalist judges to evaluate state of the art economic theory and evidence on a case by case basis. Instead, we favor an approach that is consistent with the spirit of Easterbrook’s original analysis, identifying simple filters aiming to harness the best existing economic knowledge to design simple rules that minimize error costs. We conclude with five such proposals for simple rules based on existing economic theory, empirical evidence, and acknowledgement of the institutional biases toward false positives discussed above.

II. THE LIMITS OF ANTITRUST, THE ERROR COST FRAMEWORK, AND THE NEW ECONOMY

The primary contribution of Judge Easterbrook’s *Limits of Antitrust* was to force the antitrust community to think much more rigorously about the relationship between errors and antitrust liability rules. The key policy tradeoff, Easterbrook explained, was that between Type I (“false positive”) and Type II (“false negative”) errors. Table 1 presents a two by two matrix laying out the types of errors that occur in antitrust litigation.¹⁸

Table 1. Possible Errors in the Antitrust Assessment of Business Practices

Competitive Impact	Illegal	Legal
Harmful to Competition	Percent of cases correctly condemning anticompetitive practices	Percent of cases falsely absolving anticompetitive practices (“false negatives”)
Not Harmful to Competition	Percent of cases falsely condemning legitimate practices (“false positives”)	Percent of cases correctly absolving legitimate practices

¹⁸ Table 1 originally appears in David S. Evans & Jorge Padilla, *Neo-Chicago Approach to Unilateral Practices*, 72 U. CHI. L. REV. 73 (2005).

While the error-cost framework is a concept that can comfortably be applied to any area of the law, it is especially useful in antitrust given the often-underappreciated difficulty of the task assigned to judges: to distinguish anticompetitive behavior from pro-competitive given limited evidence, along with the clues economic theory can provide. Thus, the problem of dealing with error in the design of the liability rules themselves in antitrust was an important innovation. From simple legal and economic assumptions, Easterbrook provided a powerful framework to think about the optimal design of antitrust rules in the face of expected errors. The assumptions were as follows: (1) both types of errors were inevitable in antitrust cases, because of the difficulty in distinguishing efficient, pro-competitive business conduct from anticompetitive behavior;¹⁹ (2) the social costs associated with Type I errors would generally be greater than the social costs of Type II errors because market forces offer at least some corrective with respect to Type II errors and none with regard to Type I errors, or as Easterbrook articulated it, “the economist’s system corrects monopoly more readily than it corrects judicial [Type II] errors;”²⁰ and (3) optimal antitrust rules will minimize the expected sum of error costs subject to the constraint that the rules be relatively simple and reasonably administrable.²¹

From those simple presumptions Easterbrook argued that a number of simple filters could be used to minimize error costs, including requirements that a plaintiff demonstrate that the firm at issue had market power, that the practices could harm consumers, whether firms in the industry use different methods of production and distribution, whether the evidence was consistent with a reduction in output, and whether the complaining firm was a rival in the relevant market.²²

A. The Error-Cost Framework

Easterbrook’s analysis of antitrust errors lends itself nicely to a Bayesian decision-theoretic framework designed to address problems of decision-making under uncertainty, and economists re-labeling the approach as the “error-cost

¹⁹ There are really two separate points here. The first is the inevitability of errors with decision by legal rule generally. See Easterbrook, *supra* note 16, at 14-15 (reiterating that “one cannot have the savings of decision by rule without accepting the costs of mistakes.”). The second point is that the likelihood of antitrust error depends crucially on the development of economic science to produce techniques and methods by which we can successfully identify conduct that harms consumers. See also Frank H. Easterbrook, *Workable Antitrust Policy*, 84 MICH. L. REV. 1696 (1986).

²⁰ Easterbrook, *supra* note 16, at 15.

²¹ This is a point most often attributed to then Judge Breyer’s well known admonition that antitrust rules “must be administratively workable and therefore cannot always take account of every complex economic circumstance or qualification.” *Town of Concord v. Boston Edison Co.*, 915 F.2d 17, 22 (1st Cir. 1990). But the Chicago School of antitrust has traditionally shared with Breyer’s Harvard School a preference for using economics to generate simple and administrable rules rather than overly sophisticated economic tests. See Joshua D. Wright, *The Roberts Court and the Chicago School of Antitrust: the 2006 Term and Beyond*, 3 Comp. Pol’y Int’l. 25, 27 (2007); William Kovacic, *The Intellectual DNA of Modern U.S. Competition Law for Dominant Firm Conduct: the Chicago/Harvard Double Helix*, 2007 COLUM. BUS. L. REV. 1, 32-35 (2007) .

²² Easterbrook, *supra* note 16, at 18.

framework,” have applied the framework to identify optimal rules for a range of practices including tying, exclusive dealing, mergers and RPM.²³ Applying this approach, the regulator, court or policymaker holds a prior belief about the likelihood that a specific business practice is anticompetitive. These prior beliefs are updated with new evidence either as the theoretical and empirical understanding of the practice evolves over time or with case-specific information. The optimal decision rule is then based on the new, updated likelihood that the practice will be anticompetitive by minimizing a loss function measuring the social costs of Type 1 and Type 2 errors.

Following Cooper, et al.,²⁴ we can write the expected loss functions associated with both types of errors as follows:

$$(1) \quad E[\text{Loss}_1|x] = L_1 P(C|x) = \frac{L_1 P(C)P(x|C)}{R_c}$$

$$(2) \quad E[\text{Loss}_2|x] = L_2 P(A|x) = \frac{L_2 P(A)P(x|A)}{R_c}$$

Where x is the available evidence, $P(\)$ denotes probability, C denotes that the practice is pro-competitive, and A that it is anticompetitive. A Bayesian rule leads an enforcer to challenge the practice at issue only if the expected Type 2 loss from refraining from enforcement is greater than the expected Type 1 loss from challenging it. As such, one can restate the optimal, “error-cost adjusted” enforcement rule which minimizes these losses as:

$$(3) \quad \frac{P(x|C)}{P(x|A)} \leq \left(\frac{L_2}{L_1}\right) \left(\frac{P(A)}{P(C)}\right)$$

From this framework, we can see that the error-cost minimizing antitrust rule will depend on the likelihoods that particular practices are anticompetitive, the loss functions of the enforcer, and the enforcer’s prior beliefs. Immediately one can see the importance of the fundamental insight from the *Limits of Antitrust* that Type 1 errors are likely to be more costly than Type 2 errors because market forces place some constraints on the latter but not the former. Indeed, this insight becomes more and not less important as our collective economic wisdom about a new business

²³ See generally Joshua D. Wright, *Overshot the Mark? A Simple Explanation of the Chicago School’s Influence on Antitrust*, 5 COMP. POL’Y INTL. 179 (2009) (hereinafter “*Overshot the Mark*”); Keith N. Hylton & Michael Salinger, *Tying Law and Policy: A Decision Theoretic Approach*, 69 ANTITRUST L.J. 469 (2001); C. Frederick Beckner III & Steven C. Salop, *Decision Theory and Antitrust Rules*, 67 ANTITRUST L.J. 41 (1999).

²⁴ See generally James C. Cooper, Luke M. Froeb, Dan O’Brien & Michael G. Vita, *Vertical Antitrust Policy as a Problem of Inference*, 23 INT’L J. INDUS. ORG. 639 (2005). See also Keith N. Hylton, *The Law and Economics of Monopolization Standards*, in ANTITRUST LAW AND ECONOMICS (forthcoming 2009).

practice decreases—when, in other words, a challenged practice or setting is innovative. All things equal, the error-cost framework calls for a more interventionist antitrust rule when Type 2 error costs are higher, there are strong priors that the given practice is anticompetitive, and theory and evidence suggest a strong likelihood that the practice is anticompetitive.²⁵

The error cost framework is also useful for providing a taxonomy of antitrust errors in creating mistaken likelihoods about the competitive impact of a particular practice, failing to update one's priors with new evidence, misjudging the relative magnitude of the social costs associated with antitrust errors, or including non-economic arguments in the regulator's loss function.²⁶ We focus almost exclusively on the first type of error here—that is, a court or regulator's erroneous conclusion that a practice is anticompetitive. This type of error itself can have many causes, but the root of them all is the fundamental problem that it is a difficult task to identify anticompetitive conduct and distinguish it from pro-competitive conduct in any specific case. Consider two examples. First, one can imagine a court or regulator faithfully and accurately applying bad economic theory which simply has not yet fully comprehended the competitive implications of the practice at issue. Antitrust jurisprudence, both historical and recent, contains several excellent examples of this, including several of the Warren Court's horizontal merger decisions, such as *Von's Grocery*, and the Court's long-held and recently dispelled *per se* prohibition against resale price maintenance. In each case judges condemn business practices that economists either do not yet understand or misunderstand to be anticompetitive. As we will discuss, antitrust lawyers and economists have a long and storied history of systematically assigning anticompetitive explanations to conduct that is novel and not well understood.

Second, consider a different sort of problem that leads to the same type of error. We now have substantial bodies of economic theory explaining the use of

²⁵ Multiple academics review the existing theory and evidence on vertical restraints and single firm conduct more generally and uniformly conclude that the practices at issue are generally pro-competitive and that antitrust rules should "slant" towards requiring plaintiffs to demonstrate clear anticompetitive effect before condemning finding violations. See, e.g., Cooper et. al, *supra* note 24; Francine Lafontaine and Margaret Slade, *Exclusive Contracts and Vertical Restraints: Empirical Evidence and Public Policy*, in HANDBOOK OF ANTITRUST ECONOMICS (Paolo Buccirossi, ed., forthcoming 2009); Daniel P. O'Brien, *The Antitrust Treatment of Vertical Restraints*, in Report: The Pros and Cons of Vertical Restraints 40 (2008), available at http://www.konkurrensverket.se/upload/Filer/Trycksaker/Rapporter/Pros&Cons/rap_pros_and_cons_vertical_restraints.pdf.

²⁶ Obviously, this choice of loss function need not be a "mistake" unless compared to a regime where the loss function is measured exclusively by total or consumer welfare. Quite the contrary, the decision to incorporate non-economic arguments is generally deliberate. For example, Cooper et al. explore the possibility that concerns with market integration in the European Union and a higher tolerance for Type 1 error deriving from a less generous system of private rights of action explain divergent treatment of vertical restraints between the EU and US. See Cooper et al., *supra* note 24.

exclusive dealing contracts and their potential competitive effects.²⁷ The body of theory itself, as far as we know, is not mistaken. Post-Chicago models describe potentially-anticompetitive uses of exclusive dealing contracts while other models explain possible efficiency justifications. Both models are built on sets of simplifying and sometimes highly stylized assumptions and lay out necessary conditions for their predictions to hold. A generalist judge is asked to reconcile expert economic testimony from competing experts arguing that their own model of exclusive dealing best explains the practice at issue in this case. Perhaps the experts bolster their case with a technical appendix of the model and maybe even some econometric data, fixed effects panel regressions with instrumental variables to correct for endogeneity, and a lengthy discussion of the appropriate standard errors for such analysis. In this case, the inevitability of errors stems not from inadequate or demonstrably “wrong” economic theory, but rather the demands on judges not generally trained in economics to make increasingly sophisticated economic determinations.²⁸

In each case, economics is not providing adequate tools to identify anticompetitive conduct without systematic error. This is not meant as an attack on economics in antitrust *per se*. The alternative of simply assigning liability based on prior beliefs without updates according to existing economic theory and evidence would not be an improvement, and some would argue, has already been attempted without success in the earliest days of the Sherman Act. Without a serious methodological commitment to economic science, the incorporation of economics into antitrust is merely a façade allowing regulators and judges to select whatever economic model fits their prior beliefs or policy preferences rather than the model that best fits the real world data. Economic theory remains essential to antitrust law; it is economic analysis that constrains antitrust law and harnesses it so that it is used to protect consumers rather than competitors. And, to be sure, the relationship between economics and antitrust is responsible for the successful evolution of antitrust from its economically incoherent origins to its present state. But in our view, the fundamental challenge for antitrust is one that is created by having “too many theories” without methodological commitments from regulators and courts on how to select between them. The proliferation of economic models that came along with the rise of Post-Chicago economics, integration of game theory into industrial organization, and now increasing calls to incorporate insights from behavioral economics into antitrust and competition policy has led to a state of affairs where a regulator or court has a broad spectrum of models to choose from when analyzing an

²⁷ See also Alden F. Abbott and Joshua D. Wright, *Antitrust Analysis of Tying Arrangements and Exclusive Dealing*, in ANTITRUST LAW AND ECONOMICS (Keith N. Hylton, ed., forthcoming 2009) (summarizing the literature and empirical evidence on exclusive dealing contracts).

²⁸ See generally Michael R. Baye & Joshua D. Wright, *Is Antitrust Too Complicated for Generalist Judges? The Impact of Economic Complexity & Judicial Training on Appeals* (George Mason University School of Law, Working Paper, August 21, 2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1319888 (finding a statistically significant tendency for economically trained judges to perform better in simple antitrust cases, but not those involving sophisticated economic evidence).

antitrust issue, but antitrust has not provided that decision-maker with sensible criteria for making that model selection decision. Taken to the extreme, this model selection problem threatens to strip the disciplining force that economics has placed on antitrust law and which was a key part of the successful evolution of that body of law over the last fifty years.²⁹

The key point is that the task of distinguishing anticompetitive behavior from pro-competitive behavior is a herculean one imposed on enforcers and judges, and that even when economists get it right *before* the practice is litigated, some error is inevitable. The power of the error cost framework is that it allows regulators, judges and policy makers to harness the power of economics, and the state of the art theory and evidence, into the formulation of simple and sensible filters and safe harbors rather than convert themselves into amateur econometricians, game-theorists, or behaviorists.³⁰

B. Error Costs and Innovation

While economists have applied this framework fruitfully to several business practices that have attracted antitrust scrutiny, our goal in this paper is to harness the power of this framework to take an Easterbrookian, error-cost minimizing approach to antitrust intervention in markets where *innovation* is a critical part of the competitive landscape. While much has been said about the relationship between innovation and antitrust, often in the way of broad pronouncements that innovation either renders antitrust essential to economic growth or entirely unnecessary, the error-cost framework allows for greater precision in policy prescriptions and a more nuanced approach.

Our goal in this paper is to discuss the application of the error-cost framework to business conduct involving innovation and to discuss the framework's policy implications. Some of the implications are well understood in the current body of literature and others have been frequently ignored or remain entirely unrecognized. Given recent activities in the antitrust enforcement landscape—identifying innovating firms in high-tech markets as likely antitrust targets combined with recent discussions of error costs from leading enforcers,³¹ at the Section 2

²⁹ Joshua Wright, *Commissioner Rosch, Rhetoric, and the Relationship Between Economics and Antitrust*, TRUTH ON THE MARKET (June 12, 2009, 11:55 AM), at <http://www.truthonthemarket.com/2009/06/12/commissioner-rosch-rhetoric-and-the-relationship-between-economics-and-antitrust/>; *see also* Wright, *supra* note 23.

³⁰ Indeed, one of the most powerful implications of the error-cost framework is one that creates some tension for economically-minded antitrust scholars. The implication is that a movement towards sophisticated rule of reason standards that attempt to determine fully the competitive effects of a given practice on a case by case basis with modern economic tools, a movement many antitrust economists support, is likely to increase error costs if sufficient attention is not paid to the administrability of the tests.

³¹ *See* Varney, *supra* note 5.

Hearings,³² and elsewhere³³—we hope to begin a more rigorous discussion of the relationships between innovation, antitrust error, and optimal liability rules that goes beyond merely selecting economic models that fit regulator’s prior beliefs. We begin by discussing some principles for application of the error cost framework in the innovation context before discussing the historical relationship between antitrust error and innovation in Section III.

Innovation creates special opportunity for antitrust error in two important ways. The first is that innovation by definition generally involves new business practices or products. Novel business practices or innovative products have historically not been treated kindly by antitrust authorities. From an error cost perspective, the fundamental problem is that economists have had a longstanding tendency to ascribe anticompetitive explanations to new forms of conduct that are not well understood. As Nobel Laureate Ronald Coase described in lamenting the state of the industrial organization literature:

if an economist finds something—a business practice of one sort or another—that he does not understand, he looks for a monopoly explanation. And as in this field we are very ignorant, the number of understandable practices tends to be very large, and the reliance on a monopoly explanation, frequent.³⁴

Antitrust economists were not alone in tending toward monopoly explanations of new or persistently misunderstood practices. Courts relying on economic literature with some lag long found attraction in the model of perfect competition and its atomistic markets years after it had been disregarded by most economists as a model of individual firm behavior.³⁵ With the increasing integration of economic concepts into antitrust law and almost universal agreement about the assertion that modern economics contains useful tools for incorporating dynamic efficiencies’ innovation effects into traditional antitrust analysis,³⁶ the anti-market bias in the antitrust

³² U.S. DEP’T OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT viii (2008), *available at* <http://www.usdoj.gov/atr/public/reports/236681.pdf> (internal citations omitted).

³³ *See, e.g.*, Stacey L. Dogan & Mark A. Lemley, *Antitrust Law and Regulatory Gaming*, 87 TEX. L. REV. 685 (2009).

³⁴ Ronald Coase, *Industrial Organization: A Proposal for Research*, in POLICY ISSUES AND RESEARCH OPPORTUNITIES IN INDUSTRIAL ORGANIZATION (Victor R. Fuchs, ed., 1972). For more modern critiques of the industrial organization literature in the same vein, *see* Timothy J. Muris, *Economics and Antitrust*, 5 GEO. MASON L. REV. 303 (1997), Bruce H. Kobayashi, *Game Theory and Antitrust: A Post Mortem*, 5 GEO. MASON L. REV. 411 (1997) (reviewing critiques of the IO literature); Evans and Padilla, *supra* note 18.

³⁵ *See* Alan Meese, *Market Failure and Non-Standard Contracting: How the Ghost of Perfect Competition Still Haunts Antitrust*, 1 J. COMP. L. & ECON. 21 (2005); Harold Demsetz, *How Many Cheers for Antitrust’s 100 Years?* 30 ECON. INQ. 207 (1992).

³⁶ ANTITRUST MODERNIZATION COMMISSION, REPORT AND RECOMMENDATIONS 32 (2007) (recommending that “in industries where innovation, intellectual property, and technological change are central features . . . antitrust enforcers should carefully consider market dynamics in assessing competitive effects . . .”).

economics profession described by Coase is likely to have even more significant policy consequences in modern antitrust.

Both product and business innovations involve novel practices, and such practices generally result in monopoly explanations from the economics profession followed by hostility from the courts (though sometimes in reverse order) and then a subsequent, more nuanced economic understanding of the business practice usually recognizing its pro-competitive virtues. This sequence and outcome is exactly what one might expect in a world where economists' career incentives skew in favor of generating models that demonstrate inefficiencies and debunk the Chicago School status quo, while defendants engaged in business practices that have evolved over time through trial and error have a difficult time articulating a justification that fits one of a court's checklist of acceptable answers. From an error-cost perspective, the critical point is that antitrust scrutiny of innovation and innovative business practices is likely to be biased in the direction of assigning higher likelihood that a given practice is anticompetitive than the subsequent literature and evidence will ultimately suggest is reasonable or accurate.

This bias toward Type 1 error is skewed only further by the fact that, as a general rule, economists know much less about the relationship between competition and innovation, and in turn, consumer welfare, than they do about standard price competition.³⁷ The antitrust community appears enthusiastically to endorse the proposition that not only should antitrust analysis more rigorously incorporate dynamic efficiencies and innovation effects, but could do so within its current analytical framework. For example, the Antitrust Modernization Committee recommendations and findings conclude that:

“[C]urrent antitrust analysis has a sufficient grounding in economics and is sufficiently flexible to reach appropriate conclusions in matters involving industries in which innovation, intellectual property, and technological change are central features.”³⁸

The debate thus appears to be moving beyond a discussion of *whether* antitrust should account for innovation and towards a fruitful discussion regarding the appropriate methodology for doing so. But exactly what do we know about the relationship between competition, innovation and consumer welfare? While we know that innovation is critical to economic growth, the theoretical literature relating to competition and innovation remains insufficient to instill any great confidence in our ability to determine what antitrust policies will encourage innovation and result in net consumer welfare gains. Specifically, our ability to apply antitrust standards

³⁷ See, e.g., Joshua D. Wright, *Antitrust, Multi-Dimensional Competition, and Innovation: Do We Have An Antitrust Relevant Theory of Competition Now?*, in REGULATING INNOVATION: COMPETITION POLICY AND PATENT LAW UNDER UNCERTAINTY (Geoffrey A. Manne & Joshua D. Wright, eds., Cambridge University Press, forthcoming 2010); see generally Geoffrey A. Manne & Joshua D. Wright in ID. at ch.1 (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1462489).

³⁸ ANTITRUST MODERNIZATION COMMISSION, REPORT AND RECOMMENDATIONS 38 (2007)

depends on our ability to predict how a rule will impact the *mixture* of competitive forms that will exist after the policy is implemented and to rank these mixtures on consumer welfare or efficiency criteria.³⁹ While economists continue to make progress in this field, Gilbert’s careful examination concludes that the existing body of theoretical and empirical literature on the relationship between competition and innovation “fails to provide general support for the Schumpeterian hypothesis that monopoly promotes either investment in research and development or the output of innovation” and that “the theoretical and empirical evidence also does not support a strong conclusion that competition is uniformly a stimulus to innovation.”⁴⁰

The critical point here is that innovation is closely related to antitrust error. The argument is simple. Because innovation involves new products and business practices, courts and economists’ initial understanding of these practices will skew initial likelihoods that innovation is anticompetitive and the proper subject of antitrust scrutiny. To the extent that modern antitrust analysis relies even more heavily on economics, the problem is exacerbated. Further, to the extent that economists have less systematic theoretical and empirical knowledge about the relationship between competition and innovation on policy relevant margins than they do about other traditional forms of competition, this bias is likely to do more damage.

The second critical link between antitrust error and innovation is that, relative to non-innovation cases, the stakes are higher. While the empirical literature does not contain reliable information on the relative magnitudes of Type 1 and Type 2 error costs, the well-established empirical link between innovation and economic growth tells us that the stakes of error are much higher. Of course, one could argue that innovation simply raises the costs of both Type 1 and Type 2 error and therefore would not predict a shift in the optimal antitrust liability rule under the error cost framework. This, however, ignores Easterbrook’s central assumption, based on bedrock economic principles, that Type 1 (false positive) errors are likely to be

³⁹ See Wright, *supra* note 37; accord Richard J. Gilbert, *Competition and Innovation*, in 1 ISSUES IN COMPETITION LAW AND POLICY 577, 583 (W. Dale Collins ed., 2008) (“economic theory does not provide unambiguous support either for the view that market power generally threatens innovation by lowering the return to innovative efforts nor the Schumpeterian view that concentrated markets generally promote innovation.”).

⁴⁰ *Id.* It should be noted that Gilbert takes from this mixed record the implication that presumptions that product market competition increases innovation should be applied under certain conditions and that generally, case-by-case fact-specific analysis is appropriate. This is in line with the general view of economists that rule of reason analysis is best suited for situations where competing theories render predictions on consumer welfare indeterminate. We do not agree for reasons discussed in Sections 3 and 4. The primary point is that where economic science generates indeterminate predictions, asking judges to resolve the debate requires an unrealistic degree of economic literacy. An alternative approach, and the one advocated in the *Limits of Antitrust*, is to harness existing economic knowledge into simple presumptions that can reduce error rates. We note in passing, moreover, that to the extent that we are correct about the relationship between antitrust enforcement and error costs, the empirical failure of the Schumpeterian hypothesis may be a consequence of a long history of antitrust enforcement decisions that account insufficiently for the benefits of monopoly to innovation.

significantly more costly than Type 2 errors because market forces offer at least a partial corrective in the case of the latter. In the innovation context, successfully challenging business or product innovations is likely to dampen innovation across the economy whereas Type 2 errors are at least mitigated in part by entry and other competition. When viewed through the error cost lens, the combination of the anti-market bias in favor of monopoly explanations for innovative conduct that courts and economists do not understand, and the increased stakes of antitrust intervention against innovative business practices is problematic from a consumer welfare perspective.

Regulators are left with a tough set of conditions to overcome in order to harness the power of antitrust to generate a positive rate of return for consumers. We are left with a confluence of incentives that result in more cases involving new and innovative conduct, a bias towards courts and economists ascribing anticompetitive explanations to those practices before they are well understood (and thus prone to assigning too high a likelihood to the probability that a given innovation is anticompetitive), and a loss function that predicts even greater Type 1 error costs when innovation is present.

In Part III, we examine the historical performance of antitrust intervention and innovation in light of these conditions.

III. A BRIEF HISTORY OF ANTITRUST ERROR AND INNOVATION

The twin problems of likelihood and costs of erroneous antitrust enforcement are magnified in the face of innovation. But while some innovations—particularly technological advances—are evident, others may be somewhat more difficult to identify but nonetheless generate enormous welfare gains for consumers.⁴¹ As discussed, there is a robust body of literature establishing the contributions of technological innovation to economic growth and social welfare. Indeed, one of the persistent lessons from the economic literature on innovation has been that even apparently-small innovations can generate large consumer benefits.⁴² It is because of these dynamic and often largely-unanticipated consequences of novel technological innovation that both the likelihood and social cost of erroneous interventions against innovation are increased. As with false positives in the traditional context, it is intuitive that Judge Easterbrook's observation of the fundamental asymmetry of Type 1 and 2 error costs applies because the consequences of Type 1 error are magnified by the threat of erroneous intervention

⁴¹ See, e.g., Jerry Hausman, *Valuation of New Goods Under Perfect and Imperfect Competition*, in *THE ECONOMICS OF NEW GOODS* 209-67 (Bresnahan & Gordon eds., 1997) (discussing the consumer welfare gains from new product introductions and product line extensions).

⁴² *Id.* at 67.

further deterring subsequent, similar innovation or applications of innovations in novel settings.

Less obviously, but of at least equal importance, it is also the case that *business* innovations—innovations in organization, production, marketing, and/or distribution—can have similar, far-reaching consequences.⁴³ Part of the unheralded genius of Easterbrook’s original article was to identify that the error cost problem was particularly acute in the face of “new method[s] of making and distributing a product.”⁴⁴ The explosion of the “New Economy” shortly after the publication of Judge Easterbrook’s article drew attention to the problems of antitrust intervention in the face particularly of technological innovation, although this was not the subject of Easterbrook’s article. However, Easterbrook’s insights with respect to the problems of false positives are equally applicable in the context of business or contractual innovations.

Unfortunately, interventions in the face of innovation (whether business or product innovations) have in fact been prevalent in our antitrust jurisprudence, and most often erroneously. A significant portion of important antitrust cases can be characterized as interventions undertaken under uncertainty, in the face of a novel business practice or product, relying on fundamentally flawed or misapplied economic analysis, subsequently demonstrated to have been mistaken. In some cases the courts do, indeed, correct the error of the initial enforcement or litigation decision; in most they do not.

What is curious is that *new* is in fact *bad* in antitrust; antitrust is hostile to innovation. As we have discussed, despite the obvious contributions that economics has made to the development of antitrust, economists and economics are at the root of this hostility. The incentives of the economics academy, coupled with the incentives of judges, regulators and lawyers, lead to the creation and misuse of economic analysis aimed at demonstrating that nearly every un-tested market innovation can have anticompetitive consequences. Indeed, a review of the leading modern industrial organization textbooks and literature surveys reveals game theoretic models identifying conditions under which just about every contractual arrangement, product innovation, or business activity can result in consumer harm.⁴⁵ Ironically, however, it is precisely when confronted with innovative products and innovative contracts that the consequences of erroneous enforcement are increased.

⁴³ Oliver E. Williamson, *MARKETS AND HIERARCHIES, ANALYSIS AND ANTITRUST IMPLICATIONS: A STUDY IN THE ECONOMICS OF INTERNAL ORGANIZATION* (1975).

⁴⁴ Easterbrook, *supra* note 16, at 5.

⁴⁵ *See generally* JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* (1988); *see also* Comments from Timothy J. Muris, *Antitrust Law, Economics, and Bundled Discounts* (July 15, 2005), *available at* http://govinfo.library.unt.edu/amc/commission_hearings/pdf/Muris.pdf (“In the same way that a visitor from Mars who reads only the mathematical 10 literature could mistakenly conclude that the U.S. economy is rife with monopoly power, it would be a mistake to infer that the growing volume of theoretical papers examining bundling or bundled rebates as an exclusionary device implies that there is *any* growing or significant danger from the anticompetitive use of bundling”).

While this argument implies that the error-cost framework and its lessons are even *more* important in the so-called “new economy,” the troublesome trend apparent in the academic literature and from assertions of leading antitrust regulators is to downplay the role that errors play in both enforcement decisions and the design of efficient antitrust standards.

This hostile stance (the “inhospitality tradition”) toward novel economic behavior and the institutionalization of laws and processes that tend to condemn innovative behavior as questionable are particularly problematic in the face of a conception of economic behavior that is appropriately circumspect about the relationship between corporate actors’ actions and their consequences. Judge Easterbrook highlights this problem:

Wisdom lags far behind the market. It is useful for many purposes to think of market behavior as random. Firms try dozens of practices. Most of them are flops, and the firms must try something else or disappear. Other practices offer something extra to consumers—they reduce costs or improve quality—and so they survive. In a competitive struggle the firms that use the best practices survive. Mistakes are buried.

Why do particular practices work? The firms that selected the practices may or may not know what is special about them. They can describe what they do, but the why is more difficult. Only someone with a very detailed knowledge of the market process, as well as the time and data needed for evaluation, would be able to answer that question. Sometimes no one can answer it.⁴⁶

Easterbrook credits Armen Alchian with articulating fundamental principle. As Alchian suggests, it makes little sense to demand that economic actors identify, understand, and assess the procompetitive, profit maximizing basis for their behavior, as they are hampered by “imperfect foresight and human inability to solve complex problems containing a host of variables even when an optimum is definable.”⁴⁷ Rather, economic efficiency results from constrained calculations “combined with the essentials of Darwinian evolutionary natural selection.”⁴⁸ For Alchian, it is a mistake to ascribe to economic actors any special prescience about the broad (or even narrow) economic consequences of their actions.

The admonition extends even more strongly to regulators and courts, and, in particular, counsels them against assumptions based on inferences about the anticompetitive consequences of unexplained, novel economic behavior (or worse,

⁴⁶ Easterbrook, *supra* note 16, at 5.

⁴⁷ Armen Alchian, *Uncertainty, Evolution, and Economic Theory*, 58 J. POL. ECON. 211, 212 (1950).

⁴⁸ *Id.* at 213 n.7.

the anticompetitive intentions of economic actors). Innovation presents a particular challenge to antitrust.

A. Product Innovation

The false positives problem is magnified in the context of technological innovation, both because of the immense value of the innovations⁴⁹ and because of the increased likelihood of error. In his article on “Antitrust in the New Economy,” Judge Posner identifies several aspects of the “New Economy” that challenge traditional antitrust in doctrine, application, or both. Interestingly, all but one of these characteristics is essentially *product-specific* (the exception is higher rates of vertical integration).

[The New Economy is] characterized . . . by falling average costs (on a product, not firm, basis) over a broad range of output, modest capital requirements relative to what is available for new enterprises from the modern capital market, very high rates of innovation, quick and frequent entry and exit, and economies of scale in consumption (also known as “network externalities”), the realization of which may require either monopoly or interfirm cooperation in standards setting. And while vertical integration is a common feature of the old economy, it tends to be even more common in the new one, precipitating an unusually large number of firms into customer or supplier relations with other firms that are also its competitors.⁵⁰

Posner adds that the “principal output of these industries . . . is intellectual property.” The key (and potentially problematic) elements of the production and distribution of intellectual property are standardization, the need for interoperability, economies of scale, and the presence of network effects, all of which may contribute to an increased likelihood of monopolization in these industries. At the same time, the very availability of monopoly rents encourages vigorous competition for the field, yielding enormous short-run consumer welfare (some of which may be subsequently internalized through monopoly rents) as well as long-run dynamic benefits unlikely ever to be internalized by the innovator.

Posner also offers the often overlooked point that “[t]he prospect of a network monopoly should thus induce not only a high rate of innovation but also a low-price strategy that induces early joining and compensates the early joiners for the fact that eventually the network entrepreneur may be able to charge a monopoly

⁴⁹ Charles I. Jones & John C. Williams, *Measuring the Social Return to R&D*, 113 Q. J. ECON. 1119 (1998) (estimating that the social return to R&D investment far exceeds the private return, meaning existing incentives for innovation are already lower than optimal).

⁵⁰ Richard A. Posner, *Antitrust in the New Economy*, 68 ANTITRUST L.J. 925, 927 (2001).

price.”⁵¹ It is thus not only the future, dynamic benefits of technological innovation that should be weighed against its costs, but also its *past*, static benefits. One of the problems with the application of antitrust principles to the New Economy is that it is (narrowly) forward-looking, assessing whether complained-of conduct will lead to (or has already led to) monopolization. But this is a problem if the innovators have forsaken monopoly profits in competition for the field in expectation of future reward, only to find that their reward is made unavailable at the moment they begin to enjoy it. A purely static, forward-looking assessment will miss the consumer welfare benefits previously enjoyed by consumers of the innovative product and curtail the market because of a present or future expectation that consumers will be harmed. This has long-run dynamic efficiency effects, chilling the very innovation that might confer initial consumer surplus,⁵² but it also may simply miss the mark in a more static sense, punishing conduct that is already consumer-welfare enhancing.

One key problem with the economist’s incentives to identify theoretical possibilities of anticompetitive behavior, and the inhospitality tradition in antitrust law that takes advantage of it, is the enormous difficulty of identifying when specific application of the theory can be rejected. “Whenever an antitrust court is called on to balance efficiency against monopoly, there is trouble; legal uncertainty, and the likelihood of error, soar.”⁵³ Certainly it is not always the case that an exclusionary innovation is necessarily anticompetitive and even an innovation that might be anticompetitive *sometimes* will be unlikely to be anticompetitive *all the time*. Thus, a key critique of the modern industrial organization literature and its possibility theorems involving anticompetitive behavior has been that it fails to consistently produce testable implications.⁵⁴

A proper application of error-cost principles would deter intervention in such cases until empirical evidence could be amassed and assessed. Nevertheless, it is precisely in these situations that intervention may be more likely. On the one hand this may be because in the absence of information *disproving* a presumption of anticompetitive effect, there is an easier case to be made against the conduct—this despite putative burden-shifting rules that would place the onus on the complainant. On the other hand, successful innovations are also more likely to arouse the ire of competitors and/or customers, and thus both their existence and their negative characterization are more likely brought to the attention of courts or enforcers—abetted in private litigation by the lure of treble damages.

⁵¹ *Id.* at 929.

⁵² David J. Teece, *Favoring Dynamic over Static Competition: Implications for Antitrust Analysis and Policy* (forthcoming 2009).

⁵³ Posner, *supra* note 50, at 932.

⁵⁴ See generally Evans & Padilla, *supra* note 18; Wright, *supra* note 23, at _____. In addition to a general insensitivity to the facts and market conditions of the particular cases in which these theorems are to be applied, as noted above, the literature is particularly insensitive to the institutional and political economy limitations of enforcers and courts.

The following table presents a brief history of antitrust intervention in product innovation cases, identifying both the cases' underlying anticompetitive theories and the key economic insights that cast doubt on the underlying theories. In each of these cases, whether ultimately rightly or wrongly decided, the enforcement decision and/or litigation was undertaken with an anticompetitive principle animated by the product innovation being assessed.

Table 1. Product Innovation Cases

Case	Innovation	Problematic Anticompetitive Theory	Liability	Refutation of Anticompetitive Theory	Illustrative Source
<i>Berkey Photo</i>	High-quality pocket camera and film	Essential facility (“failure to predisclose”)	No	Imposing duty to deal creates suboptimal incentive to innovate and is unnecessary to ensure downstream competition	Schumpeter 1942; Areeda 1989; Lipsky & Sidak 1999; Carlton 2001
<i>Microsoft US</i>	Operating system	Network effects facilitate exclusion; refusal to deal	Yes	Network effects are positive externalities and do not lead to market failure	Liebowitz & Margolis 1990, 1994, 1995 & 1999; Spulber 2008a
<i>Microsoft EU</i>	Server operating software	Non-interoperability; refusal to deal	Yes	Imposing duty to deal on monopolist creates suboptimal incentive to innovate	Spulber 2008a, 2008b
<i>C.R. Bard</i>	Biopsy guns (and needles)	Technological tying/monopoly leverage (anticompetitive product design)	Yes	Single monopoly profit theorem; price discrimination	Director
<i>Abbott v. Teva</i>	Pharmaceutical product line extension	Product hopping	Pending (motion to dismiss denied)	Imposing duty to deal on monopolist creates suboptimal incentive to innovate	Schumpeter 1942; Carlton 2001; Gilbert 2007

To illustrate the problems, consider the more detailed assessment of two representative cases from this list.

Berkey Photo, Inc. v. Eastman Kodak Co.

In *Berkey Photo*, the innovation at issue was a new camera and its complementary film. The complaint, although spanning several causes of action, essentially alleged that the introduction of the product amounted to an anticompetitive act. More precisely, the plaintiff claimed the introduction of the product *without advance notice to competitors* was an anticompetitive act. To us this is a distinction without a difference: turning a novel innovation into old hat by requiring advanced disclosure of the innovation would subvert the incentive/reward structure that facilitates expenditure on technological innovation (and the marketing and distribution of innovative products). To complain of innovation without advance notice is to complain of innovation.

Admittedly, the appellate court in *Berkey* got the case right, at least on the most general level. The opinion by Chief Judge Kaufman of the Second Circuit even draws on Learned Hand's famous summation of the core conflict of the Sherman Act in *Alcoa* to draw particular attention to the complex incentives of competitor suits alleging anticompetitive behavior:

The conundrum was indicated in characteristically striking prose by Judge Hand, who was not able to resolve it. Having stated that Congress "did not condone 'good trusts' and condemn 'bad' ones; it forbade all," he declared with equal force, "The successful competitor, having been urged to compete, must not be turned upon when he wins." Hand, therefore, told us that it would be inherently unfair to condemn success when the Sherman Act itself mandates competition. Such a wooden rule, it was feared, might also deprive the leading firm in an industry of the incentive to exert its best efforts. Further success would yield not rewards but legal castigation. The antitrust laws would thus compel the very sloth they were intended to prevent. We must always be mindful lest the Sherman Act be invoked perversely in favor of those who seek protection against the rigors of competition.⁵⁵

But the district court and its jury were not inclined to adopt such a nuanced view, and the case in total consumed nine years of the litigants' time, including a full *four years* of pretrial activity—a hefty deterrent even with a generally positive outcome for the defendant. And while the Second Circuit's opinion contains some sophisticated thinking and language,⁵⁶ it still demonstrates a myopia concerning the totality of competitive conditions relevant to a determination of anticompetitive effect.

⁵⁵ *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263, ___ (2d, Cir. 1979) (citations omitted).

⁵⁶ Including language evidencing a concern for the substantial risk and cost of false positives created by uncertain or overly-complex application of the antitrust laws. *Id.* at ____. ("But it is difficult to comprehend how a major corporation, accustomed though it is to making business decisions with antitrust considerations in mind, could possess the omniscience to anticipate all the instances in which a jury might one day in the future retrospectively conclude that prediscovery was warranted.").

For example, the opinion makes no mention of the role of Fuji Film, which had, in fact, begun a strong push into the US market in 1972, the year before the *Berkey Photo* case was brought and precisely as Kodak introduced the 110 Instamatic camera in the “pocket camera” market—a market substantially invigorated by the high-quality Kodacolor II film made (at first) only for the 110 Instamatic at issue in the case.⁵⁷ Beginning in 1967, in fact, Kodak saw declining market share in both the overall camera and film markets (although its share seems to have remained quite high in both).⁵⁸ These sorts of dynamic market changes, and the efforts firms undertake to respond to them, are a consistent problem in antitrust cases. Firms are poorly-positioned to assess future competitive threats and to know how to address them, and courts are substantially more-hampered in these assessments. Moreover, especially on market definition questions, the importance of competitive threats is systematically undervalued by courts, conditioned as they are to assess the facts before them and to view claims of not-yet-materialized competitive threats with suspicion.

At root this case is similar to many other product innovation cases, where claims are based on variants of arguments about interoperability and access to intellectual property (or products protected by intellectual property). In this case, a competitor claimed that it was disadvantaged in its ability to compete with its dominant competitor without sufficient advance notice of the dominant company’s innovations.⁵⁹ Although not discussed in the case, the argument appears to us like an essential facilities argument, and there is an element of essential facilities logic to all of these product innovation cases. The problem with such arguments is that they assume, incorrectly, that there is no opportunity for meaningful competition with a strong incumbent in the face of innovation, or that the absence of competitors in these markets indicates inefficiency. The root of the problem is essentially in the application of inhospitable antitrust rules in the face of technological innovation. The traditional indicia of dominance are often easy to satisfy in the face of successful product innovation, especially in the New Economy. But it does not follow that dominance presents the same problems as it might in other facets of the economy. As one commentator has put it:

Some factors make leaders even more aggressive and tend to increase their market share (eventually until other firms exit): these

⁵⁷ See Vrinda Kadiyali, *Eastman Kodak in the Photographic Film Industry: Picture Imperfect?*, in MARKET DOMINANCE: HOW FIRMS GAIN, HOLD OR LOSE IT AND THE IMPACT ON ECONOMIC PERFORMANCE 89, 100 (David Rosenbaum, ed., 1998).

⁵⁸ *Id.* at 92 (citing *Berkey Photo*, 603 F.2d at ____). It is worth noting that Kodak’s share of the camera market was less consistently under pressure during this period, with a significant bump attributable to its introduction of the Pocket 110 camera at issue in the case. Also notable, however, is that its most significant decline (seven percentage points) in camera market share came from competitors in this very market, only about one year after the introduction of the Pocket 110.

⁵⁹ The lower court’s decision is made only more troubling by the fact that Kodak *did* offer advance disclosure of its innovation (for a fee)—but apparently the two months of advance notice given to *Berkey* were insufficient.

are scale economies, network effects and learning by doing in dynamic contexts, product homogeneity and rapid technological development, all factors typical of New Economy markets. The consequence is that markets with high concentration due to the presence of a dominant firm are perfectly consistent with efficiency. This has major implications for competition policy: while the old approach to abuses of dominant positions needs to verify dominance through structural indicators and the existence of a certain abusive behaviour, a new economic approach would just need to verify the existence of harm to consumers. As Rey *et al.* correctly point out, “the case law tradition of having separate assessments of dominance and of abusiveness of behaviour simplifies procedures, but this simplification involves a loss of precision in the implementation of the legal norm. The structural indicators which traditionally serve as proxies for ‘dominance’ provide an appropriate measure of power in some markets, but not in others”, notably in the New Economy.⁶⁰

There is an unfortunate *post hoc* reasoning to these product innovation cases, where a technological standard or a dominant market share attributable to a product innovation is taken for granted, and arguments are made (and accepted) that competition is possible only with access to (or the ability to clone) the dominant or standardized innovation. The problem with this sort of argument, as much of the network effects literature makes clear, is that competition on the merits is still possible even in the face of dominant products or standards. Remarkably, given the immense resources that litigation of this case consumed, Berkey itself was able to introduce a competing product to Kodak’s 110 camera only eighteen months after the 110’s introduction.

Moreover, competition for the field may be as effective as *ex post* competition in ensuring both that a market is dynamically efficient and that surplus is shared between producers and consumers.⁶¹

It is emblematic of the essential difficulty in applying economic theory to policy decisions that even if the claim is correct that the presence of a network effect could perpetuate a monopoly beyond the point when it recouped the efficiencies it conferred in the initial competition for dominance,⁶² the theory that makes this claim has an impossible task in identifying at what point this becomes true. Furthermore, the preferred remedy—mandatory access—must be regulated on economically-beneficial terms. The antitrust regulator becomes a systematic price regulator by virtue of accepting the theoretical claim that certain market dynamics can, in certain

⁶⁰ Federico Etro, *Competition Policy: Toward a New Approach*, 2 EUR. COMP. J 29, __ (2006).

⁶¹ Harold Demsetz, *Why Regulate Utilities?*, 11 J.L. & ECON. 55 (1968)

⁶² Such theories abound. See, e.g., Janusz Ordover & Garth Saloner, *Predation, Monopolization and Antitrust*, in SCHMALENSEE & WILLIG, HANDBOOK OF INDUSTRIAL ORGANIZATION 538 (1989).

circumstances, extend an incumbent's dominance beyond a theoretically optimal point.⁶³ The information required to make this determination, however, is forever unavailable to the regulator. Moreover, the only real evidence he does have is that of a thwarted competitor, whose own travails the competitor and the regulator, as well as the economist, are happy to depict as evidence that "competition" has been thwarted, rather than merely the one competitor.⁶⁴

Emblematic of this problem is the district court judge's instruction to the jury on the basic issue in the *Berkey* case:

Standing alone, the fact that Kodak did not give advance warning of its new products to competitors would not entitle you to find that this conduct was exclusionary. Ordinarily a manufacturer has no duty to predispose its new products in this fashion. It is an ordinary and acceptable business practice to keep one's new developments a secret. However, if you find that Kodak had monopoly power in cameras or in film, and if you find that this power was so great as to make it impossible for a competitor to compete with Kodak in the camera market unless it could offer products similar to Kodak's, you may decide whether in the light of other conduct you determine to be anticompetitive, Kodak's failure to predispose was on balance an exclusionary course of conduct.⁶⁵

In reality, even if a jury were to find that Kodak's monopoly were "so great" that it made it impossible for this competitor to compete at this moment with this particular product innovation in this particular market, so concluding would not make access to Kodak's innovation requisite for competition. The appropriate calculation required to determine whether the failure to disclose was "on balance" exclusionary would be a much more complicated one, perhaps beyond the bounds of information held and intelligible by a judge and a jury. But the evidence (and theory) available and accessible nevertheless and inappropriately drive the approach in the case, permitting what should be a more general inquiry into dynamic efficiency to turn on whether the specific fortunes of a specific competitor fit a theoretical model. This focus on finding evidence to fit the anticompetitive theory has an additional problematic feature: Inappropriate reliance on intent evidence.

The court in *Berkey Photo*, echoing several other cases, asserted that "[w]here a course of action is ambiguous, 'consideration of intent may play an important role in divining the actual nature and effect of the alleged anticompetitive

⁶³ Mandatory dealing "requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing—a role for which they are ill-suited." *Verizon Comm'ns., Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2005).

⁶⁴ For a comprehensive assessment of the problem of mandatory access and the essential facilities doctrine as an antitrust remedy and theory, see Abbott B. Lipsky, Jr. & J. Gregory Sidak, *Essential Facilities*, 51 *STAN. L. REV.* 1187 (1999).

⁶⁵ *Berkey Photo*, 603 F.2d at ____.

conduct.”⁶⁶ This is probably true, in a limited sense, but the application of this maxim to assess *anticompetitive effect* (the *sine qua non* of antitrust cases)—particularly in lieu of direct evidence of anticompetitive effect—is problematic. This problem is multiplied in cases involving innovation where even businesspeople are hampered in their ability to predict the effect of their products or actions. “There is a significant distinction between the reliability of evidence used to demonstrate that an actor engaged in specific, intended conduct, and evidence used to demonstrate that an actor’s conduct *had a particular, economic, and legal effect.*”⁶⁷

The problem was summed up quite effectively by Judge Easterbrook himself:

Almost all evidence bearing on “intent” tends to show both greed-driven desire to succeed and glee at a rival’s predicament [B]ut drive to succeed lies at the core of a rivalrous economy. Firms need not like their competitors; they need not cheer them on to success; a desire to extinguish one’s rivals is entirely consistent with, often is the motive behind competition Intent does not help to separate competition from attempted monopolization and invites juries to penalize hard competition. It also complicates litigation. Lawyers rummage through business records seeking to discover tidbits that will sound impressive (or aggressive) when read to a jury. Traipsing through the warehouses of businesses in search of misleading evidence both increases the cost of litigation and reduces the accuracy of decisions Although reference to intent *in principle* could help disambiguate bits of economic evidence in rare cases the cost (in money and error) of searching for these rare cases is too high—in large measure because the evidence offered to prove intent will be even more ambiguous than the economic data it seeks to illuminate.⁶⁸

In addition to abetting the uncertainty of antitrust assessments already plagued by uncertainty, particularly in the innovation context, the use of intent evidence exacerbates the very asymmetry at the heart of the error cost framework: “Whenever a restraint appears unreasonable in the light of . . . [its] redeeming virtues

⁶⁶ Berkey Photo, 603 F.2d at ___ (quoting U.S. v. U.S. Gypsum Co., 438 U.S. 422, 436 n.13 (1978) and citing *Sargent-Welch Scientific Co.*, 567 F.2d at 712).

⁶⁷ Geoffrey A. Manne & E. Marcellus Williamson, *Hot Docs vs. Cold Economics: The Use and Misuse of Business Documents in Antitrust Enforcement and Adjudication*, 47 ARIZ L REV 609, 647-48 (2005). Harold Demsetz makes a related point in the context of predatory pricing: “A price cut to obtain new customers imposes as much harm on rivals as a price cut whose objective is to harm them.” Harold Demsetz, *Barriers to Entry*, 72 AM. ECON. REV. 47, 54 (1982). It is hard to know what value evidence of intent could have where a claim depends on proof on injury and injury is as likely a result of anticompetitive as procompetitive intent.

⁶⁸ A.A. Poultry Farms, Inc. v. Rose Acre Farms, Inc., 881 F.2d 1396, 1402 (7th Cir. 1989) (emphasis in original).

and alternatives, the defendant's innocent mental state will not save it."⁶⁹ In other words, intent evidence is a one-way ratchet, used to help prove anticompetitive effect, but not used to exonerate novel behavior. The parallel to the bias in economic theory is clear, and both serve to reinforce each other.

The *Microsoft* Case⁷⁰

Few endeavors have had as large an impact on the history and future of antitrust as the case against Microsoft. Considered together, the DOJ and European Commission cases have continuously held Microsoft under a cloud for 25 years—and counting. Microsoft still labors under a consent decree in the US, ongoing settlement negotiations and a judgment in Europe, and remains continuously exposed to private and government actions throughout the world.

For brevity's sake we will not touch on every aspect of the Microsoft cases, but merely highlight a fundamental problem they present for antitrust adjudication in the face of innovation.⁷¹

Microsoft presents an elaborate problem of innovation in two-sided platforms with network effects. As we have mentioned, the essential issue in product innovation cases is interoperability or access to intellectual property. Whether through essential facilities, refusal to deal, failure to pre-disclose, or monopoly leverage, the claim is rooted in an assumption that effective competition requires access to the monopolist's innovation. It is certainly the case that the government leveled some quite traditional exclusionary conduct claims at Microsoft. Nevertheless, *Microsoft* and similar cases are predicated on claims that innovative products are inherently problematic (conferring market power), requiring government intervention to ensure competition where competitors are otherwise restricted.

The case in *Microsoft* turned, essentially, on network effects. First, it is important to note that our current best understanding of network effects views them appropriately as beneficial, although there is dispute in the literature over the extent

⁶⁹ 7 AREEDA & HOVENKAMP, *supra* note ____, ¶1506 (and cases cited therein).

⁷⁰ Although this section focuses on the US *Microsoft* case, the relevant cites for the relevant decisions from both the US and the EU are: U.S. v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001); Case COMP/C-3/37.792 *Microsoft*, Commission Decision of 24 March 2004 available at <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf> (hereinafter *EC Decision*); *European Commission v. Microsoft Corp.*, Judgment of the Court of First Instance (Grand Chamber), Case T-201/04, Sept. 17, 2007, available at [http://curia.europa.eu/jurisp/cgi-bin/form.pl?lang=EN&Submit=Rechercher\\$dorequire=alldocs&numaff=T-201/04&datefs=&datefe=&nomusuel=&domaine=&mots=&resmax=100](http://curia.europa.eu/jurisp/cgi-bin/form.pl?lang=EN&Submit=Rechercher$dorequire=alldocs&numaff=T-201/04&datefs=&datefe=&nomusuel=&domaine=&mots=&resmax=100) (hereinafter *CFI Decision*).

⁷¹ William Page and John Lopatka have done yeomen's work in discussing the *Microsoft* cases. See, Page & Lopatka, *supra* note 3; Page & Childers, *supra* note 12. See also Daniel F. Spulber, *Competition Policy and the Incentive to Innovate: The Dynamic Effects of Microsoft v. Commission*, 25 YALE J. ON REG. 101 (2008).

to which their presence also raises exclusionary concerns.⁷² Although there is often a great deal of carelessness in defining terms, particularly in the tenuous translation from economic theory to judicial opinions, there is a crucial distinction between *indirect* and *direct* network effects.⁷³ Liebowitz and Margolis highlight the dramatically different implications of the two effects, and in particular demonstrate that transactions involving complementary products (indirect network effects) fully internalize the benefits of consuming complementary goods.⁷⁴ Thus, despite claims to the contrary, indirect network effects are not a source of market failure leading to technology lock-in (and thus, potentially, exclusionary effects).⁷⁵

The US Microsoft case was built on indirect network effects, however. The most important claim—that the substantial number of developers writing applications to run on Windows systems was an “applications barrier to entry”—was an argument that indirect network effects insulated Microsoft from competition and conferred the monopoly power required for the court to find against it despite the claimed persistent threat of entry.⁷⁶ But the court’s arguments here are less than persuasive, resting on a “finding that the applications barrier to entry *discourages* many from writing for these less popular platforms.”⁷⁷ The problem is determining at what point, if ever, this competitive advantage derived from network effects amounts to an insurmountable barrier to entry and license to monopolize—and in determining if the theory is applicable to the facts at hand.

Direct evidence would seem to offer a corrective, and, in fact, Microsoft argued that the issue should be decided on the basis of direct evidence. The court, however, dismissed Microsoft’s direct evidence on monopoly power and essentially relied on the structural argument derived from the applications barrier. The problem, of course, is that the court was proven wrong. Today Linux and Apple are significant competing standards, and Google and other upstarts (likely including several yet unknown) exert a powerful constraint. Even Lawrence Lessig, at one time a special master in the case and one of its vocal proponents has avowed his error, declaring, “I blew it on Microsoft.”⁷⁸

The economics of networks and its application to antitrust was fairly well-established by the time the US Microsoft case was decided. At minimum, significant theoretical contributions from Arthur, Katz, Shapiro, Saloner and Farrell were

⁷² Compare Stan J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. ECON. PERSP. 133 (1994) with Carl Shapiro, *Exclusivity in Network Industries*, 7 GEO. MASON L. REV. 673 (1999). See also George L. Priest, *Rethinking Antitrust in an Age of Network Industries*, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1031166.

⁷³ Liebowitz & Margolis, *supra* note 72; Michael L. Katz and Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93 (1994).

⁷⁴ Liebowitz & Margolis, *supra* note 72.

⁷⁵ See Daniel F. Spulber, *Unlocking Technology*, 4 J. COMP. L. & ECON. 915 (2008).

⁷⁶ *U.S. v. Microsoft Corp.*, 253 F.3d 34, 55 (D.C. Cir. 2001).

⁷⁷ *Id.* (emphasis added). The district court was not quite so circumspect.

⁷⁸ Wired Magazine, “Posts” (January 2007) available at <http://www.wired.com/wired/archive/15.01/posts.html?pg=6>.

around, as well as most of Liebowitz & Margolis' important theoretical and empirical work and a host of earlier antecedents. The body of work was highly theoretical and mathematical, however, and Liebowitz and Margolis presented a compelling, dissenting view. The incorporation of this literature into the Microsoft case, and the concomitant diminishment of direct evidence was in our view mistaken.⁷⁹ While acknowledging the potentially-fleeting nature of technology-based monopolies (citing Schumpeter), the court effectively ignored Microsoft's evidence of its competitive threat. As Liebowitz and Margolis wrote during the heat of the Microsoft case, "[c]learly the potential to misuse such antitrust theories by competitors unable to win in the marketplace is very great, not unlike various theories of predation. Since the empirical support for this theory is so weak, it appears at best to be premature and at worst simply wrong to use this theory as the basis for antitrust decisions."⁸⁰ Essentially the court was asked to act as the ultimate peer reviewer of an internecine economic debate—a task for which it was singularly unsuited.

One reason that antitrust intervention in the face of innovative products is (deservedly) uncommon is that new goods are generally quite valuable, and the cost to deterring the introduction of new goods and expenditures on innovation, both of which are potentially costly and extremely risky, is high.⁸¹ For the same reason, regulatory interventions of all sorts, especially antitrust cases, undertaken against a product innovation are particularly risky. The case against Microsoft was certainly abetted by the presumption that Microsoft's product's uniqueness and its ubiquity would not soon be challenged. As noted above, subsequent facts have proved this prediction to be inaccurate.

One complication, unheeded by most network effect theorists and absent from the *Microsoft* case, was the possibility that market correctives—opportunities for coordination among consumers to facilitate change to a superior (but less-developed) network—could overcome the models' problems. For Dan Spulber,

The standard definition of network effects refers to an increase in consumer benefits due to an increase in the number of others consuming the network good. I define *network effects* as deriving from a more fundamental effect: mutual benefits of consumption. This allows consumers to care about the identity of other consumers and the amounts that they consume. The standard definition, that consumers simply care about the total number of other consumers, is a special case of this more general definition.

⁷⁹ This diminution is especially ironic given that it is based at least in part on the court's assessment that Microsoft's long-term, dynamic concerns about entry were too remote, even though the applicable structural literature is entirely concerned with long-term, dynamic efficiency effects.

⁸⁰ Stan J. Liebowitz & Stephen E. Margolis, *Network Effects*, THE NEW PALGRAVE'S DICTIONARY OF ECONOMICS AND THE LAW (1998)

⁸¹ See generally THE ECONOMICS OF NEW GOODS 209 (Timothy F. Bresnahan & Robert J. Gordon, eds., 1997); see also Easterbrook, *supra* note 16, at ____.

To obtain mutual benefits from consumption, it is necessary for there to be coordination between consumer decisions. The pessimistic view is that transaction costs prevent consumers from coordinating, thus leading to externalities and market failure.⁸²

The implication of this characterization is that consumers (and entrants) will facilitate coordination among the relevant small (and large) groups of consumers. But Spulber is correct that courts and most economists *assume* the absence of consumer coordination in network markets (which in turn facilitates the assumption that inter-network competition, where competition is for the field, is impossible).

As in the *Berkey* case (and all cases mandating access to incumbents' technology), the US Microsoft court, and to an even greater degree, the European Commission and the European Court of First Instance, operated under an assumption that the relevant innovation itself must be available for effective competition to occur. Admittedly this mistake is less prevalent in the economic literature, but not absent even there.⁸³ The argument that competition in a market can't take place in the face of innovations that may have exclusionary effect is a persuasive one, even where neither evidence nor economic theory suggest it. The reality, of course, is that

⁸² Daniel F. Spulber, *Consumer Coordination in the Small and in the Large: Implications for Antitrust in Markets with Network Effects*, 4 J. COMP. L. & ECON. 207, 209 (2008).

⁸³ Even Judge Posner falls into this trap in his discussion of the *Standard Fashion* case (*Standard Fashion Co. v. Magrane-Houston Co.*, 258 U.S. 346 (1922)) in *Antitrust in the New Economy*. There, Judge Posner suggests that *Standard Fashion's* exclusive dealing contracts may have been problematic because of economies of scale in distribution—the desire on the part of consumers (and thus retailers) to have a complete line of clothing available to choose from at a single store. Judge Posner makes the analogy to network effects explicit, arguing that “the network corresponds to the full-line retail store” and that *Standard Fashion* could use exclusive dealing with the local dry-goods monopolist retailer to deter the entry of rivals. However, the *Standard Fashion* as *New Economy* exclusion story doesn't hold up to scrutiny. See Benjamin Klein, *Exclusive Dealing as Competition on the Merits*, 12 J. GEO. MASON L. REV. 119, 146-52 (2003). First, *Standard Fashion's* product line did not appear, in fact, to be essential to retailers. Second, the contracts were only two years in duration and thus unlikely to deter entry for a period of time significant enough to prevent substitution. Third, as Klein explains, *Standard Fashion's* exclusive dealing contract was likely an attempt to align promotional incentives between *Standard Fashion* and its retailers. See Benjamin Klein & Kevin M. Murphy, *Vertical Restraints as Contract Enforcement Mechanisms*, 31 J.L. & ECON. 265 (1988) (explaining vertical restraints as mechanisms to solve this pervasive incentive conflict over promotional services and induce retailer performance), and Benjamin Klein & Joshua D. Wright, *The Economics of Slotting Contracts*, 50 J.L. & ECON 473 (2007) (applying this framework to explain supermarket slotting contracts for premium shelf space as a form of promotion). But even absent procompetitive justification, the claim of foreclosure is a tenuous one. First, at some price consumers would willingly visit multiple stores to collect their wardrobes if the cost of doing so were less than the monopoly overcharge they would have to pay to buy from *Standard Fashion's* complete line at its exclusive retailers; network effects have their limits. Second and more important, for how long would *Standard Fashion's* clothing remain *in fashion*? Fashion is, in fact, notoriously fleeting and even dominant brands and designs find themselves quickly displaced as tastes change. The appropriate trade-off in this, as in all cases, is whether the cost of monopoly over its duration without intervention outweighs the cost of enforcement plus the savings from (potentially) curtailing anticompetitive conduct more quickly than it would end without intervention. The fact that the conduct had clear procompetitive justification (having nothing to do with network effects) makes this minimal calculation all the more essential.

even in the face of refusals to deal, refusals to interoperate, refusals to license and network effects, competitors can and have gained ground against incumbents. As noted, Linux and Apple's operating systems and the paradigm-shifting threat from Google are powerful checks on Microsoft's dominance, even though they may not have been significant at the time the US case was adjudicated; open source server software is in fact dominant in some markets, and continues to gain ground against Microsoft even absent licensing of intellectual property sufficient to satisfy the European Commission; technological changes rendered IBM's monopoly obsolete; and the list goes on. The case initiated by a competitors' claim of needed access to extant technology, and focusing on that access as core matter, does not necessarily further economic efficiency where significant competition may arise even without access.

B. Business Innovation

While there is seemingly widespread recognition of the benefits of innovation in terms of economic growth and consumer welfare, and in turn at least some appreciation for the principle that optimal antitrust rules and enforcement decisions ought to at least minimally reflect costs of chilling *product innovation* in the form of introducing new products, we contend that the optimal rules for business innovations should also reflect these error cost concerns. As discussed, these concerns with business and contractual innovations were at the heart of Easterbrook's analysis -- and rightly so. A fundamental lesson of the new institutional economics, a branch of economics now associated with at least three Nobel Prizes in Economics (Fogel, Coase, and Williamson), is that contractual innovation and changes in organizational form, like product innovation, can lead to dramatic efficiency benefits. Unfortunately, antitrust law has exhibited a poor track record of incorporating this insight into the design of its liability rules despite the fact that product and business innovations invoke similar error cost concerns.

Indeed, false positives play a central role in the historical narrative of antitrust and business innovation. More specifically, the trend emerging from the cases is consistent with our analysis in Section 2. That is, despite occasional lip service paid to the concept that the antitrust sword ought to remain sheathed in cases involving new business practices or contractual innovation, the historical account is one of liability before analysis, condemnation before economic understanding, and typically, of subsequent demonstration of Type I error. Table 2 offers a non-exhaustive selection of cases which we believe fit this description and the model of antitrust enforcement involving innovation in the courts. Each case involves a new business practice or contractual innovation at least challenged and typically condemned under the antitrust laws, only to be followed by subsequent economic knowledge which at a minimum casts doubt upon, and sometimes demonstrably refutes, the economic logic of the anticompetitive theory motivating the case.

Table 2. Business Innovation Cases

Case	Innovation	Problematic Anticompetitive Theory	Liability	Procompetitive Explanation	Illustrative Source
<i>Vons Grocery</i>	Supermarkets	Incipency; Concentration/price relationship	Yes	Market concentration was a product of superior efficiency	Demsetz 1973; Wright 2001
<i>Broadcast Music</i>	Rights clearinghouse	Collusion	No	The rights clearinghouse was a solution to a transaction cost problem	Williamson 1985; Ostrom 1990; Merges 1996
<i>Paramount; Lowes</i>	Block booking	Monopoly leverage	Yes	Price discrimination; minimize information/transaction costs (prevent costly “oversearching”)	Stigler 1964; Kenney & Klein 1983
<i>Dr. Miles</i>	RPM	Collusion	Yes	Align manufacturer-retailer incentives and prevent free riding	Telser 1960; Klein & Murphy 1988
<i>FTC v. McCormick</i>	Slotting contracts	Exclusion	Yes	Align manufacturer-retailer incentives to promote	Klein & Wright 2007
<i>Chicken Delight</i>	Franchise tying	Monopoly leverage	Yes	Ex ante competition avoids monopoly power; Align franchisor-franchisee incentives; quality control	Demsetz 1968; Rubin 1978; Klein & Safp 1985
<i>Albrecht; White Motor Co.</i>	Exclusive territories	Market division	Yes	Align Manufacturer-dealer incentives	Telser 1960; Mathewson & Winter 1984; Klein & Murphy 1988

The taxonomy is not perfect, and there are certainly business decisions inherent in exploiting product innovations such that the two can be difficult to disentangle. The point, however, is to demonstrate that innovation is not limited to the “New Economy.” It is not only where there are network effects and/or intellectual property issues that the likelihood and magnitude of error costs increase; rather, a large swath of antitrust enforcement decisions and important case law demonstrates the problems we have discussed. These business innovations demonstrate similar characteristics—and present similar problems for antitrust enforcement and adjudication—as their product innovation counterparts. Business innovations, like product innovations, confer competitive advantages and, while remaining ill-understood, engender uncertainty, rent-seeking, and reprisal. Business innovations present interesting opportunities for economic analysis (to an even greater extent than product innovations, in fact) and are thus susceptible to the

systematic biases in economic analysis that we have discussed. These innovations are also extremely valuable, in particular because they may be directly extendable to a much-wider range of the economy than product innovations, and like product innovations, business innovations can have wide-ranging, dynamic follow-on effects throughout the economy. There are, of course, business innovations that have not been subjected to antitrust challenge by dint of their innovation. To some extent these were innovations that had already become widely-understood as efficient practice before the advent of the antitrust laws. In even more cases these innovations have, in fact, been subject to relentless antitrust pursuit but don't show up on our list because they were not, in fact, innovations by the time the antitrust challenges began.⁸⁴

Before discussing a few cases from Table 2 for illustrative purposes, it is worth pointing out that Easterbrook's article presages this overall assessment, and, in fact, is primarily concerned with business decisions rather than product characteristics and their treatment by the antitrust laws:

Ignorance would be tolerable but for the fact that every successful competitive practice has victims. The more successful a new method of making and distributing a product, the more victims, the deeper the victims' injury. Joseph Schumpeter called competition a 'gale of creative destruction.' It is a neverending process of weeding out the sluggish and the inefficient. Yet those who lose in the competitive struggle do not view the outcome as just. They are probably less knowledgeable than the average business executive about why they failed and others succeeded. (If they knew what went wrong, they might have improved.) The gale of creative destruction produces victims before it produces economic theories and proof of what is beneficial.⁸⁵

Since Easterbrook's article, we have entered the era of the New Economy, and the problem of errors in the face of innovation (the dynamic efficiency problem) are rightly asked (by some) to be subjected to a particularly-withering error cost analysis rooted in Judge Easterbrook's article. But the problem innovation presents to antitrust is not limited to high-tech products, and the error cost framework is as

⁸⁴ At the same time, the list could be even more inclusive (and is not meant to be exhaustive). For example, Intel has encountered antitrust problems arising from its pricing practices—practices which are sophisticated and interesting, but not particularly innovative; we declined to treat Intel as a business innovation case. But of course Intel's is a dramatically innovative industry. And it is, in fact, the New Economy character of its business, particularly the problem of recouping the extraordinarily high fixed costs of product innovation (given low marginal costs), that leads it engage in its controversial contracting practices; one could argue that Intel presents a typical product innovation case.

⁸⁵ Easterbrook, *supra* note 16, at 5.

important in the face of business innovations as it is in the face of product innovations.⁸⁶ Consider the following two examples.

Vons Grocery

Vons Grocery (“*Vons*”) presents a clear picture of the problem of error costs in the face of business innovation. In *Vons* the innovation at issue was the big box retail store—the supermarket. *Vons* and Shopping Bag Food Stores, two successful grocery store chains in Southern California, merged amid generally declining fortunes for Southern California’s grocery stores. From 1950 to 1963, the number of single-store “mom and pop” grocery stores had declined from 5365 to 3590. The merged firm would have enjoyed a market share of approximately 9 percent in the applicable market. The majority ultimately concluded that the merger violated Section 7 of the Clayton Act on two grounds: (1) that the trend toward concentration in the industry would make collusion easier and thus the merger would result in higher prices, and (2) that the merger would independently do damage to small businesses operating at higher costs than the more efficient supermarkets.

It would be easy to dismiss *Vons* as an example of economic nonsense emerging from Warren Court era antitrust decisions. Indeed, *Vons* failed to articulate an approach to merger analysis that protected *either* consumers *or* small businesses. With respect to small businesses, the prosecutors in the case (including now Judge Posner, who later confessed that the merger was “harmless”⁸⁷) argued that the merger would result in collusion and *higher prices* that would result in a price umbrella that would protect smaller, less efficient firms. Ignoring the prosecutor’s mistaken theory coordinated effects theory, the Court adopted a rule that both: (1) condemned virtually any horizontal combination on the grounds that any increase in concentration would lead to greater efficiency and *lower prices* which would run small firms out of business, and (2) endorsed an economic logic that high levels of concentration, especially when combined with trends toward greater concentration, would necessarily result in higher prices. But dismissing *Vons* as an outlier outside the influence of the economic theory of the time would be a mistake.

Consider, for example, the body of economic knowledge concerning the relationship between market concentration and price. The late 1950s and early 1960s

⁸⁶ Product innovations, of course, are not themselves limited to the New Economy; however, it is only New Economy products, characterized by network effects or employing far-reaching restrictions on the use of intellectual property, that seem to draw antitrust scrutiny.

⁸⁷ *From Von’s to Schwinn to the Chicago School: Interview with Judge Richard Posner*, Seventh Circuit Court of Appeals, ANTITRUST, Spring 1992, at 4, 5. See also Richard A. Posner, ANTITRUST LAW 127 (2d Edition, 2001) (“the fatal flaw in the government’s case was to ignore the easy and rapidity of entry into the retail grocery industry”). See also Joshua D. Wright, *Von’s Grocery and the Concentration-Price Relationship in Grocery Retail*, 48 UCLA L. REV. 743 (2001) (providing empirical evidence that the retail grocery industry examined in *Vons* was highly competitive and that, even at modern concentration levels, there was no positive correlation between market concentration and price).

were a period of time in which state of the art economic analysis viewed the problem of market concentration and oligopolistic collusion as the “principal defect of present antitrust law.”⁸⁸ Scholars urged Congress to pass new legislation aimed at reducing market concentration across the economy and a, White House Task Force Report on Antitrust Policy endorsed various forms of such proposals.⁸⁹ Kovacic and Shapiro have described the era producing well known and universally criticized decisions like *Vons*, *Federal Trade Commission v. Procter & Gamble Co.* (386 U.S. 568 [1967]), *United States v. Pabst Brewing Co.* (384 U.S. 546 [1966]), and *Brown Shoe Co. v. United States* (370 U.S. 294 [1962]) as exhibiting “considerable consistency between judicial decisions and economic thinking.”⁹⁰

That is not to say that the economic errors and contradictions in the Court’s analysis were invisible to all at the time. In dissent, Justice Stewart argued that “even the most superficial analysis of the record makes plain the fallacy of the Court’s syllogism that competition necessarily reduced when the bare number of competitors has declined.”⁹¹ Nor did the relationship between antitrust error and innovation escape Justice Stewart, who admonished the majority that “the Clayton Act was never intended by Congress for use by the Court as a charter to roll back the supermarket revolution” and made the obvious economic point that “the numerical decline in the number of single-store owners is the result of transcending social and technological changes that positively preclude the inference that competition has suffered because of the attrition of competitors.”⁹²

Over forty years after *Vons*, it is now well-established in modern merger analysis, whether the unilateral effects or coordinated effects theories are involved, that the key economic question with regard to mergers is whether the reduction in the number of independent competitors in the particular case changes post-merger pricing incentives. However, in the decade directly following the decision, the body of economic knowledge available to regulators and courts concerning the relationship between market concentration and price would change dramatically. Professor Muris has described the history in the context of a possible Federal Trade Commission investigation of the automobile industry that highlights the sea change that occurred in economics during the decade after *Vons*:

In August 1976, the Commission began a formal investigation of the automobile industry. The decision to begin the highly publicized investigation followed an

⁸⁸ CARL KAYSSEN & DONALD TURNER, *ANTITRUST POLICY: AN ECONOMIC AND LEGAL ANALYSIS* 110 (1959).

⁸⁹ *White House Task Force Report on Antitrust Policy*, 2 *ANTITRUST L. & ECON. REV.* 11, 14-15, 65-76 (1968-69).

⁹⁰ William E. Kovacic & Carl Shapiro, *Antitrust Policy: A Century of Legal and Economic Thinking*, 14 *J. ECON. PERSP.* 43, 52 (2000). *See also* William E. Kovacic, *The Influence of Economics on Antitrust Law*, 30 *J. ECON. INQ.* 294, 295-96 (1992) (describing features of U.S. competition policy system that give economists major role in shaping antitrust rules).

⁹¹ *U.S. v. Von’s Grocery Co.*, 384 U.S. 270, 281 (1966) (Stewart, J., dissenting).

⁹² *Id.* at 278-88.

extensive preliminary inquiry by the agency's staff. In a critique covering nearly 100 single-spaced pages, the staff argued that there was widespread evidence justifying a fundamental restructuring of the U.S. industry. The staff endorsed the horizontal and vertical dismemberment of the industry leader (General Motors) and indicated that the second and third members of the American "Big Three" (Chrysler and Ford) might be worthy candidates for divestiture as well.

A crucial analytical basis for the staff's critique was the simple market concentration doctrine - the belief that concentration and economic performance were closely and inversely correlated. Had the year been 1966, a Commission decision to embrace this belief would have been more understandable. In 1966, the view that high levels of concentration inevitably degraded economic performance commanded considerable academic support. Many commentators saw the American automobile industry, dominated by General Motors for decades, as the paradigm example. Ten years later, however, there was serious reason for the FTC to doubt the validity of the simple market concentration hypothesis or to presume the invincibility of U.S. producers. By 1976 the academic consensus condemning market concentration was crumbling. As discussed in more detail below, changes in economic theory and, more importantly, empirical research had undermined the simple concentration hypothesis.⁹³

Perhaps the most significant contributions to the literature undermining the simple market concentration doctrine underlying the structure-conduct-performance ("SCP") paradigm often associated with Joe Bain came from UCLA economist Harold Demsetz, who produced a compelling efficiency explanation for the observed relationship between concentration and price.⁹⁴ Specifically, Demsetz contended that superior efficiency rather than collusive conduct was the likely explanation for the observed relationship between concentration and profitability.⁹⁵

The innovation apparent in *Vons*, no doubt a product in part of the various technological advances that made it possible, was an organizational and marketing concept: Larger, more comprehensive grocery stores—supermarkets—drawing from a larger geographical area, focusing particular attention on shelf space allocation (according to particular local characteristics), and replacing a range of smaller, more-specialized competitors. *Vons* falls nicely into the pattern of antitrust error in the face of business innovation described in Section 2. Early economic explanations for market concentration and expansion through merger rather than internal growth were largely and almost exclusively anticompetitive in nature. Indeed, the business innovation in question presented the Court with a choice that was in direct conflict with one of the most-cherished notions of antitrust jurisprudence at the time: firm

⁹³ Timothy J. Muris, *Improving the Economic Foundations of Competition Policy*, 12 GEO. MASON L. REV. 1 (2003).

⁹⁴ Harold Demsetz, *Two Systems of Belief About Monopoly*, in INDUSTRIAL CONCENTRATION: THE NEW LEARNING 164 (Harvey J. Goldschmid et al. eds., 1974). See also YALE BROZEN, CONCENTRATION, MERGERS, AND PUBLIC POLICY (1982).

⁹⁵ For a discussion of this literature, see Wright, *supra* note 87, at 755-762.

size is bad. Armed or at least aware of these anticompetitive theories, but before they are ultimately discredited as robust economic theories or established empirical relationships, the Court employed them to “roll back the supermarket revolution.”

What lesson are we to draw from *Vons*? One possible interpretation is a success story for economics. The addition of new economic learning on market concentration and price was followed by a correction in horizontal merger doctrine, Horizontal Merger Guidelines which improved matters relative to the Warren Court days, and a current state of affairs in merger analysis in which Judge Posner describes infamous decisions like *Vons* as “largely forgotten . . . through never expressly overruled,” replaced by evidence-based decisions such as *FTC v. Staples* which represent the “com[ing] of age” of the economic analysis of mergers.⁹⁶ We believe such an interpretation would be mistaken for several reasons. The most important is that the biases we discuss in Section 2 appear to continue to plague antitrust enforcement. While there is no doubt that the economic technology available for analyzing mergers has improved dramatically in the last 50 years and that economic errors as egregious as those in *Vons* are less likely, modern economic analysis of mergers brings new opportunities for error in applying critical loss analysis, assessing merger simulation evidence, and evaluating competing econometric models. Second, we suspect that the flow of new business innovations into the economy will provide enough fodder for the biases in favor of false positives to continue indefinitely. Third, for every area of substantive antitrust law that improves along with the quality of economic information about the specific business practice (such as horizontal mergers), there are areas that seem all but immune to incorporating advancements in economic theory and empirical knowledge into the fold.

Which brings us to the saga of *Dr. Miles* and the antitrust analysis of minimum resale price maintenance (“RPM”).

Dr. Miles Medical Co. v. John D. Park & Sons Co.

In *Dr. Miles*, the Supreme Court struck down an agreement between a manufacturer of patented medicines and his dealers on the minimum prices at which the dealers could sell the medicines.⁹⁷ While it is quite difficult to date the introduction of RPM into product distribution, there is at least some evidence that its initial introduction in the United States occurred around the turn of the century and that *Dr. Miles* represented the Court’s first opportunity to analyze it.⁹⁸ Despite the

⁹⁶ Posner, *supra* note 87, at 127,158.

⁹⁷ 220 U.S. 373 (1911).

⁹⁸ See William Breit, *Resale Price Maintenance: What Do Economists Know and When Did They Know It?*, J. INST. & THEOR. ECON. 147 (1991) (claiming that Alfred Marshall’s *Principles of Economics* was the first product distributed under an RPM scheme in the United States).

novelty of RPM as a business innovation, the Court begins its analysis by concluding “that these agreements restrain trade is obvious.”⁹⁹

The obvious explanation, to the Court, was that minimum RPM functioned as a cartel of dealers. The Court offered the following explanation:

The bill asserts the importance of a standard retail price, and alleges generally that confusion and damage have resulted from sales at less than the prices fixed. But the advantage of established retail prices primarily concerns the dealers. The enlarged profits that would result from adherence to the established rates would go to them, and not to the complainant. It is through the inability of the favored dealers to realize these profits, on account of the described competition, that the complainant works out its alleged injury. If there be an advantage to the manufacturer in the maintenance of fixed retail prices, the question remains whether it is one which he is entitled to secure by agreements restricting the freedom of trade on the part of dealers who own what they sell. As to this, the complainant can fare no better with its plan of identical contracts than could the dealers themselves if they formed a combination and endeavored to establish the same restrictions, and thus to achieve the same result, by agreement with each other.¹⁰⁰

As is now well understood, the Court was mistaken in its economic analysis of the purpose of the RPM agreement. As Judge Posner, among others, has written, the Court’s dealer cartel explanation explains neither why Dr. Miles was in court defending the agreements nor, more fundamentally, what Dr. Miles had to gain from paying supra-competitive prices for distribution.¹⁰¹ Nonetheless, the Court condemned the agreement out of hand despite both its complete lack of understanding about its economic function and its status as a new and innovative business practice.

As one might expect, economic advances over the last century since *Dr. Miles* have resulted in a significant improvement in our understanding of vertical restraints such as RPM.¹⁰² Unlike mergers, where the bulk of evidence suggests that economic analysis has improved matters, the history of antitrust analysis of RPM remains an embarrassment for antitrust from an economic perspective even after finally overturning *Dr. Miles* in *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*¹⁰³ In *Leegin*, relying extensively on the existing theoretical and empirical economic literature, the Supreme Court overturned *Dr. Miles*’ century old *per se*

⁹⁹ 220 U.S. 373 at 400.

¹⁰⁰ *Id.* at 407-08.

¹⁰¹ Posner, *supra* note 87, at 177.

¹⁰² This discussion of resale price maintenance draws from Joshua D. Wright, *Overshot the Mark*, *supra* note 23.

¹⁰³ 551 U.S. 877 (2007).

prohibition against minimum RPM in favor of a rule of reason approach.¹⁰⁴ Justice Kennedy’s majority opinion concluded that the *per se* rule was inappropriate because, while there was universal agreement among economists that RPM could be anticompetitive, the theory and evidence simply did not demonstrate that the practice “always or almost always tend[s] to restrict competition and decrease output.”

The Court’s error in *Vons* resulted from reliance on the existing economics in the form of the underlying SCP paradigm favored by many economists of the era and supported by leading interpretations of the evidence at the time. In contrast, before *Leegin*, the persistence of the *per se* rule against RPM flew in the face of longstanding and nearly universally accepted developments in the theoretical and empirical economics literature.

Consider first the state of modern empirical knowledge concerning RPM that has been added to the industrial organization literature. Two recent empirical surveys summarize the existing and growing empirical literature. The first, authored by a group of Federal Trade Commission and Department of Justice economists, reviews 24 papers published between 1984 and 2005 providing empirical effects of vertical integration and vertical restraints.¹⁰⁵ The second, by Francine Lafontaine and Margaret Slade, reviews 23 papers (with some overlap).¹⁰⁶ Both surveys attempt to synthesize the existing empirical contributions and reach strikingly similar conclusions. The FTC and DOJ economists observe that “empirical analyses of vertical integration and control have failed to find compelling evidence that these practices have harmed competition, and numerous studies find otherwise,” and while “some studies find evidence consistent with both pro- and anticompetitive effects,” “virtually no studies can claim to have identified instances where vertical practices were likely to have harmed competition.”

Lafontaine and Slade reach a similar conclusion after a careful review of the evidence:

it appears that when manufacturers choose to impose restraints, not only do they make themselves better off, but they also typically allow consumers to benefit from higher quality products and better service provision . . . the evidence thus supports the conclusion that in these markets, manufacturer and consumer interests are apt to be aligned.

¹⁰⁴ For a proposed structural rule of reason approach consistent with an error cost approach, see Thomas A. Lambert, *Dr. Miles is Dead. Now What?: Structuring a Rule of Reason for Minimum Resale Price Maintenance*, 50 WILLIAM AND MARY LAW REVIEW 1937 (2009).

¹⁰⁵ James C. Cooper, Luke M. Froeb, Dan O’Brien, & Michael G. Vita, *Vertical Antitrust Policy as a Problem of Inference*, 23 INT’L. J. INDUS. ORG. 639 (2005).

¹⁰⁶ Francine Lafontaine & Margaret Slade, *Empirical Assessment of Exclusive Contracts*, in HANDBOOK OF ANTITRUST ECONOMICS (Paolo Buccirossi ed., 2008).

These conclusions find further support in a more recent analysis of the vertical restraints literature. O'Brien notes that three recent additions to the literature provide additional evidence that RPM is pro-competitive and concludes that, consistent with the other existing syntheses of the evidence, that "with few exceptions, the literature does not support the view that these practices are used for anticompetitive reasons."¹⁰⁷

On the theoretical side, economists have shifted views on RPM in the last century. An Amicus Brief filed by a number of leading economists in *Leegin* concludes that "[i]n the theoretical literature, it is essentially undisputed that minimum RPM can have procompetitive effects and that under a variety of market conditions it is unlikely to have anticompetitive effects."¹⁰⁸ Given the fact the Court eventually got RPM right and overturned *Dr. Miles* in favor of a rule of reason approach to RPM, why do we characterize antitrust analysis of RPM as an embarrassment rather than a slowly evolving victory for economics?

The first reason is that the dissenting position was able to attract four votes on the basis that this widely held consensus that RPM was not "always or almost always anticompetitive" was just not enough of a change in our economic learning to overturn *Dr. Miles*. Despite the changes in the economics literature discussed by the Economists Amicus Brief, Justice Breyer's dissent in *Leegin* concedes confusion about what possible efficiency gains might derive from the use of RPM in the absence of free-riding:

I do not understand how, in the absence of free-riding (and assuming competitiveness), an established producer would need resale price maintenance. Why, on these assumptions, would a dealer not 'expand' its 'market share' as best that dealer sees fit, obtaining appropriate payment from consumers in the process? There may be an answer to this question. But I have not seen it. And I do not think that we should place significant weight upon justifications that the parties do not explain with sufficient clarity for a generalist judge to understand.¹⁰⁹

The fundamental economic question is why, in a competitive retail market with zero free riding, retailers lack a sufficient incentive to adequately promote the manufacturer's product? In other words, why don't retailers in a competitive retail market, when left to their own devices, provide the efficient level of promotional

¹⁰⁷ Daniel P. O'Brien, *The Antitrust Treatment of Vertical Restraints: Beyond the Possibility Theorems*, in REPORT: THE PROS AND CONS OF VERTICAL RESTRAINTS 40, 80 Konkurrensverket, Swedish Competition Authority, 2008), available at http://www.konkurrensverket.se/upload/Filer/Trycksaker/Rapporter/Pros&Cons/rap_pros_and_cons_vertical_restraints.pdf.

¹⁰⁸ See Brief of Amici Curiae Economists in Support of Petitioner at 16, *Leegin Creative Leather Prods. v. PSKS, Inc.*, 127 S. Ct. 2705 (No. 06-480), 2007 WL 173681.

¹⁰⁹ *Leegin Creative Leather Prods. v. PSKS, Inc.*, 127 S. Ct. 2705 (2007).

services? Justice Breyer searches for an answer. The search, however, should not have been demanding. Justice Kennedy's majority opinion in *Leegin* provides one, as does the Economists' Brief, citing Klein and Murphy's seminal article on the economics of vertical restraints which provided the answer to this question 20 years ago.¹¹⁰ The second reason that antitrust analysis of RPM remains an embarrassment despite *Leegin* is that it there remains much interest from state antitrust authorities and legislatures, the United States Congress, and the Federal Trade Commission in bringing back *Dr. Miles*.

For our purposes, the critical lesson to draw from the saga of *Dr. Miles* is that the courts and antitrust agencies are most likely to view business and contract innovations such as RPM suspiciously. There is no doubt that the Court's stance toward vertical restraints deterred efficient distribution practices for nearly a century. A further lesson to be drawn from *Dr. Miles* is that even overwhelming changes in the economics literature – it is indeed rare to get the type of consensus that economists share on RPM with respect to vertical practices more generally – may be insufficient to overcome the biases and tendencies courts and agencies have historically exhibited when faced with business innovations.

IV. CONCLUSIONS: SOME SIMPLE RULES FOR A COMPLEX AND INNOVATIVE WORLD

Our primary claim is that there exists a historical relationship between business and product innovations and erroneous antitrust interventions stemming from the institutional factors that exist in antitrust, courts and the economics profession. We contend that this historical and persistent bias embedded in antitrust institutions tends toward erroneous intervention and understanding its causes and consequences is critical to understanding the error cost approach to designing optimal liability rules. The error cost consequences of false positives in the case of product innovation are generally well understood or at least often discussed. However, one contribution of this paper is to demonstrate that antitrust appears to treat both product *and* business innovations with suspicion and hostility and that this pattern has persisted over time.

Interestingly, antitrust law appears to at least give lip service to the concept that liability rules should be sensitive to whether the business practice at issue is innovative or novel. Specifically, there is much legal authority for the proposition that liability should not hastily be applied in cases where the court finds itself analyzing a practice for the first time. The first appearance of such language in Supreme Court antitrust jurisprudence appears to be in *White Motor Co.*, where the

¹¹⁰ Benjamin Klein & Kevin M. Murphy, *Vertical Restraints as Contract Enforcement Mechanisms*, 31 J.L. & ECON. 265 (1988). See also Benjamin Klein & Joshua D. Wright, *The Economics of Slotting Contracts*, 50 J.L. & ECON 473 (2007).

court refuses to apply the *per se* rule to a novel vertical territorial restriction.¹¹¹ Similar language appears in *Maricopa*,¹¹² *Broadcast Music, Inc.*,¹¹³ *Topco*,¹¹⁴ and *NCAA*.¹¹⁵ In recent appellate decisions, the D.C. Circuit’s technological tying analysis in *U.S. v. Microsoft* appears to endorse this proposition.¹¹⁶

Consistent with Easterbrook’s analysis in *Limits of Antitrust*, the most critical lesson of error-cost analysis is that *per se* rules of illegality are especially pernicious when one cannot sensibly assign a very high likelihood to the probability that the practice at issue will result in consumer harm. As we’ve discussed, both product innovations and contract innovations will nearly always fit this description. In this sense, the cases above appear to correctly reject application of the *per se* rule when the court is confronted with a new business practice or innovation. This is all to the good. The standard economic argument is that rule of reason analysis will allow a more accurate case-by-case analysis of business conduct. We contend that the standard argument is wrong for a number of reasons, and that in the case of product and contract innovations, the rejection of *per se* rules does not go far enough to protect consumers from the systematic bias toward Type 1 error that exists in antitrust institutions.

First, as we discussed in Section 2, when innovation is involved, Type 1 error involves a greater risk to consumers than conventional antitrust cases. The critical role of innovation in fostering economic growth and the relatively scarce knowledge that economists have concerning the relationships between competition

¹¹¹ *White Motor Co. v. U.S.*, 372 U.S. 253, 261 (1963) (“This is the first case involving a territorial restriction in a vertical arrangement; and we know too little of the actual impact of both that restriction and the one respecting customers to reach a conclusion on the bare bones of the documentary evidence before us.”) .

¹¹² *Arizona v. Maricopa County Med. Soc.*, 457 U.S. 332, 351 n. 19 (1982) (citing *White* and referring to the “the established position that a *new per se* rule is not justified until the judiciary obtains considerable rule-of-reason experience with the particular type of restraint challenged”).

¹¹³ *Broad. Music, Inc. v. CBS*, 441 U.S. 1, 9 (1979) (“it is only after considerable experience with certain business relationships that courts classify them as *per se* violations”) and going on to say that “We have never examined a practice like this one before; indeed, the Court of Appeals recognized that “[i]n dealing with performing rights in the music industry we confront conditions both in copyright law and in antitrust law which are *sui generis*. And though there has been rather intensive antitrust scrutiny of ASCAP and its blanket licenses, that experience hardly counsels that we should outlaw the blanket license as a *per se* restraint of trade.”)

¹¹⁴ “It is only after considerable experience with certain business relationships that courts classify them as *per se* violations of the Sherman Act.” *United States v. Topco Associates, Inc.*, 405 U.S. 596, 607-608, 92 S.Ct. 1126, 1133-1134, 31 L.Ed.2d 515. (1972).

¹¹⁵ *Bd. of Regents of Univ. of Okla. v. NCAA*, 707 F.2d 1147, 1166 (1984).

¹¹⁶ “While every “business relationship” will in some sense have unique features, some represent entire, novel categories of dealings. As we shall explain, the arrangement before us is an example of the latter, offering the first up-close look at the technological integration of added functionality into software that serves as a platform for third-party applications. There being no close parallel in prior antitrust cases, simplistic application of *per se* tying rules carries a serious risk of harm. Accordingly, we vacate the District Court’s finding of a *per se* tying violation and remand the case. Plaintiffs may on remand pursue their tying claim under the rule of reason.” *U.S. v. Microsoft Corp.*, 253 F.3d 34, 87 (2001).

and innovation relative to price competition, imply that an error cost sensitive approach to designing antitrust standards would treat innovative conduct differently.

Second, recognizing the biases in favor of Type 1 error in the face of innovative conduct embedded into modern antitrust institutions including courts, agencies and economics departments implies that false positives will occur with greater frequency in such cases and deserve special treatment.

Third, rejection of the *per se* rule of illegality is insufficient to account for these error cost concerns. Specifically, mere rejection of the *per se* rule in favor of the rule of reason requires a degree of economic literacy from generalist judges that is inconsistent with the quality of economic reasoning in the courts.¹¹⁷ There is no doubt that these battles of the experts in rule of reason cases have certainly been a boon for economists as expert witnesses. However, even when experts battle over state of the art economic theory and econometric techniques (which are now frequently too mathematically complex for most judges to understand and apply themselves) in the most diligent manner, the incorporation of sophisticated economics into case-by-case competitive effects analysis is increasingly becoming an additional source of antitrust error.

To be clear, we are not claiming that the role of economics in antitrust should be diminished. It is a question of when the economics is to be incorporated, not whether. In our view, demands to evaluate state of the art economic theory and evidence ought not be thrust upon generalist judges on a case by case basis. Instead, we favor an approach that is consistent with the spirit of Easterbrook's original filters aiming to harness the best existing economic knowledge to design simple rules that minimize error costs. We conclude with five such proposals for simple rules based on existing economic theory, empirical evidence, and acknowledgement of the institutional biases toward false positives discussed above.

RULE 1: *Per se* legality for new product introductions.

We propose a rule of *per se* legality for new product introductions. New product introductions—innovations—present the most troubling case for application of antitrust liability. The large dynamic social benefits from innovation, coupled with the uncertainty surrounding determinations like market definition and market power, tip the error cost calculation strongly in favor of new products.

We recognize that antitrust arguments with respect to new products tend to be coupled with (or couched in terms of) ancillary anticompetitive conduct. But pricing or contractual strategies employed to increase the acceptance of new products and recoup investment in R&D may be equally innovative and, regardless, essential to the success of the product innovation. Even combined with evidence that the intent behind a particular product innovation was “predatory” (see below on

¹¹⁷ See generally Baye & Wright, *supra* note 28.

admissibility of intent evidence), the cost of deterring innovation is substantial.¹¹⁸ At the same time, as we discuss at length above, where antitrust liability is predicated on the product itself creating market power (network effects; monopoly leveraging, e.g.) or an essential facility or standard demanding interoperability, there is reason to expect that courts and enforcers will systematically under-appreciate the remaining avenues of meaningful competition.¹¹⁹ Finally, the remedial threat of predisclosure or other access requirements curtailing legitimate intellectual property protections (as in the *Berkey* case) also militates in favor of a safe harbor for new product innovations.

RULE 2: Require direct proof of actual anticompetitive effect for monopolization, consummated mergers, and horizontal restraints.

We propose that for conduct that has already occurred in the marketplace, other than naked cartel agreements and non-consummated mergers,¹²⁰ the complaining party must produce proof of actual anticompetitive effects rather than speculative losses. For a range of cases, including monopolization, consummated mergers, horizontal restraints and joint ventures, the theory of anticompetitive harm can be subjected to a market test. In these cases, a necessary but not sufficient condition for liability (since the defendant gets an opportunity to produce efficiency justifications) is that the conduct caused higher market prices, lower output, reduced product variety, or harm to innovation.

This rule reflects error cost concerns because it recognizes that current economic and empirical learning indicates that most of these business practices generate efficiencies, because it restrains courts from condemning behavior based on speculative economic theory, and because it corrects for the bias that efficiencies are inherently more difficult to measure and explain to courts than anticompetitive effects.¹²¹ It is true that such a rule will also produce a greater number of false

¹¹⁸ See *id.* Hovenkamp, Janis & Lemley have proposed the use of intent evidence in this context, as a way of identifying problematic product introductions. See Herbert Hovenkamp, Mark D. Janis & Mark A. Lemley, *IP AND ANTITRUST*, vol. 1 (2005 Supp.) at § 12.4. We note, however, that a weaker form of our proposal might require proof of anticompetitive intent before assigning liability in product introduction cases. See Ronald A. Cass & Keith N. Hylton, *Antitrust Intent*, 74 S. CAL. L. REV. 657 (2001). Far more problematic is the approach taken in the US Microsoft case which shifted the burden of demonstrating procompetitive justification for product design decisions to the defendants. See *U.S. v. Microsoft Corp.*, 203 F.3d at 64-67.

¹¹⁹ Note that this was one of the issues in the interminable IBM case, but of course distinguishing between “predatory” product innovations and real innovations is an intractable problem, and the case was, after 13 years, dropped.

¹²⁰ We exclude naked horizontal restraints because, as discussed, the per se rule is appropriate in instances where economic and empirical learning suggest that a business practice has a high likelihood of producing anticompetitive effects. The prophylactic language of the Clayton Act requires that we exclude non-consummated horizontal mergers.

¹²¹ See Dennis W. Carlton, *A General Analysis of Exclusionary Conduct and Refusal to Deal—Why Aspen and Kodak Are Misguided*, 68 ANTITRUST L. J. 659, 675 (2001) (“efficiencies are hard to measure, and the benefit of the doubt should go to defendants, not to plaintiffs; otherwise, the continued generation of the large efficiency benefits responsible for raising our standard of living will be jeopardized”).

negatives because there will inevitably be cases where direct evidence of actual effects is difficult to establish with economic or statistical evidence but exists. In our view, as discussed above, inviting courts to entertain speculative economic theories of harm without requiring actual proof of competitive effects is an invitation to chill innovation and competition. However, the rule is designed not to avoid error altogether but to strike the optimal balance between Type 1 and Type 2 errors and requiring this proof of actual harm where the conduct has already existed in the marketplace is a step in the right direction.

RULE 3: No treble damages for private suits

Automatic trebling of damages attracts excessive private litigation without offsetting benefits and is not economically justified in most cases. The conventional economic justification for trebling damages is that super-compensatory damages are necessary to compensate for a low probability of detection of the violation. We would retain a multiplier for hard core cartel violations. While one can argue about the correct multiple of damages for price-fixing cases depending on our best estimates of the probability of detection of hard-core cartels,¹²² it makes little economic sense to automatically treble damages in cases involving exclusionary practices such as tying or exclusive dealing where the contracts are known to upstream and downstream firms and therefore the probability of detection is certainly above one third and more likely approximates unity. Thus, in the vast majority of private litigation involving exclusionary conduct and mergers, trebling has little economic function other than to draw excessive resources into enforcement and exacerbate the Type 1 error problem by attracting follow-on actions. While others have proposed similar single damage reforms,¹²³ including asking juries to assess the probability of concealment,¹²⁴ we favor a simple rule of restricting recovery to single damages in all private antitrust cases except for hard-core cartels.

Rule 4: Intent evidence is inadmissible.

Intent evidence causes more harm than good—in the terminology of the law of evidence, is more prejudicial than probative—and should not be admitted to demonstrate economic harm in antitrust adjudication. Intent is frequently used as a stop-gap in antitrust cases when evidence of anticompetitive effect is unavailable. But the inability to prove a theoretical case with evidence of real economic injury is not a justification for relaxing the requirement.

¹²² See, e.g., Peter G. Bryant and E. Woodrow Eckard Jr., *Price Fixing: The Probability of Detection of Getting Caught*, 73 REV. OF ECON. & STAT. 531 (1991); see also Nathan H. Miller, *Strategic Leniency and Cartel Enforcement*, 99(3) AM. ECON. REV. 750 (2009).

¹²³ Separate Statement of Dennis Carlton, Antitrust Modernization Committee Report and Recommendations 399-400 (“I favor a reduction in the multiple to single damages when the actions are overt (e.g., exclusive dealing)”).

¹²⁴ Posner, *supra* note 87, at 272-73.

The basic problem is that the connection between *intent* to cause some anticompetitive harm and the *realization* of economic harm is tenuous. This is particularly true in the face of novel business conduct, the real import of which may not be known even to the actors. To be sure, intent evidence might be useful (and admissible) to demonstrate that a particular action was, in fact, undertaken. But intent evidence should not be admissible to demonstrate economic effect.

The principle underlying this rule was examined at great length by Phil Areeda in the context of predatory pricing, but, although the problem there is particularly acute, it is not unique.¹²⁵ It is precisely in the predatory pricing context that the general problem is made most stark, where enforcers and plaintiffs, constrained by *Brooke Group* to demonstrate likelihood of recoupment, but constrained as well but the near-impossibility of proving this as an economic matter, turn to actors' *intent to recoup* as evidence that they will. But this improperly elevates economic theory over evidence and tilts the scales away from efficient antitrust enforcement. And in practical application, evidence of subjective intent has in fact helped to tilt the scales in many cases, recently (and most controversially, perhaps) contributing to the Third Circuit's *LePage's* decision.¹²⁶

Rule 5: *Per se* legality for unconditional refusal to share intellectual property.

Finally, we propose a rule of *per se* legality for unconditional refusals to share intellectual property. This rule is similar in spirit to our first rule but is not limited to new product innovations; instead this rule applies anywhere antitrust injury is alleged to result from a rights holder's decision to enforce its intellectual property right. As noted above, this rule is animated in part by our belief that demonstrating the requisite market power or essential facility to support liability is systematically likely to result in Type I errors. But more important, the rule reflects a concern for the problems inherent in mandating dealing among competitors. "Using the antitrust laws to require a monopolist to deal with a rival creates a tension between static and dynamic welfare considerations." Neither economists nor courts have the skills requisite convincingly to balance these competing concerns and, for reasons we have discussed, the risk of falsely condemning practices that would have positive dynamic welfare effects predominates.¹²⁷ The problem is particularly acute in the case of refusals to license intellectual property.

¹²⁵ See Phillip Areeda & Donald F. Turner, *Predatory Pricing and Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697 (1975); Phillip Areeda, *Predatory Pricing*, 49 ANTITRUST L.J. 897, 899-90 (1981) (proposing that courts "refuse to consider intent, unless the party relying upon it gives the tribunal reason to believe that his evidence is unusually probative"). Areeda himself saw the problem outside of the predatory pricing context. See Phillip Areeda, *Monopolization, Mergers, and Markets: A Century Past and Future*, 75 CAL. L. REV. 959, 963-65 (1987) (discussing problems with the use of intent evidence in monopolization cases). Many others, including Frank Easterbrook, have also noted the problem and suggested limitations like the one we propose here.

¹²⁶ *LePage's Inc. v. 3M*, 324 F.3d 141, 159-63 (3d Cir. 2003).

¹²⁷ See Carlton, *supra* note 123.

As Frank Easterbrook has noted, the duty to deal as applied in *Aspen Skiing* “is bound to create systematic error.”¹²⁸ And although the Supreme Court’s *Trinko* decision nods in the direction of a corrective, a stronger rule is called for.¹²⁹ As the Department of Justice concluded in its recent Section 2 Report, “The Department believes that there is a significant risk of long-run harm to consumers from antitrust intervention against unilateral, unconditional refusals to deal with rivals, particularly considering the effects of economy-wide disincentives and remedial difficulties. The Department thus concludes that antitrust liability for unilateral, unconditional refusals to deal with rivals should not play a meaningful part in section 2 enforcement.”¹³⁰ Our simple rule would be a commitment to this sensible position.

These simple rules are no panacea. They would not completely solve the most serious problems facing competition policy that defers substantially to the latest thinking of economists. The modern industrial organization literature offers a virtually endless number of models justifying the entire spectrum of potential policy decisions, with the results highly sensitive to assumptions and modeling choices, and leaving open the possibility that courts and regulators simply select models that fit their priors. Without institutional mechanisms to commit to an evidence-based approach to economic model selection, thereby assuring that the best available theory and evidence are informing policy decisions, consumers are at risk of losing at least some of the significant gains from incorporating economics into antitrust over the past 50 years. Judicial education in *basic* economics is an obvious first step to reduce the costs associated with the gap between supply and demand of judicial economic literacy in antitrust cases.¹³¹ However, the increasing sophistication of economic models and econometric evidence suggests that any truly effective solution must include a commitment to liability rules that simultaneously reduce the demands placed on judges on a case-by-case basis and are informed by existing theory and evidence on the likelihood and incidence of anticompetitive effects. It is difficult policy problem with no easy solutions. Elements of the New Economy, and particularly product and business innovation, only exacerbate these problems and demonstrate that error cost concerns are even *more* fundamental to thinking about the optimal design of antitrust rules now than when Easterbrook shared his insights on antitrust and errors 25 years ago. Our simple rules are first steps toward such an institutional commitment.

¹²⁸ Frank H. Easterbrook, *On Identifying Exclusionary Conduct*, 61 NOTRE DAME L. REV. 972, 973 (1986)

¹²⁹ *Verizon Comm. Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004).

¹³⁰ U.S. DEP’T OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT 129 (2008), available at _____. See also See, e.g., U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND PROTECTING COMPETITION 23–24 (2007), available at <http://www.usdoj.gov/atr/public/hearings/ip/222655.pdf> (concluding that “liability for mere unilateral refusals to license will not play a meaningful part in the interface between patent rights and antitrust protections”); Posner, ANTITRUST LAW at 243-44 (noting that “it cannot be sound antitrust law that, when Congress refuses or omits to regulate some aspect of a natural monopolist’s behavior, the antitrust court will step in and, by decree, supply the missing regulatory regime”).

¹³¹ See Baye and Wright, *supra* note 28.