Florida Law Review

Volume 68 | Issue 2 Article 9

January 2017

Antitrust and Information Technologies

Herbert Hovenkamp

Florida Law Review

Founded 1948

VOLUME 68 | MARCH 2016 | NUMBER 2

DUNWODY DISTINGUISHED LECTURE IN LAW*

ANTITRUST AND INFORMATION TECHNOLOGIES

*Herbert Hovenkamp***

INTRODUCTION

The relationship between antitrust policy and information was traditionally concerned with oral or written communications that had anticompetitive potential, mainly because they furthered collusion or market exclusion.[1] Among the most difficult problems was interpreting

* This Article was prepared as the basis for the 2016 Dunwody Distinguished Lecture in Law at the Fredric G. Levin College of Law, University of Florida, on April 8, 2016.

** Ben V. & Dorothy Willie Professor, Law and History, University of Iowa.

1. *See, e.g.*, Associated Container Transp. (Austl.) Ltd. v. United States, 705 F.2d 53, 55–56 (2d Cir. 1983) (focusing on communications between companies accused of exclusionary tactics).

the significance of communications that could be construed as either threats or offers to collude, or as facilitators of collusion.[2] On the one hand, markets profit greatly from the free flow of information.[3] On the other, particular uses of information threaten competition when they enable firms to coordinate price, output, or innovation.[4]

Of course, explicit price fixing is a use of information but so are various cartel-facilitating practices that depend on publicizing one's price or output. As a result, the way information is communicated has been a factor in merger analysis, particularly when the fear is that the merger might facilitate collusion.[5] A recent example of this concern is *In re LIBOR-Based Financial Instruments Antitrust Litigation*,[6] which includes claims that banks used misreporting about interest rates as a device for manipulating them.[7] U.S. courts have also confronted complaints that companies were exchanging wage and salary information to suppress or fix wages at an artificially high level. Individuals from numerous industries have made such claims, ranging from petroleum geologists,[8] to high technology Silicon Valley employees,[9] to law professors.[10]

Prior to the 1980s, "information" in antitrust enforcement meant mainly print media, radio, television, film, and audio recording. All were involved in antitrust disputes at one time or another, and the challenged practices ran the entire gamut of U.S. antitrust law—from vertical integration and exclusion in the 1948 *United States v. Paramount*

2. *See* 6 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶¶ 1417–1419 (on communications among competing sellers and offers to collude); William H. Page, *Communication and Concerted Action*, 38 LOY. U. CHI. L.J. 405 (2007) (similar).

3. *See, e.g.*, Herbert Hovenkamp, *Antitrust Violations in Securities Markets*, 28 J. CORP. L. 607, 607 (2003).

4. *See* 12 HERBERT HOVENKAMP, ANTITRUST LAW ¶ 2020 (3d ed. 2012) (describing price fixing and related practices); LOUIS KAPLOW, COMPETITION POLICY AND PRICE FIXING 219, 221 (2013); Page, *supra* note 2, at 412; William H. Page, *The Gary Dinners and the Meaning of Concerted Action*, 62 SMU L. REV. 597, 607–10 (2009).

5. 4 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶¶ 914, 942–944 (4th ed. 2016) (forthcoming).

6. 935 F. Supp. 2d 666 (S.D.N.Y. 2013).

7. *Id*. at 679.

8. Todd v. Exxon Corp., 275 F.3d 191, 195 (2d Cir. 2001), *cause transferred by In re* Comp. of Managerial, Prof'l & Tech. Emps. Antitrust Litig., 206 F. Supp. 2d 1374 (J.P.M.L. 2002).

9. *In re* High-Tech Emp. Antitrust Litig., 856 F. Supp. 2d 1103, 1108–09 (N.D. Cal. 2012).

10. United States v. Am. Bar Ass'n, 934 F. Supp. 435, 436 (D.D.C. 1996), *modified*, 135 F. Supp. 2d 28 (D.D.C. 2001), *and modified*, No. 95-1211, 2001 WL 514376 (D.D.C. Feb. 16, 2001) (settling an antitrust case against the American Bar Association for tying law school accreditation to faculty salaries).

Pictures, Inc.[11] case, to unilateral refusal to deal in *Lorain Journal Co. v. United States*,[12] to a series of newspaper mergers and the passage of the Newspaper Preservation Act in 1970 to protect newspaper production joint ventures.[13] In *Times-Picayune Publishing Co. v. United States*,[14] the Supreme Court refused to condemn a government-challenged tying arrangement in the newspaper publishing industry, exonerating a New Orleans newspaper publishing company's practice of requiring that the same classified advertisements be run in its morning and evening editions.[15] Finally, the *Broadcast Music, Inc. v. Columbia Broadcasting System, Inc.*[16] decision rejected an antitrust challenge and, in the process, acknowledged the value of nonexclusive, blanket copyright licenses for recorded music.[17]

Information also plays an important role in competition policy in the regulated industries, mainly because agencies depend on accurate information typically supplied by the regulated firms. As a result, misreporting one's own market position can serve to exclude a rival or become a device for collusion.[18] Or, in patent law, exaggerated claims about the validity or strength of one's own patents can become a potent exclusion device.[19]

All of these issues concerning the relationship between competition policy and information remain today. Many are more important than ever given the ubiquity of information and the speed at which it travels.

This Article considers a related but nevertheless distinct issue: the relationship between competition policy and the technologies of information. Technological change can both facilitate and undermine the use of information for anticompetitive practices.[20] The effects are

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11. 334 U.S. 131, 137 (1948).

12. 342 U.S. 143, 148, 155 (1951).

13. *E.g.*, Mich. Citizens for an Indep. Press v. Thornburgh, 868 F.2d 1285, 1286–87 (D.C. Cir. 1989) (interpreting the Newspaper Preservation Act, 15 U.S.C. §§ 1801–1804 (2012)); *see also* 1B PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 251e (4th ed. 2013) (discussing the Newspaper Preservation Act as an antitrust exemption).

14. 345 U.S. 594 (1953).

15. *Id.* at 596–97, 627.

16. 441 U.S. 1 (1979).

17. *Id.* at 22–25.

18. *See* Kottle v. Nw. Kidney Ctrs., 146 F.3d 1056, 1058–59 (9th Cir. 1998) (granting *Noerr-Pennington* immunity to health-care provider who allegedly provided false information to authority to induce its refusal to permit another firm to enter the market).

19. *See, e.g.*, Walker Process Equip., Inc. v. Food Mach. & Chem. Corp., 382 U.S. 172, 177 (1965); Transweb, LLC v. 3M Innovative Properties Co., 812 F.3d 1295, 1306–12 (Fed. Cir. 2016) (applying *Walker Process*).

20. *See, e.g.*, Rachel Aridor-Hershkovitz, *Antitrust Law—A Stranger in the Wikinomics World? Regulating Anti-Competitive Use of the DRM/DMCA Regime*, 27 J. MARSHALL J. COMPUTER & INFO. L. 1, 2–6 (2009) (discussing technological regime changes in digital rights

heavily, although not exclusively, a result of digitization and the many products and processes that it enables.[21] Further, information technologies account for a significant portion of the difficulties that antitrust law encounters when it addresses intellectual property (IP) rights.[22] In addition, changes in the technologies of information affect the structures of certain products, in the process either increasing or decreasing the potential for competitive harm.[23] Of particular importance here are the measurement of market power in heavily digital technologies; the changing role of consumer choice in digital markets, focusing here on the Google Search investigation; the impact of digitization on the opportunities for collusion, focusing on the Apple eBooks antitrust case; the role of the antitrust laws in facilitating net neutrality or other conceptions of internet competition; and the role of information in antitrust evaluation of patent practices, particularly those pertaining to FRAND licensing in markets subject to standard setting, and patent pools.

I. DIGITAL TECHNOLOGY AND MARKET POWER

The principal feature distinguishing antitrust from other legal controls of improper business conduct is that antitrust is concerned with practices that threaten the exercise of "market power," or the power to profit by reducing output below the competitive level, thereby increasing the price.[24] If a firm without power reduces its output, others will quickly make up the output loss, and price will be unaffected.[25] So to have market

copyright law leading to anticompetitive practices).

21. *See id.* at 2.

22. Dana R. Wagner, *The Keepers of the Gates: Intellectual Property, Antitrust, and the Regulatory Implications of Systems Technology*, 51 HASTINGS L. J. 1073, 1073–76 (2000).

23. *E.g.*, Novell, Inc. v. Microsoft Corp., 731 F.3d 1064, 1066–67 (10th Cir. 2013) (software), *cert. denied*, 134 S. Ct. 1947 (2014); Somers v. Apple, Inc., 729 F.3d 953, 956, 958 (9th Cir. 2013) (digital music plus devices); Lavoho, LLC v. Apple, Inc., 71 F. Supp. 3d 395, 396 (S.D.N.Y. 2014) (eBooks); Meredith Corp. v. SESAC LLC, 1 F. Supp. 3d 180, 186 (S.D.N.Y. 2014) (licensed television programming); Comput. Automation Sys., Inc. v. Intelutions, 998 F. Supp. 2d 3, 6–7 (D.P.R. 2014) (software); United States v. Apple, Inc., 992 F. Supp. 2d 263, 266 (S.D.N.Y. 2014) (eBooks), *aff'd*, 787 F.3d 131 (2d Cir. 2015); Kickflip, Inc. v. Facebook, Inc., 999 F. Supp. 2d 677, 682 (D. Del. 2013) (social network); Blizzard Entm't Inc. v. Ceiling Fan Software LLC, 28 F. Supp. 3d 1006, 1010 (C.D. Cal. 2013) (computer game software); Oracle Am., Inc. v. CedarCrestone, Inc., 938 F. Supp. 2d 895, 896–97 (N.D. Cal. 2013) (software); Authors Guild v. Google Inc., 770 F. Supp. 2d 666, 670 (S.D.N.Y. 2011) (digital books settlement litigation); TradeComet.com LLC v. Google Inc., 693 F. Supp. 2d 370, 372–73 (S.D.N.Y. 2010) (search engine advertising), *aff'd in part*, 647 F.3d 472 (2d Cir. 2011), and *aff'd in part*, 435 Fed. Appx. 31 (2d Cir. 2011).

24. *See* 2B PHILLIP E. AREEDA, HERBERT HOVENKAMP & JOHN L. SOLOW, ANTITRUST LAW ¶ 501, at 109 (4th ed. 2014).

25. *Id.*

power, a firm (or group of firms acting in concert) must generally be large enough to remove a sizeable share of output from the market.[26] In addition, something must restrain rivals or potential rivals from either entering the market or increasing their own output.[27] Fraud, consumer deception, hard bargaining, and some business torts involving destruction or disparagement of rivals' assets can all affect the price of a product. They are not antitrust violations, however, unless they threaten to increase or prolong market power. This market power requirement is essential to most antitrust analysis because so many practices, such as technology sharing, tying arrangements, agreements to deal exclusively with a single firm, refusals to deal, and mergers, are socially benign or beneficial in competitive markets. For these practices, market power is a necessary, although usually not sufficient, condition for competitive harm.

Digital technology affects the way firms exercise market power and also imposes serious measurement difficulties. The digital revolution in product development and distribution has occurred in stages. The most extreme is "complete" digital distribution where all of the content shipped to the consumer is digital.[28] Prior to that and continuing to this day, music, some books, and other media are distributed in formats such as digital compact disc (CD) or digital video disc (DVD).[29] Although most of the direct user content in such formats is digital, it is still downloaded onto a physical object, which is then packaged and distributed to consumers through traditional channels, including brick-and-mortar retailers and the mail.[30] By contrast, complete digital distribution refers to markets such as those for downloaded songs and downloaded or streamed video content, including movies, games, and software, as well as electronic books.[31] The entire consumer "package" is distributed purely electronically. Of course, taking advantage of digital content requires a device capable of reading and processing it, and a fair amount of litigation involves these devices or restraints that tie the digital content to these devices.[32]

One important consequence of complete product digitization is the

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26. *Id.* at 109–10.

27. *Id.* ¶ 420, at 73 (describing barriers to entry or competitor mobility).

28. Aaron Perzanowski & Jason Schultz, *Digital Exhaustion*, 58 UCLA L. REV. 889, 890 (2011).

29. *See id.* at 890–91, 890 n.1.

30. *See id.*

31. *See id.* at 890–91.

32. *See, e.g.*, Tucker v. Apple Comput., Inc., 493 F. Supp. 2d 1090, 1093 (N.D. Cal. 2006) (rejecting plaintiffs' challenge to technological tie between Apple music playing devices and iTunes music database).

effect on the opportunities firms have to exercise market power.[33] Another is the change in the size or shape of the markets in which firms compete.[34] The production and distribution of digital books or other media is so different from traditional production and distribution in these markets that most historical analogies fail us. For instance, eBooks compete everywhere that electronic transmission is available. Further, they can be transmitted anywhere at nearly no cost, and costs typically do not vary with transmission distance. This means that the "relevant antitrust market"[35] in which competition occurs is at least nationwide and perhaps worldwide.[36] As a result, local retailers such as bookstores, who might have a certain amount of power in smaller communities, face increased competition even though no additional local retailers have entered the market.

These facts do not necessarily mean that traditional booksellers and eBook sellers operate in the same antitrust market, however. An antitrust market, or "relevant market," is one in which goods are not only substitutes for one another, and the competition of other sellers is sufficient to prevent any single firm from increasing its price significantly by reducing output.[37] Each firm's prices will then remain close to its costs.[38] Determining this is particularly difficult when the two sellers have very different technologies of distribution, as is the case with traditional products and completely digital alternatives, even for the same title. For example, a traditional CD store may be able to compete effectively with downloaded music only when the latter is priced at a large markup above its costs.[39] If that is the case, then the completely digital music seller may have significant market power even when competing traditional sellers are present.

The same thing is true of movies, which can be distributed through brick-and-mortar theaters, DVDs (either purchased in a store or rented through the mail), cable television, or internet streaming.[40] A casual observer might see the very same consumers obtaining movies by all of these means, switching back and forth among them. But it would be

33. *See* Nicola F. Sharpe & Olufunmilayo B. Arewa, *Is Apple Playing Fair? Navigating the iPod Fairplay DRM Controversy*, 5 NW. J. TECH. & INTELL. PROP. 332, 332–33, 348–49 (2007).

34. *See id.* at 332–33.

35. 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 539, at 317.

36. *See, e.g.*, Lavoho, LLC v. Apple, Inc., 71 F. Supp. 3d 395, 396 (S.D.N.Y. 2014) (involving small domestic sellers of *e*books—with foreign purchasers—that claimed injury resulting from an Apple-orchestrated price-fixing agreement and most-favored-nation clause).

37. *See* 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 539, at 317.

38. *See id.*

39. *E.g.*, *In re* Dig. Music Antitrust Litig., 812 F. Supp. 2d 390, 397 (S.D.N.Y. 2011).

40. Howard Marvel & Kivanc Kirgiz, *Recent Antitrust Issues in Distribution of DVDs*, 15 ABA SEC. ANTITRUST 9, 9 (2011).

premature to conclude that they are meaningful antitrust competitors unless the presence of one of them is sufficient to hold the prices of another reasonably close to cost. A few decisions have made this error.[41]

Competition generally drives prices toward short-run marginal cost, which is the incremental cost of producing one additional unit.[42] A pervasive problem in analyzing power in digital markets is that sellers typically have a very high ratio of fixed to variable costs.[43] This entails that prices must be considerably above short-run marginal cost to be profitable,[44] lest the firm be unable to recover its fixed costs. For example, it might cost $10 million to develop the code for *Microsoft Office* but only $5 per disc to manufacture and distribute physical copies on a DVD. If Microsoft competed head-to-head with several makers of indistinguishable copies, the price would be driven toward $5, and the firms would be unable to recover their large investment. If Microsoft streamed the program to users over broadband, distribution costs would fall to nearly zero.

As a result of these facts, many traditional measures of market power produce unacceptable false positives.[45] These measures include the Lerner Index and other tools derived from it. Beginning with the observation that competition drives prices toward marginal cost, the Lerner Index assesses power by the ratio $(P–MC)/P$, where P is the observed price, and MC is the firm's short-run marginal cost at that price.[46] At a competitive price, which equals marginal cost, the index reads zero.[47] As the degree of market power increases, the index value approaches one.[48] Significantly, however, the Lerner Index is completely indifferent to fixed costs.[49] As a result, an all-digital firm could be

41. *See, e.g.*, Cable Holdings of Ga., Inc., v. Home Video, Inc., 825 F.2d 1559, 1563 (11th Cir. 1987) (grouping into a single relevant market all movies: theatrical first- or subsequent-run, video rentals, and cable television); United States v. Syufy Enters., 712 F. Supp. 1386, 1389 (N.D. Cal. 1989) (finding the contemporary product market to be first- and sub-run motion picture exhibits, home video, and cable and pay-per-view television), *aff'd*, 903 F.2d 659 (9th Cir. 1990).

42. Phillip Areeda & Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697, 700 (1975).

43. *E.g.*, 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 520, at 216.

44. *Id.* at 216–17.

45. Daniel A. Crane, *Market Power Without Market Definition*, 90 NOTRE DAME L. REV. 31, 59–60 (2014).

46. *See generally* A. P. Lerner, *The Concept of Monopoly and the Measurement of Monopoly Power*, 1 REV. ECON. STUD. 157 (1934) (explaining what would come to be known as the Lerner Index); Herbert Hovenkamp, *Response: Markets in IP and Antitrust*, 100 GEO. L.J. 2133, 2140–41 (2012).

47. *Id.*

48. HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE §§ 3.1–3.2 (5th ed. 2015).

49. Hovenkamp, *supra* note 46, at 2140.

charging a price much higher than its marginal cost, thus showing significant power, but still be going bankrupt because it cannot recover its fixed costs.

The short-run marginal cost of digital delivery is typically very low, including any required payment of per use royalties, as well as the trivial marginal cost of electronic transmission. For example, once the eBook or digital music file is in place, the cost of selling or streaming an additional copy is only a little above zero. So in complete digital distribution, where only the digital content passes from the seller to the buyer, the Lerner Index reading can create a false impression of substantial market power.

That naturally invites a question: If digital media are sold in competition with one another, then why is the price not zero or something very close to zero? That answer lies in the twin effects of IP protection—namely, per use royalties and product differentiation. A per use royalty is a variable cost that the seller incurs each time it sells a unit.[50] Therefore, it is part of marginal cost. For example, if the author of an eBook is entitled to one dollar on each copy sold, then the cost of distribution must be at least one dollar per copy. By contrast, lump sum royalties, which are a single royalty on a product over its entire commercial life,[51] do not show up in marginal costs. For example, if a person sells a story to a digital magazine for $2,000 and that is the only revenue expectation from this story, then that $2,000 is a fixed cost to the magazine and does not affect marginal costs. It pays no more in royalties when it sells an additional copy. That is also the case for many academic authors who may not receive any royalty for their scientific or technical articles. Once again, the marginal cost of electronic distribution is practically zero.

Nonetheless, articles in digitized academic journals for which the authors receive no royalties are hardly priced at zero. In fact, they can be very expensive.[52] This is true because IP rights also create product differentiation, which blunts the impact of competition quite considerably, even when there are no royalties. For example, Amazon at this writing (April 2016) lists more than 281 Kindle electronic Italian cookbooks, ranging in price from zero to twenty-five dollars.[53] Books that

50. *See* Christopher B. Seaman, *Ongoing Royalties in Patent Cases After* eBay*: An Empirical Assessment and Proposed Framework*, 23 TEX. INTELL. PROP. L.J. 203, 225 (2015).

51. *Id.* at 223–24.

52. *See, e.g.*, Aaron S. Edlin & Daniel L. Rubinfeld, *Exclusion or Efficient Pricing? The "Big Deal" Bundling of Academic Journals*, 72 ANTITRUST L.J. 119, 154–55 (2004); *see also* DANIELLE JURSKI & BRIDGET LAMB, STUDY OF SUBSCRIPTION PRICES FOR SCHOLARLY SOCIETY JOURNALS: SOCIETY JOURNAL PRICING TRENDS AND INDUSTRY OVERVIEW 2–4 (Allen Press, 2015), http://allenpress.com/system/files/pdfs/library/2015_Allen_Press_Study_of_Subscription_Prices.pdf (showing that many publishers have increased prices at a steady rate since 2011).

53. AMAZON, https://www.amazon.com (select "Kindle Store" in search options; then search "Italian cookbook") (displaying a list of Italian cookbooks available for under twenty-five

are still under copyright cannot be precise copies of one another. Unless licensed, the second of two identical books would infringe the copyright on the first. To the extent that they differ, however, customers have preferences for one over another, and this permits prices at above cost even though the market has multiple competitors.[54]

The market for digital distribution of books for which the copyright has expired demonstrates the impact of legally enforceable copyright protection. Typically, these are books that were originally copyrighted in the United States before 1923. Entry into the public domain not only makes royalties unnecessary, but it also permits head-to-head competition between undifferentiated versions of a product. For example, the above-referenced Italian cookbook on Amazon with a price of zero was published in 1919, so it is in the public domain.[55] The price of a fully digital edition of *Moby Dick* (originally published in 1851)—a public domain famous book—is also zero on several websites, including Amazon,[56] Gutenberg,[57] Google Books (several editions),[58] and Hathitrust (also several editions).[59] In this case, sellers do not need to pay a license fee, and different sellers can offer identical text without fear of copyright infringement. Stores such as Barnes & Noble also sell *Moby Dick* in unlicensed, public domain hard-copy editions. There the price is positive,[60] however, reflecting the positive costs of individual book production and distribution. Finally, one element of product differentiation that can produce positive prices even on public domain digital content is format specificity. If an electronic file format is specific to a device, then a firm may be able to charge a positive price to owners of that device.[61]

When traditional antitrust tools measure market power, firms with high fixed costs appear to have significant amounts of it.[62] This problem is not limited to the Lerner Index. None of the antitrust tools for assessing

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dollars).

54. EDWARD CHAMBERLIN, THE THEORY OF MONOPOLISTIC COMPETITION 56 (1933); Drew Fudenberg & J. Miguel Villas-Boas, *Price Discrimination in the Digital Economy*, *in* THE OXFORD HANDBOOK OF THE DIGITAL ECONOMY 254 (Martin Peitz & Joel Waldfogel eds., 2012).

55. *See* AMAZON, http://amazon.com (select "Kindle Store" in search options; then search Maria Gentile, "The Italian Cook Book The Art of Eating Well") (displaying a price of zero).

56. *See* AMAZON, http://amazon.com (select "Kindle Store" in search options; then search "Moby Dick") (displaying a price of zero).

57. GUTENBERG, https://www.gutenberg.org (search book catalog field for "Moby Dick").

58. GOOGLE BOOKS, https://books.google.com (search in search bar for "Moby Dick").

59. HATHITRUST, https://www.hathitrust.org (search in search bar for "Moby Dick").

60. BARNES & NOBLE, http://barnesandnoble.com (search in search bar for "Moby Dick") (listing multiple editions for a range of positive prices, including $8.60 for a paperback edition).

61. For a discussion of standard setting, see *infra* Section V.A.

62. Hovenkamp, *supra* note 46, at 2140–41.

power is particularly sensitive to the presence of fixed costs.[63] Even traditional product and geographic market definitions consider how firms respond to greater or lesser competition within a certain product or geographic range and over a relatively short period of time.[64] For example, a court might assess an antitrust market by considering the price responses that occur when a new pizza restaurant comes into a community that previously had only one or the amount by which one firm lowers its price in response to a perceived competitor's price cut. But these short-run responses generally assume fixed-cost assets that are already in place, so most of the responses, such as lowering one's price when new entry occurs, consider mainly variable costs. Courts generally do not consider previous investment in such things as research and development.[65]

Antitrust should not draw an inference of substantial market power unless returns over a fairly long run are excessive. Often purely digital products are sold in competitive, product-differentiated markets. For example, the market for "apps" for electronic calculators or notepads that can run on a device such as an iPad often shows competition among numerous suppliers.[66] These markets are simultaneously competitive but may also exhibit high price–cost margins if courts only consider the short run.[67] Product differentiation largely explains prices above marginal cost as well as differences in pricing.

A single firm's inability to earn high returns over the long run does not preclude the exercise of market power. It does mean, however, that participating firms must exercise market power collaboratively rather than unilaterally.[68] For example, a combination of high fixed costs plus low variable costs, as in the "app" example,[69] creates inducements for price fixing or in some cases for market division, which occurs when two or more sellers can slice the market into pieces, giving each seller an

63. *See id.*

64. See Philip Nelson, *Monopoly Power, Market Definition, and the* Cellophane *Fallacy*, ECONOMISTS INC., http://www.justice.gov/atr/monopoly-power-market-definition-and-cellophane-fallacy (last updated June 25, 2015).

65. The government's 2010 Horizontal Merger Guidelines account for this by distinguishing "rapid entrants" in response to a price increase from other entrants. An entrant is "rapid" if it need not incur significant sunk or fixed costs to migrate into the price-affected market. *See* U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES § 5.1 (2010), http://www.justice.gov/atr/public/guidelines/hmg-2010.html.

66. *See* Gideon Kimbrell, *Five Killer Marketing and Distribution Strategies for Your App*, FORBES (July 18, 2014, 9:11 AM), http://www.forbes.com/sites/theyec/2014/07/18/five-killer-marketing-and-distribution-strategies-for-your-app/.

67. *See* Hovenkamp, *supra* note 46, at 2140.

68. *See* 12 HOVENKAMP, *supra* note 4, ¶ 2000, at 7.

69. 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 520, at 216.

exclusive right in each piece.[70] Both price fixing and market division can reduce market-wide output and increase the prices of the product in question, but only if the participating firms collectively hold market power.[71] If a cartel of firms lacking any power (such as a group of ten tomato growers in a market of 10,000) attempted to raise prices, they would simply lose all their sales.

While high fixed costs might explain why a cartel occurs, they certainly do not justify it. One reason is that product differentiation is typically sufficient to produce above-cost returns even when fixed costs are high.[72] The real concern is markets with high fixed costs whose output cannot be differentiated.

Another reason for not tolerating price fixing in markets with high fixed costs is that colluding firms will charge the monopoly (or cartel) price, not the minimum profitable price.[73] The full monopoly price in a market could be much higher than the minimum price necessary to sustain production and thus represents a significant wealth transfer away from consumers[74] as well as inefficiency losses from lower output.[75]

Courts can assess naked price fixing and market division under antitrust's per se rule without an inquiry into market power.[76] That still leaves the problem of unilateral conduct or collaborative activities that have efficiency-creating potential, which courts traditionally assess under the rule of reason. This requires an assessment of market power, regardless of whether it is difficult to accomplish.

In its recent *Federal Trade Commission v. Actavis, Inc.*[77] decision, which involved competition between name-brand and bioequivalent generic pharmaceutical drugs,[78] the U.S. Supreme Court held that courts could infer market power from a large "pay-for-delay" settlement from a branded drug maker to a generic.[79] Under that agreement, the generic firm would stay out of the market for a

70. 12 HOVENKAMP, *supra* note 4, ¶ 2000, at 6.

71. *See id.*¶ 2000, at 7.

72. 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 520, at 219.

73. *See* 12 HOVENKAMP, *supra* note 4, ¶ 2001a, at 8–9.

74. *See* William H. Page, *A Neo-Chicago Approach to Concerted Action*, 78 ANTITRUST L.J. 173, 175–76 (2012).

75. *See* Jonathan B. Baker, *Preserving a Political Bargain: The Political Economy of the Non-interventionist Challenge to Monopolization Enforcement*, 76 ANTITRUST L.J. 605, 605 (2010).

76. *See* 12 HOVENKAMP, *supra* note 4, ¶ 2004, at 68.

77. 133 S. Ct. 2223 (2013).

78. *Id.* at 2224–25.

79. *Id.* at 2236–37 (referring to the settlement as a "reverse payment"); Aaron Edlin, Scott Hemphill, Herbert Hovenkamp & Carl Shapiro, *The* Actavis *Inference: Theory and Practice*, 67 RUTGERS L. REV. 585, 586 (2015).

specified term in exchange for the pioneer's payment, often in the hundreds of millions of dollars.[80] The high pay-for-delay settlement indicates power because it shows that the payer has volume and margins worth protecting.[81] To be sure, the payer's output may reflect the power of a valid patent, but the patent validity question should not be confused with the power question. Further, even if a patent is perfectly valid, a horizontal price-fixing or market-division agreement is not justified for the same reason noted above—it tends to equate the value of the patent with the full monopoly or cartel value of the market.[82]

As *Actavis* suggests, in some cases one can estimate market power from behavior, and these estimates can be more reliable than estimates taken from information about price–cost relationships.[83] Just like digital technology, pharmaceuticals are a market where high price–cost margins are poor indicators of power because they do not pick up development costs, which are significant but incurred up front, mainly prior to production.[84] Production costs are low, and margins are consequently very high. As a result, prices often drop dramatically when a chemically identical generic competitor enters the market. This is most dramatic when two or more generic equivalents enter a market previously occupied by only a single pioneer drug manufacturer.[85] These differences between price and short-run cost are not as extreme as for purely digital technologies, but they are substantial nonetheless.

An important message of *Actavis* is that courts can infer market power from other criteria than market definition or price–cost relationships in circumstances where this more traditional evidence is not very helpful. Behaviors such as making large payments to keep someone out of one's market are rational acts only on the premise that a firm has significant power.[86] Courts should look more closely at these nontraditional mechanisms for evaluating power, including the ability to impose onerous terms on others.

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80. *Actavis*, 133 S. Ct. at 2225.

81. *See id.* at 2236; 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 520, at 215–16.

82. *See* 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 520, at 216–17; Crane, *supra* note 45, at 54.

83. *See id.*; Crane, *supra* note 45, at 77.

84. *See* M. Howard Morse, *Product Market Definition in the Pharmaceutical Industry*, 71 ANTITRUST L.J. 633, 674–75 (2003); *see also* Crane, *supra* note 45, at 57 (explaining that the Lerner Index is misaligned in the pharmaceutical context, "where large fixed investments in research and development (R&D) are necessary to the creation of new technologies").

85. *See* Edlin et al., *supra* note 79, at 607; Herbert Hovenkamp, *Anticompetitive Patent Settlements and the Supreme Court's* Actavis *Decision*, 15 MINN. J.L. SCI. & TECH. 3, 9–10 (2014).

86. 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 520, at 214.

Another common feature of digital markets is networks, which also create complexities for assessing market power. Networked markets are frequently "two-sided" or multi-sided. This means that transactions move along more than a single avenue between buyers and the seller.[87] The seller in a two-sided market faces two or more groups of buyers that can either compete with or complement one another.[88]

For example, credit card companies must compete for both merchant acceptance and card users, and a practice that enlarges one side might either enlarge or diminish the other side. Too high a price to merchants will reduce their number, and this in turn will make the card less valuable to users. Therefore, to determine the optimal price to merchants, the card issuer must consider the impact on card users as well. Subscription magazines also earn revenue from both subscribers and advertisers. The advertisers are willing to pay more as the subscription audience grows, and these higher payments reduce the magazine's revenue needs from consumers. For their part, consumers might welcome lower magazine prices but also might resist excessive advertising. To earn a profit, the magazine must optimize across these two groups together.[89] In some cases, the optimal price to one group is zero.[90] In traditional television antenna markets as well as non-satellite AM and FM radio, for example, consumers watch or listen for free, and the stations earn their revenue completely from advertisers. A bigger audience increases advertising revenue, but at least some members of the audience may switch channels if they hear more advertising than they want. A similar situation occurs in large internet search engines, such as Google Search, which is largely free to users but financed by advertising.[91]

Multi-sided markets are a common feature of digital networks. A variety of digital websites such as news magazines, music servers, and some games are free to users and supported by advertising.[92] Other digital websites, including Spotify or Pandora, come in both a free version that

87. David S. Evans, *Governing Bad Behavior by Users of Multi-sided Platforms*, 27 BERKELEY TECH. L.J. 1201, 1203 (2012).

88. *See id.* at 1203–04; *see also* Herbert Hovenkamp & Christopher R. Leslie, *The Firm as Cartel Manager*, 64 VAND. L. REV. 813, 867–70 (2011) (providing the example of MasterCard and Visa).

89. *See* Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUR. ECON. ASS'N 990, 990 (2003).

90. *See* Geoffrey G. Parker & Marshall W. Van Alstyne, *Two-Sided Network Effects: A Theory of Information Product Design*, 51 MGMT. SCI. 1494, 1496–97, 1503 (2005).

91. *See* Peter T. Barbur, Kyle W. Mach & Jonathan J. Clarke, *Market Definition in Complex Internet Markets*, 12 SEDONA CONF. J. 285, 290 (2011).

92. *See, e.g.*, David S. Evans, *Antitrust Issues Raised by the Emerging Global Internet Economy*, 102 NW. U. L. REV. 1987, 1992 (2008) (noting that many internet businesses offer free content by generating revenue primarily from advertisers).

advertising largely supports and also a premium version for which the users pay and the provider removes or severely limits advertising.[93] Looking only at the listener market, one might see a form of price discrimination intended to capture both high-demand premium and low-demand free customers. But price discrimination involves selling at different ratios of price to cost. Before measuring these ratios, one must know the revenue from both customer use and advertising. Conceivably, the platform operator earns more from its "free" advertising-supported customers than from its paid customers.

Measuring market power in multi-sided markets poses special difficulties because of "feedback" effects that occur when a price change in one side affects size and revenue on a different side. Looking at one side alone, there is no necessary relationship between price and marginal cost, and even a consumer price of zero may be a component in a perfectly rational and competitive business strategy.[94] Assessing market power often requires looking at all sides of the market together. For example, it would be incorrect to conclude that an advertising-sponsored internet music site lacked power because its price to subscribers is zero. It would also be incorrect to conclude that a magazine has substantial market power because a significant change in the subscription price would not lead to a profit-defeating reduction in subscribers. The loss of revenue from subscribers would have to be added to any loss of advertising revenue that results from a lower subscription base.[95]

Market multi-sidedness can make traditional market share measures much less valuable as well. By charging a price of zero, for example, a seller might acquire an enormous share of the audience market for its particular product. However, its share of the advertising market in which it actually earns its revenue might be very small. Further, the advertising market and the audience market might have very different boundaries. For example, a magazine about sports fishing might appeal mainly to people whose hobby is fishing, but it might attract advertisers from a number of different markets that do not compete with one another, including fishing equipment, travel agencies, airlines, resort rentals, boats, outdoor clothing, and the like. These advertisers might advertise in a wide variety of markets related to sports and leisure but hardly limited to fishing.

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93. *Spotify v. Pandora*, DIFFEN, http://www.diffen.com/difference/Pandora_vs_Spotify (last visited Apr. 4, 2016).

94. *E.g.*, Wallace v. IBM Corp., 467 F.3d 1104, 1107 (7th Cir. 2006) (not unlawful predatory pricing for IBM to charge a price of zero for its open source operating system when attached to computer hardware).

95. *See* Jith Jayaratne & Janusz A. Ordover, *Economics and Competition Policy: A Two-Sided Market?*, ANTITRUST, Fall 2012, at 78, 79–80.

These problems are further exacerbated by the fact that in most multi-sided platform markets, fixed costs are high, which limits the use of price–cost margins to assess power.[96] These complexities have led to the criticism that antitrust agencies often ignore multi-sidedness and consider power by focusing their attention excessively or exclusively on one side of the market alone.[97] Countering this is the fact that whether a practice is unreasonably exclusionary is often a consequence of market share or dominance. Moreover, a firm that is dominant in one side of a multi-sided market can often exclude rivals anticompetitively.

All of these factors serve as a warning that assessment of market power is extremely difficult in markets characterized by very low variable costs, IP rights, networking, multi-sidedness, or some combination of these things. Not uncommonly, networked digital markets exhibit all of them.[98] Power evaluations in these situations are at significant risk of false positives or false negatives if the market is not fully understood. Further, answers may differ depending on the question. Suppose that there are twenty note-taking "apps" available for the iPad or other Apple devices. Each one of these, assuming it is not free, sells at a price considerably above short-run marginal cost. This latter fact, standing alone, should not establish a monopoly power requirement for an exclusionary practice. It is also necessary to determine just how the defendant app manufacturer's practice will result in market-wide (as opposed to individual) exclusion as well as the likelihood that such exclusion will occur. At the same time, however, there is no need to hesitate to condemn price fixing or naked market division among these same manufacturers.

Finally, as noted previously, in purely digital markets, IP rights are almost always crucial to the exercise of significant market power.[99] The principal IP right relevant here is copyright, although trademark rights and occasionally patents may have importance as well. Once a book such as *Moby Dick* enters the public domain, it can be very cheaply copied, and digitization reduces inventory and distribution costs to practically nothing.[100] Therefore, even explicit price fixing is not likely to maintain prices above cost for extended periods of time. If an anticompetitive restraint should occur, it would not be in the public domain product itself,

96. *Id.* at 79.

97. *See* David S. Evans, *The Antitrust Economics of Multi-sided Platform Markets*, 20 YALE J. ON REG. 325, 328–29, 345 (2003).

98. *See* 2B AREEDA, HOVENKAMP & SOLOW, *supra* note 24, ¶ 520, at 216; William J. Baer & David A. Balto, *Antitrust Enforcement and High-Technology Markets*, 5 MICH. TELECOMM. & TECH. L. REV. 73, 75–76 (1999).

99. *See supra* notes 42–51 and accompanying text.

100. *See supra* notes 49–59 and accompanying text.

although it could be in the hardware or infrastructure necessary for distributing such content. What makes collusion in digital media profitable is copyright protection, which permits cartel members to charge a higher price without losing excessive sales to outsiders.[101]

These observations should highlight one feature of digital markets that has been the focus of substantial antitrust litigation—namely, the "product" that consumers want is frequently only the tail, while the delivery device is the dog. For example, the major bottlenecks in the eBook and eMusic industries have not been the books or songs themselves, which are rarely capable of being monopolized, but rather technological constraints on reading or listening devices and the file formats that they run. In the ongoing *Apple iPod iTunes Antitrust Litigation*,[102] the plaintiffs claim that Apple strategically manipulated hardware configurations and file formats to maintain incompatibility with non-Apple systems, thus locking customers into a single technology and set of Apple devices.[103] In these situations, the enemy of competition is incompatibility, or lack of portability, across platforms. The discussion below of antitrust policy and Google Search illustrates the sometimes unappreciated importance of portability.

II. DIGITAL TECHNOLOGIES AND CONSUMER CHOICE: GOOGLE SEARCH

The other side of the market power coin is consumer choice. One consequence of the simultaneous revolutions in telecommunications and digital technology is that consumers have never faced a wider array of choices, and the cost of switching among alternative products has never been lower.[104]

Here, an important factor is the degree of dependence between dedicated hardware and compatible digital choices.[105] While purely digital systems are or can be highly portable across different platforms, hardware is often much less so.[106] Consider the differences between the Microsoft/Windows cases from more than a decade ago and the Google Search cases, now likely concluded in the United States but ongoing in

101. *See* David McGowan, *Networks and Intention in Antitrust and Intellectual Property*, 24 J. CORP. L. 485, 486 (1999).

102. No. 05-CV-0037 YGR, 2014 WL 4809288 (N.D. Cal. Sept. 26, 2014).

103. *Id.* at *2. At this writing, this case had been tried and resulted in a jury verdict for defendant Apple. Verdict Form at 2, *Apple iPod*, No. 05-CV-0037.

104. *See* Adam Candeub, *Behavioral Economics, Internet Search, and Antitrust*, 9 I/S: J.L. & POL'Y FOR INFO. SOC'Y 407, 409 (2014); Aaron S. Edlin & Robert G. Harris, *The Role of Switching Costs in Antitrust Analysis: A Comparison of Microsoft and Google*, 15 YALE J.L. & TECH. 169, 172–73, 177 (2013); Herbert Hovenkamp, *Antitrust and the Movement of Technology*, 19 GEO. MASON L. REV. 1119, 1120 (2012).

105. *See* Edlin & Harris, *supra* note 104, at 178.

106. *See id.* at 193–94.

Europe.[107] Microsoft was able to exploit a high degree of dedication between computer hardware—so called "IBM-compatible" or Intel-based computer stations—and the Windows operating systems.[108] A business that operated 300 Windows computers could switch to the Apple operating system only by switching out its computers. This would be extraordinarily costly, not only because of the computers themselves but also because of the training of employees, the replacement of a great deal of application software, and so on.[109]

The Google Search cases present a sharp contrast. The U.S. and EU investigations into Google Search should be regarded skeptically, notwithstanding Google's high search market share in Europe.[110] Most search engines are multi-platform products that run equally well on all of the most popular platforms, which include Windows, Apple, and Android devices. To be sure, Google may be the default or preinstalled search engine on Android mobile phones and some others, but consumers can generally install alternative search engines. Microsoft makes its own search engine, Bing, which is generally the default search engine accompanying Microsoft operating systems.[111] The story for desktop and laptop computers is even simpler from the consumers' perspective. Consumers can install any of the more popular search engines, of which there are many, almost instantaneously and at no charge. Not uncommonly, computer users have several search engines available. Any time they are unhappy with the results of one engine's search, they can turn to another one.

Here, high market share should not be confused with monopoly. The latter requires the ability to hold prices above the competitive level or provide an inferior service even while retaining one's own dominant market share.[112] As a result, competition policy makers should be wary of technological locks that make it difficult for consumers to switch to a different search engine. Having done that, the concern about the *content*

107. *Id.* at 171–74.

108. *See* United States v. Microsoft Corp., 253 F.3d 34, 52 (D.C. Cir. 2001); Edlin & Harris, *supra* note 104, at 185–86. For an excellent discussion of these cases, see generally ANDREW I. GAVIL & HARRY FIRST, THE MICROSOFT ANTITRUST CASES: COMPETITION POLICY FOR THE TWENTY-FIRST CENTURY (2015).

109. For an excellent study, see ANDREW I. GAVIL & HARRY FIRST, THE MICROSOFT ANTITRUST CASES: COMPETITION POLICY FOR THE TWENTY-FIRST CENTURY (2015).

110. *See* Matt Rosoff, *Here's How Dominant Google Is in Europe*, BUS. INSIDER (Nov. 29, 2014, 2:38 PM), http://www.businessinsider.com/heres-how-dominant-google-is-in-europe-2014-11 (providing graphics on search engine market share).

111. *E.g.*, Sam Mattera, *Microsoft Is Trying to Keep You off Chrome and Firefox*, MOTLEY FOOL (Sept. 20, 2015, 6:00 PM), http://www.fool.com/investing/general/2015/09/20/microsoft-is-trying-to-keep-you-off-chrome-and-fir.aspx.

112. *See* Matthew K. Finkelstein & Colleen Lagan, Note, *"Not For You"; Only for Ticketmaster: Do Ticketmaster's Exclusive Agreements with Concert Venues Violate Federal Antitrust Law?*, 10 ST. JOHN'S J. LEGAL COMMENT. 403, 415 (1995).

of a particular search becomes far less important.

To be sure, deception is a problem. Most deception has nothing to do with monopoly, however, and consumer protection or tort law best addresses the problem. For a durable monopoly to exist, consumers must pay too much (or obtain too little) and be helpless to do anything about it. By contrast, the best cure for deception is to enjoin or penalize it. For example, there is far less reason for concern about a Google search result that favors its own asset, such as YouTube, a Google subsidiary, if searchers (1) know about the ownership interest and (2) have easy access to alternative search engines. If Google persistently favors its own assets in a way that harmed consumers, then consumers can readily and without cost switch to a different search engine. The best way to address this problem is informational: requiring Google to inform consumers when favored sites are located more prominently in search results. "Favored" in this context means either assets that Google owns or where Google has accepted compensation for high placement. Beyond that, management of search algorithms is best left to the market.

This suggests that the competition law authorities should focus on ensuring that every platform from which search engines are launched, including mobile platforms, have adequate alternatives available to which reasonably well-informed customers can easily switch. If a more forceful behavioral approach is necessary, managing the default search engine is a much simpler solution than managing the search algorithm. Further, as one episode suggests, it is likely to be effective. Early in 2015, Firefox, the third-most popular web browser worldwide and in the United States,[113] shifted its default search engine from Google to Yahoo.[114] Soon after, Google's share of all U.S. search dropped from 77.3% to 75.2%, while Yahoo's increased from 8.6% to 10.6%.[115] Interestingly, Microsoft Bing, which was not involved in the change of the default search engine, was unaffected.[116] Looking only at Firefox users, Google's share of search fell from 86.1% to 60.8%, while Yahoo's increased from 7.5% to

113. For ongoing statistics on browser market share, see generally STATCOUNTER, https://statcounter.com (last visited Apr. 4, 2016).

114. Nicole Arce, *Here's Why Firefox Dumped Google and Made Yahoo! Its Default Search Engine*, TECH TIMES (Nov. 22, 2014, 4:55 AM), http://www.techtimes.com/articles/20602/20141122/heres-why-firefox-dumped-google-and-make-yahoo-its-default-search-engine.htm.

115. Liam Tung, *Google's US Desktop Search Share Dips After Yahoo-Firefox Tie Up*, ZD NET (Jan. 8, 2014, 11:41 AM), http://www.zdnet.com/article/googles-us-desktop-search-share-dips-after-yahoo-firefox-tie-up/.

116. *See id.* A different report showed even larger market share shifts on Firefox browser users. *See* Gregg Keizer, *Yahoo's U.S. Share on Firefox Quadruples After Deal*, COMPUTERWORLD (Jan. 8, 2015, 3:02 AM), http://www.computerworld.com/article/2866429/yahoos-us-share-on-firefox-quadruples-after-deal.html.

32.2%.[117] This data suggests that the choice of a default search engine can have an impact on market share, although at this writing it is too early to say how significant or durable these changes will be. Managing search engine defaults would be a far more tractable approach to this competition problem than any attempt to micromanage the Google search algorithm, which will almost certainly require ongoing supervision, effectively turning Google Search into a public utility. A simple order could prevent the sale of devices with a default search engine and instead require users to select a default.

Of course, as one journalist pointed out, customers who use the Firefox browser with Yahoo as the default search engine can always switch back, and some of them have.[118] Nevertheless, the market share response to a switch in the default search engine means a great deal for competition policy analysis. If Google is in fact a monopolist, why would someone switch back to it? Assuming that they are not constrained to do so, the explanation is that they prefer Google Search for some reason. In that case, antitrust has no business interfering.

III. DIGITIZATION, COST STRUCTURE, AND COLLUSION: THE EBOOKS ANTITRUST CASE

In re Electronic Books Antitrust Litigation[119] is a challenge to collusive behavior born in the United States but later expanded to Europe and elsewhere. Apple facilitated the creation of a cartel of book publishers that not only increased the price of electronic books but also imposed pricing rules in the form of most-favored-nation clauses on Apple's competitor, Amazon.[120] Here, the most-favored-nation clause was a contractual provision that required the publishers to charge a price for electronic books sold through Apple's rivals, principally Amazon, to be at least as high as the prices charged through Apple's own electronic book store.[121] The U.S. Court of Appeals for the Second Circuit later

117. Keizer, *supra* note 116.

118. *See* Robert Hof, *Why Google's Search Markets Share Loss to Yahoo Means Pretty Much Nothing*, FORBES (Jan. 8, 2015, 6:02 PM), http://www.forbes.com/sites/roberthof/2015/01/08/why-googles-search-market-share-loss-to-yahoo-means-pretty-much-nothing/.

119. 859 F. Supp. 2d 671 (S.D.N.Y. 2012), *aff'd sub nom.* United States v. Apple, Inc., 791 F.3d 290 (2d Cir. 2015), *cert. denied*, 2016 WL 854227 (Mar. 07, 2016).

120. *Id.* at 673–74. On the impact, see Babur De los Santos & Matthijs R. Wildenbeest, *E-Book Pricing and Vertical Restraints* 7 (NET Inst. Working Paper No. 14–18, 2014), http://www.netinst.org/DelosSantos_14-18.pdf.

121. *Apple*, 791 F.3d at 304–05 ("[i]f, for any particular New Release in hardcover format, the . . . Customer Price [in the [Apple] iBookstore] at any time is or becomes higher than a customer price offered by any other reseller . . . , then [the] Publisher shall designate a new, lower Customer Price [in the iBookstore] to meet such lower [customer price]." (alterations and omissions in original) (quoting a most-favored-nation clause in Apple's contracts with

affirmed this judgment.[122]

The technology of eBooks is currently transforming the book market, with implications that go far beyond this particular price-fixing agreement. Most significantly, eBooks are rapidly changing the cost structure of the industry from one that had a nontrivial fixed-cost component and relatively high variable costs to one in which nearly all the costs other than royalties and very small distribution costs are fixed.[123]

For traditional publishing, fixed costs generally refer to the costs of manuscript acquisitions, editorial staff, typesetting, and at least some marketing.[124] Variable costs include paper and other stock, printing, cutting, binding, inventory, shipping, and retailer carrying costs.[125] The publishing market has never been particularly problematic for antitrust enforcers. The market contained numerous small publishers and only rarely had a dominant firm.[126] The total number of sellers and a substantial amount of product differentiation limited the chances for collusion. The one exception was local readership newspapers, which could acquire a dominant position in their geographic markets.[127]

The book industry does have a long history of resale price maintenance, which is publisher setting of retail prices. In the United States, it actually dates back to 1908, before courts even applied the antitrust laws to the practice. In *Bobbs-Merrill Co. v. Straus*,[128] the Supreme Court refused to enforce a price maintenance clause in a copyright license agreement.[129] However, the vehicle was not competition policy but rather copyright law's "first-sale" doctrine.[130] The British "Net Book Agreement," which largely prevented discounting of books below the publisher's announced price, was another example.[131]

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publishers)).

122. *Id.* at 297.

123. Mark Graban, *On Amazon, Publishers, and Book Prices*, LEAN BLOG (Aug. 9, 2014), http://www.leanblog.org/2014/08/on-amazon-publishers-and-book-prices/.

124. R. Anthony Reese, *Public but Private: Copyright's New Unpublished Public Domain*, 85 TEX. L. REV. 585, 653 (2007).

125. *Id.* For data, see *Price Charts*, GORHAM PRINTING, http://www.gorhamprinting.com/prices-book-printing/price-charts.html (last visited Apr. 4, 2016).

126. *SIC 2731 Book Publishing—Description, Market Prospects, Industry History*, REFERENCE FOR BUS., http://www.referenceforbusiness.com/industries/Printing-Publishing-Allied/Book-Publishing.html (last visited Apr. 4, 2016).

127. *E.g.*, Lorain Journal Co. v. United States, 342 U.S. 143, 146–47 (1951).

128. 210 U.S. 339 (1908).

129. *Id.* at 350; *see* CHRISTINA BOHANNAN & HERBERT HOVENKAMP, CREATION WITHOUT RESTRAINT: PROMOTING LIBERTY AND RIVALRY IN INNOVATION 372 (2012).

130. *See Bobbs-Merrill Co.*, 210 U.S. at 350.

131. AMELIA FLETCHER, OFFICE OF FAIR TRADING, OFT981, AN EVALUATION OF THE IMPACT UPON PRODUCTIVITY OF ENDING RESALE PRICE MAINTENANCE ON BOOKS 20 (2008), http://webarchive.nationalarchives.gov.uk/20140402142426/http://www.oft.gov.uk/shared_oft/e

Today, most resale price maintenance is once again legal in the United States,[132] although the European Union and Canada deal with it more harshly.[133]

The eBook has drastically changed the cost structure of the book publishing market. Acquisition, editing costs, and royalties are still variable, but editing has become less expensive in the age of computerized text management.[134] Once a book has been typeset into an electronic file, the publisher has spent most fixed costs except for advertising and promotion.[135] Further, while advertising might be considered a variable cost for some purposes, it is not a cost attached to each unit sold. In fact, the advertising accompanying an eBook is itself digitized. No one needs to maintain an inventory of copies other than a master copy of the digital file. Publishers can make a virtually infinite number of copies, all at the trivial cost of electronic transmission.

This change in cost structure is having remarkable effects on the book market, many of which are not yet realized. First, as the *Electronic Books* litigation illustrates, it increases the incentive to collude.[136] This is true of many industries with high fixed costs. Competition tends to drive prices to variable, or marginal, cost without enough remaining to cover fixed costs. Offsetting this in the book industry is product differentiation: each title is unique, very likely giving publishers at least some pricing discretion.

The dramatic rise of the eBook has cut enormously into the sales of traditional brick-and-mortar bookstores and the national distribution of physical hard- and soft-copy books.[137] Eventually, it may even threaten the existence of any book retailer who is independent of the publisher, including giants such as Apple and Amazon. While Apple's thirty percent markup has been widely noted, actual markups vary from something less than that amount to more than 100% for independently published

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conomic_research/oft981.pdf; *see* FREDERICK ORRIDGE MACMILLAN, THE NET BOOK AGREEMENT 1899 AND THE BOOK WAR: 1906–1908, at 1–30 (1924) (recounting the history); Herbert Hovenkamp, *The Sherman Act and the Classical Theory of Competition*, 74 IOWA L. REV. 1019, 1058 n.244 (1989).

132. Leegin Creative Leather Prods. Inc. v. PSKS, Inc., 551 U.S. 877, 882 (2007).

133. Bhawna Gulati, *Minimum Resale Price Maintenance Agreements—and the Dilemma Continues*, 8 COMPETITION L. REV. 129, 134 (2012).

134. Hean Tat Keh, *Evolution of the Book Publishing Industry*, 4 J. MGMT. HIST. 104, 105, 111 (1998).

135. William Skidelsky, *The True Price of Publishing*, GUARDIAN (Aug. 4, 2011, 10:04 AM), http://www.theguardian.com/books/booksblog/2011/aug/04/price-publishing-ebooks.

136. *See In re* Elec. Books Antitrust Litig., 859 F. Supp. 2d 671 (S.D.N.Y. 2012), *aff'd sub nom.* United States v. Apple, Inc., 791 F.3d 290 (2d Cir. 2015), *cert. denied*, 2016 WL 854227 (Mar. 07, 2016).

137. G.D., *The Future of the Bookstore: A Real Cliffhanger*, ECONOMIST: PROSPERO (Feb. 27, 2013, 7:05 PM), http://www.economist.com/blogs/prospero/2013/02/future-bookstore.

books.[138] These markups seem very high in relation to the services rendered. Publishers need not inventory eBooks, and there is little concern about returns or losses. As a result, risk is minimal. Most of the relevant publication and promotional information is in electronic form, and the publisher supplies this information. To be sure, major retailers such as Amazon and Apple offer a format for reading the book file, but the format market is competitive and new ones are being introduced all the time.[139] Many of the larger commercial publishers, such as Penguin Random House, Hachette, Harper Collins, Simon & Schuster, Macmillan, Harlequin, as well as the quasi-commercial university presses, such as Oxford, Harvard, and Cambridge, produce eBooks in a variety of formats.[140] Others, such as Penn Press, tend to favor direct distribution intended for more generic formats, such as Adobe Digital Editions or Bluefire Reader.[141] Public domain eBooks such as those published before 1923 in the United States are available in an even wider variety of file formats.[142]

The day may come when the dealer intermediary in the book market becomes superfluous. To survive, intermediaries such as Amazon and Apple will have to provide sufficient value to publishers to make them the best choice. Alternatively, they may try to take advantage of market restraints such as technological incompatibilities or technology ties with their devices. These restraints might delay migration to more efficient distribution methods but probably not indefinitely.

There is no good technological or business reason for why publishers, or perhaps a consortia of publishers, cannot directly distribute eBooks to an internet site. A system may emerge that is roughly equivalent to the "blanket license" that governs the distribution of recorded music over radio stations or other media.[143] That is, authors' books would be digitized and then placed by nonexclusive license into a massive database

138. *See* L. Gordon Crovitz, *Apple's 30% E-Book Commission Is 100% Legal*, WALL ST. J. (June 9, 2013, 7:00 PM), http://www.wsj.com/articles/SB10001424127887323844804578531433167811270.

139. *See* Rory Maher, *Here's Why Amazon Will Win the eBook War: Kindle Already Has 90% eBook Market Share*, BUS. INSIDER (Jan. 13, 2010, 12:38 PM), http://www.businessinsider.com/amazon-selling-90-of-all-e-books-2010-1 (describing the increased competitiveness in the eBook market).

140. *See, e.g.*, Maureen Sullivan, *Libraries and Book Publishers*, 22 ME. POL'Y REV. 48, 48 (2013).

141. *Ebooks from Penn Press*, UNIV. OF PA. PRESS, http://www.upenn.edu/pennpress/about/ebooks.html (last visited Apr. 4, 2016).

142. *See* Sally W. Grotta & Daniel Grotta, *E-reader Roundup: 8 Devices Compete for the Crown*, ITWORLD (Sept. 15, 2010), http://www.itworld.com/article/2748933/personal-technology/e-reader-roundup--8-devices-compete-for-the-crown.html.

143. *See* Broad. Music, Inc. v. Columbia Broad. Sys., Inc., 441 U.S. 1, 22–25 (1979).

accessible by a website. Readers could then pay for and download individual titles, which they could then preserve themselves or else have maintained on a cloud service operated by the website. The website could offer any number of file formats. The transaction costs associated with this type of system would be very low. If run by the publishers themselves, it would eliminate an intermediary's markup.

While some observers of the book business see a monopoly equilibrium favoring giant intermediaries such as Amazon,[144] the history of industrial organization and antitrust strongly suggests the contrary. Two powerful evolutionary, output-increasing phenomena are relevant here: vertical integration and coalescence around a standard.

Firms integrate vertically when it is profitable, and the main sources of profit are elimination of costly market transactions, production cost savings that accrue when a firm performs successive steps internally, and elimination of double marginalization, or monopoly or cartel pricing in either an upstream or a downstream market.[145] For example, oil refiners fearful of collusion among gasoline stations may respond by distributing gasoline directly through wholly owned stations.

A publisher-owned consortium could reduce double-marginalization problems that arise under third-party distribution, particularly if the reading device market is competitive. Double marginalization occurs when firms are in a seller–reseller relationship or provide complementary products, each firm has a certain amount of market power, and the two are unable to coordinate their output.[146] In that case, each firm maximizes individually. Final price will be higher and output lower than otherwise.[147] But if the publisher sells its own books directly to

144. *E.g.*, Keith Gessen, *The War of the Words*, VANITY FAIR (Dec. 2014), http://www.vanityfair.com/business/2014/12/amazon-hachette-ebook-publishing; Jeremy Greenfield, *How the Amazon-Hachette Fight Could Shape the Future of Ideas*, ATLANTIC (May 28, 2014), http://www.theatlantic.com/business/archive/2014/05/how-the-amazon-hachette-fight-could-shape-the-future-of-ideas/371756; George Packer, *Cheap Words: Amazon Is Good for Customers. But Is It Good for Books?*, NEW YORKER (Feb. 17, 2014), http://www.newyorker.com/magazine/2014/02/17/cheap-words; David Streitfeld, *Amazon, a Friendly Giant as Long as It's Fed*, N.Y. TIMES (July 12, 2014), http://www.nytimes.com/2014/07/13/technology/amazon-a-friendly-giant-as-long-as-its-fed.html; Steve Wasserman, *When Will the Justice Department Take on Amazon?*, NATION (July 16, 2014), http://www.thenation.com/article/180681/when-will-justice-department-take-amazon.

145. *See* HOVENKAMP, *supra* note 48, Ch. 9. On the earlier history of vertical integration in the United States, discussing these rationales, see HERBERT HOVENKAMP, ENTERPRISE AND AMERICAN LAW, 1836–1937, at 296–347 (1991). On the later history, see HERBERT HOVENKAMP, THE OPENING OF AMERICAN LAW: NEOCLASSICAL LEGAL THOUGHT, 1870–1970, at 220–39 (2015) [hereinafter HOVENKAMP, OPENING OF AMERICAN LAW].

146. De los Santos & Wildenbeest, *supra* note 120, at 2.

147. On double marginalization in vertical relationships, see 3B PHILLIP E. AREEDA AND HERBERT HOVENKAMP, ANTITRUST LAW ¶ 758 (4th ed. 2015) (forthcoming). On double marginalization problems arising from third party distribution arrangements in eBooks, see

consumers, double marginalization is not an issue as to the books, and the only worry is market power in the device market. As to devices, however, as long as the hardware device market is competitive or reading apps for covered file formats are available for zero or little cost, double marginalization should not be a problem. Today, a variety of readers for various file formats are available as free downloads.[148]

In the eBook industry, Amazon's markups, assuming they are in excess of distribution costs, provide a classic opportunity for vertical integration. One attribute of digital distribution is that the costs of vertical integration are very low, certainly much lower than the cost of building a nationwide network of gasoline stations or retail stores. To the extent intermediaries such as Amazon and Apple are charging too high a price for distribution services, one would expect publishers to integrate vertically into distribution. Authors and artists as well as consumers would benefit.

To be sure, traditional booksellers often supply important point-of-sale information in addition to the books themselves. For example, a well-informed employee in a high-quality bookshop can be a treasure trove of information. But a proliferation of online sources, including both professional and readers' book reviews, has greatly eclipsed that particular informational service.

As to coalescence around a single standard, one can assume that most readers want their books conveniently accessible, which means that readers can access and store them on a single device. Incompatible devices or file formats can frustrate this, and part of Amazon's success is that it has been able to provide a one-stop shop for people's reading as well as the largest bookstore, at least for books that are still under copyright. Even here, however, it has had to make some concessions. For example, Amazon never been able to attain a significant position in the device market,[149] and just as people want their reading in one place, they also want other types of computer activities in one place. So Amazon offers free Kindle reader apps for iPhones and iPads as well as Microsoft-based and Android devices other than Kindle.[150] Amazon's real claim to

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Germain Gaudin & Alexander White, *On the Antitrust Economics of the Electronic Books Industry* 3 (Dusseldorf Inst. For Competition Econ., Discussion Paper No. 147, 2014), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2352495.

148. For example, ePUB Reader is the most widely supported format. EPUB READER FOR WINDOWS, http://epub-reader-for-windows.en.softonic.com/download (last visited Apr. 4, 2016).

149. Data from 2015 indicate that Apple tablets had a market share of approximately 28%, while Amazon had a share of about 2.3%. Neil Hughes, *Though Apple's iPad Sales Shrank, Amazon's Kindle Fire Took 70% Nosedive Last Quarter*, APPLEINSIDER (Feb. 2, 2015, 9:18 AM) http://appleinsider.com/articles/15/02/02/though-apples-ipad-sales-shrunk-amazons-kindle-fire-took-70-nosedive-last-quarter.

150. *Free Kindle Reading Apps*, AMAZON, http://www.amazon.com/gp/help/customer/

control is its proprietary software and eBook format. A reader's books are freely transportable to Kindle apps on other devices, but they are not so easily transportable to non-Kindle software formats.[151]

One bottleneck to efficient eBook distribution is proprietary standards. While copyright and perhaps some patents protect file formats, a wide variety of them are available. The history of most technologies is that for an initial period, a great deal of incompatibility exists as each seller attempts to market its own preferred format or distribution system. In the early days of the automobile, cars burned many types of fuels, and the early days of videotapes saw a standards war between Sony Betamax and VHS. Later came high-density digital video, with a competitive fight between Blu-Ray and HD DVD. Because these various standards are inefficient, unification tends to occur as the industry matures.[152] Today, a large number of publishers and manufacturers of electronic readers have coalesced around the EPUB file format.[153] While Amazon's Kindle files and devices are largely incompatible with EPUB,[154] workarounds are available.[155]

Movement toward a single standard is likely to happen in the eBook market as well. The Internet and device market will develop readers that will cover the new standard and enable consumers to maintain a single electronic library for books procured from different sources. Alternatively, conversion will be so easy and foolproof that the market will be able to accommodate multiple file formats. Whether firms such as Amazon and Apple will be able to hold out by offering unique features is difficult to say, but this Article ventures a prediction that in the long run, theirs will be a losing battle. In particular, why should a large publishing house continue to pay Amazon a significant commission when it can self-distribute for much less?

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display.html?nodeId=200783640 (last visited Apr. 4, 2016).

151. However, conversion programs for Kindle's AZW file format are generally available online at no cost. *See, e.g.*, Kevin Pan, *How to Convert Kindle AZW to EPUB/PDF/RTF/TXT Format?*, EBOOK-CONVERTER, http://www.ebook-converter.com/69-how-to-convert-kindle-azw-other-format.htm (last updated Nov. 30, 2015) (Kindle AZW to epub).

152. *See* BOHANNAN & HOVENKAMP, *supra* note 129, at 357–63 (recounting the development of unified standards).

153. *See EPUB*, INT'L DIG. PUBL'G F., http://idpf.org/epub (last visited Apr. 4, 2016).

154. *See* Nelson Aguilar, *How to Add Any eBook Format to Your Kindle Fire HDX*, WONDERHOWTO, http://fire.wonderhowto.com/how-to/add-any-ebook-format-your-kindle-fire-hdx-0156913/ (last visited Apr. 4, 2016).

155. *See, e.g.*, Derrick Schultz, *How to Convert Your ePub to a Kindle Format*, EPUBSECRETS (Apr. 13, 2014), http://epubsecrets.com/convert-epub-to-kindle-mobi-format.php (last visited Apr. 4, 2016); *How to Read ePubs on Kindle Fire*, WIKIHOW, http://www.wikihow.com/Read-ePubs-on-Kindle-Fire (last visited Apr. 4, 2016).

Finally, the plight of the authors is not difficult to understand. As noted previously, authors' groups have urged antitrust inquiries into eBook pricing, particularly by Amazon. For the most part, these authors presumably have royalty agreements predicated on a percentage of the sales price, typically in the range of 10% to 20% of the wholesale price.[156] Because eBook technology drives variable costs down dramatically, prices have dropped dramatically as well. So authors are not being injured because fewer of their books are sold; to the contrary, sales are almost certainly higher.[157] Rather, their injury results from the fact that per-copy prices are so much lower. This is not an antitrust problem, however, but rather one in contract drafting. Most particularly, contracts that were drafted before eBooks were prominently on the scene are now "obsolete," in the sense that they provide too little compensation to authors. For example, if authors' royalties were a flat rate per copy rather than a percentage of per-unit prices authors would be better rather than worse off. In the long run, one can expect that authors will in fact be better off. Volume will be higher and there will be fewer production costs to be shared between publishers and authors. The biggest losers will be traditional intermediaries such as bookstores.

These gains and losses are nothing other than the typical adjustments to technological change, which benefit some market participants while injuring others, and in the process can cause painful changes. But authors very likely have no more of an antitrust claim than gasoline stations will have when the world switches to electric cars, or blacksmiths had when it moved away from horse-drawn modes of transportation.

The Second Circuit decision to apply the per se rule[158] and condemn Apple's solicitation of the publishers to collude against Amazon seems correct on legal grounds and almost certainly correct on policy grounds as well. To permit the publishers' price fixing and boycott agreement would have slowed up the industry's movement into a new equilibrium in which ebooks have a stable position.

As a matter of antitrust law, Apple's solicitation was a "naked" restraint, which is one whose success depends on power over price, or the exercise of market power.[159] In this case the publishers' cartel against

156. For example, the author has book contracts with several publishers, including Aspen, West Academic, Lexis, Oxford, and Harvard. All of them base royalties on numbers ranging from 10% to 20% of the wholesale net price.

157. *See, e.g.*, Hui Li, *Cannibalization or Market Expansion? The Impact of E-Books on Print Book Sales* 3 (Carnegie Mellon Working Paper, Feb. 20, 2015), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2613757 (concluding that 42% of ebook sales are taken away from traditional books, while 58% result from market expansion).

158. United States v. Apple, Inc., 791 F.3d 290, 335 (2d. Cir. 2015), *cert. denied*, 2016 WL 854227 (Mar. 07, 2016).

159. *See* 11 HERBERT HOVENKAMP, ANTITRUST LAW ¶ 1906 (3d ed. 2012).

Amazon could succeed only by forcing Amazon to raise eBook prices. Naked restraints are ordinarily governed by antitrust's per se rule, which does not require proof of market power. In this case the fact of the successful restraint itself established power.

A dissenter on the Second Circuit panel did not dispute the facts, but protested[160] that application of the per se rule seemed inconsistent with dicta in the Supreme Court's decision in *Leegin Creatives Leather Products, Inc. v. PSKS, Inc.*, where the Court wrote:

> A group of retailers might collude to fix prices to consumers and then compel a manufacturer to aid the unlawful arrangement with resale price maintenance. In that instance the manufacturer does not establish the practice to stimulate services or to promote its brand but to give inefficient retailers higher profits. Retailers with better distribution systems and lower cost structures would be prevented from charging lower prices by the agreement. . . .
>
> A horizontal cartel among competing manufacturers or competing retailers that decreases output or reduces competition in order to increase price is, and ought to be, *per se* unlawful. To the extent a vertical agreement setting minimum resale prices is entered upon to facilitate either type of cartel, it, too, would need to be held unlawful under the rule of reason.[161]

These dicta[162] apparently contemplated a situation in which a pre-existing cartel compelled a manufacturer to participate by imposing RPM as a cartel-enforcement device. Such a cartel would be contrary to the manufacturer's independent interest because the manufacturer would be best served by a competitive downstream market. Rather, it agrees to RPM as a condition of keeping the cartelists' business.

This situation is quite different from the one in *Apple*, however, where Apple actually induced the publishers to agree among themselves to impose higher prices on a *different* firm that was vertically related to the publishers but competed with Apple, namely, Amazon.[163] That restraint was intended to facilitate Apple's entry into the eBook market, but its efficacy depended on its success in forcing Amazon to charge higher

160. *Apple*, 791 F.3d at 346 (Jacobs, J., dissenting) (citing Leegin Creative Leather Prods., Inc. v. PSKS, Inc., 551 U.S. 877, 893 (2007)).

161. *Leegin*, 551 U.S. at 893 (internal citations omitted).

162. The statement was dicta because *Leegin* did not involve a cartel but only an agreement between a single manufacturer and retailer. *Id.* at 883. The Court's discussion of horizontal cartels was hypothetical, appearing in a discussion of the pro- and anticompetitive effects of resale price maintenance. *Id.* at 893–94.

163. *Apple*, 791 F.3d at 308–09.

prices.[164] As such its profitability depended on its ability to effect a price increase and is thus a naked restraint that operated horizontally to protect Apple from Amazon's lower prices. The Supreme Court noted this difference in its *NYNEX Corp. v. Discon, Inc.* decision,[165] which observed that the per se rule was properly applied to a vertically related firm in *Klor's*, where a single retailer allegedly orchestrated a conspiracy among major appliance manufacturers to boycott a store that competed with the retailer.[166] The per se rule was apt in that case because the manufacturer was allegedly soliciting the cartel of manufacturers to boycott *Klor*'s, just as Apple solicited a cartel of book publishers to force Amazon to raise its prices.[167]

IV. NET NEUTRALITY

The term "net neutrality" can mean many things. For some people, "neutrality" means charging all users the same periodic price, such as forty dollars per month, regardless of their consumption and the speed they use. For others, it means charging users in proportion to how much they use, requiring higher volume or higher speed users to pay more. Some look at whether different content suppliers, as opposed to viewers, can obtain more bandwidth, and thus higher speeds for a given amount of content, by paying more. Others consider whether certain providers are facing discrimination or are excluded altogether for either economic or noneconomic reasons.[168] Net neutrality can also refer more generally to guarantees of a certain minimum quality of service for all users.[169] The questions are further complicated because internet access is a two-sided market in which internet service providers (ISPs) derive revenue from both consumers and content providers.[170]

Net neutrality is not exclusively nor even predominantly an antitrust problem. Antitrust may become relevant when vertical integration by ISPs leads to exclusion of or discrimination against competing downstream content. In the United States, these practices violate the antitrust laws only infrequently, although they are certainly relevant in

164. *Id.*

165. 525 U.S. 128 (1998).

166. Klor's, Inc. v. Broadway-Hale Stores, Inc., 359 U.S. 207, 212–13 (1959).

167. *Cf.* Toys "R" Us, Inc. v. FTC, 221 F.3d 928, 932 (7th Cir. 2000) (toy retailer organizing cartel of toy manufacturers). *But see* MM Steel, LP v. JSW Steel (USA), Inc., 806 F.3d 835, 849 (5th Cir. 2015) (refusing to interpret *Leegin* to mandate rule of reason treatment for manufacturers of steel to participate, and thus to facilitate, a boycott by vertically related steel distributors directed at a price cutter).

168. *See* Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1, 7, 16 (2015).

169. *See id.* at 135.

170. On market two-sidedness, see *supra* text accompanying notes 87–88.

merger cases[171] and potentially relevant to the law of exclusionary practices, tying arrangements, or exclusive contracting. EU law sweeps more broadly, and the European Parliament has recently imposed significant limitations on the power of providers to discriminate among types of offerings.[172]

Net neutrality concerns can become more prominent when old technology firms such as cable companies attempt to protect their position by restraining the development of newer technologies like internet broadband.[173] Very likely the biggest long-term concern favoring government protection of net neutrality is threatened restraints on innovation.

One issue that dominates the larger debate over net neutrality is that the Internet has for all practical purposes become a public highway, reaching deep into people's daily lives. As a result, concerns analogous to the "universal service" mandates of public utility policy cannot be ignored, and these may justify protecting or occasionally even subsidizing certain portions of the market.[174] Fundamentally, however, these are not antitrust concerns, and antitrust law does not have good tools for addressing them. To the extent that they are important, a case exists for government regulation of access and prices that goes beyond antitrust.

The discussion here is limited to antitrust policy, which focuses on competitive concerns that might result from lack of net neutrality. As an antitrust matter, the concern over internet distribution is with maintaining competition, which means a state of affairs that maximizes overall output and does not unreasonably exclude either ISPs or content providers.[175] That is, in the absence of horizontal collusion, the antitrust problem is fundamentally about bottlenecks.

U.S. antitrust law properly sees competitive problems when a vertically integrated firm excludes programming that competes with its own assets. For instance, the ISP Comcast Cable is also the owner of NBC, a large distributor of programming, including movies. If Comcast attempted to reduce competition with NBC by placing limits on Netflix, a major competing streamer of movies and television programming, that could certainly raise antitrust issues. Such problems are usually handled

171. *E.g.*, Babette E.L. Boliek, *FCC Regulation Versus Antitrust: How Net Neutrality Is Defining the Boundaries*, 52 B.C. L. REV. 1627, 1634 (2011).

172. *See EU Actions*, EUROPEAN COMM'N, https://ec.europa.eu/digital-agenda/en/eu-actions (last updated Oct. 27, 2015).

173. *See infra* notes 182–93 and accompanying text.

174. *Universal Service*, FED. COMMC'NS COMM'N, https://www.fcc.gov/encyclopedia/universal-service (last visited Apr. 4, 2016) (discussing the extension of "universal service" from telephone service to the Internet).

175. *See* van Schewick, *supra* note 168, at 58.

preemptively under the law of vertical mergers or, if there is no contemplated merger, as exclusive contracting or refusal to deal.[176] The problems are most serious when a market contains a dominant ISP.

Pricing is a different matter. Pricing alone does not frequently present an antitrust problem unless a dominant vertically integrated firm prices in a way that favors its own assets and reasonable alternatives are unavailable. First of all, per-unit pricing is typical in similar technologies such as telephony, electricity, natural gas, and the like. Second, price discrimination that is unrelated to the exclusion of a competitor typically increases total output, is usually efficient, and is a virtually inherent feature in public utility policy.[177] As a result, differential pricing to either users or content providers rarely raises antitrust issues unless the firm designs pricing so as to exclude a rival or limit its competitive effectiveness. Society may wish to mandate a particular price discrimination rule to increase output or meet an articulated universal service obligation, but this would not be an antitrust rule.

The Federal Communications Commission (FCC) has classified the Internet as a common carrier, giving the FCC a set of regulatory powers analogous to those that apply to telephone services.[178] The FCC has also promulgated a set of net neutrality rules whose principal thrust is to prohibit blocking or the creation of "fast" lanes favoring some content over others.[179] The introduction of these rules has produced a great deal of overheated rhetoric, including silly claims such as Verizon's claim that such regulation is uncalled for because it is based on the 1934 Communications Act and applies regulation approaches designed for the "steam locomotive and the telegraph."[180] The fact is that the

176. *See* 7 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW, Ch. 14D (3d ed. 2011). For how the concerns might be related to internet discrimination rules, see van Schewick, *supra* note 168, at 54–58.

177. *See* 3A PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 721 (4th ed. 2015); Daniel A. Lyons, *Internet Policy's Next Frontier: Usage-Based Broadband Pricing*, 66 FED. COMM. L.J. 1, 22–23 (2013); Christopher Yoo, *Is There a Role for Common Carriage in an Internet-Based World?*, 51 HOUS. L. REV. 545, 575–76 (2013).

178. FED. COMMC'NS COMM'N, GN DOC NO. 14-28, PROTECTING AND PROMOTING THE OPEN INTERNET 3–4 (2015), https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf. For good commentary, see Rob Frieden, *Déjà vu All Over Again: Questions and A Few Suggestions on How the FCC Can Lawfully Regulate Internet Access*, 67 FED. COMM. L. J. 325 (2015).

179. *In re* Protecting and Promoting the Open Internet, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd. 5601 (adopted Feb. 26, 2015), http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0312/FCC-15-24A1.pdf). *See generally* Lawrence J. Spivak, *What Are the Bounds of the FCC's Authority over Broadband Service Providers?—A Review of the Recent Case Law*, 18 J. INTERNET L. 1 (2015) (discussing the history and avenues that the FCC could take).

180. Press Release, Verizon, Title II Regulations a 'Net' Loss for Innovation and Consumers (Feb. 26, 2015), http://publicpolicy.verizon.com/assets/docs/VZ_NR_--_2-26-15_VZ_

Communications Act, like many federal regulatory provisions, has been amended many times. The appropriate conception of common carrier regulation today is far, far different from the 1934 conception, including a much lighter regulatory touch and increased room for antitrust law as an alternative.[181]

Antitrust may have a more important role to play when older technologies that have an entrenched position confront new technologies, including internet technologies. The concerns have been raised with respect to ultimately unsuccessful proposed mergers between Comcast Cable and Time-Warner Cable, as well as the successful merger between AT&T and DirecTV, a satellite provider.[182] These proposed mergers involve both old technology cable companies and relatively new technology ISPs. Internet "on demand" programming is increasingly displacing traditional hard-wired cable television delivered with scheduled programs.[183] The switch away from cable is particularly prominent among younger viewers.[184] The market is currently in flux and non-cable alternatives are increasing rapidly. In January 2015, ESPN and Dish Network announced a standalone internet streaming service that will permit people with broadband to receive channels on the Internet

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Statement_on_Open_Internet_Order_FINAL_1.pdf (mocking the FCC's regulation by dating the article 1934 and implying the new regulation is something from the 1930s).

181. 1A PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW, ¶¶ 240–241 (4th ed. 2014). On the role of antitrust, see FED. COMMC'NS COMM'N, *supra* note 178, at 6 n.12 ("[T]his Order need not conclude that any specific market power exists in the hands of one or more broadband providers in order to create and enforce these rules. Thus, these rules do not address, and are not designed to deal with, the acquisition or maintenance of market power or its abuse, real or potential. Moreover, it is worth noting that the Commission acts in a manner that is both complementary to the work of the antitrust agencies and supported by their application of antitrust laws. Nothing in this Order in any way precludes the Antitrust Division of the Department of Justice or the Commission itself from fulfilling their respective responsibilities under Section 7 of the Clayton Act, or the Commission's public interest standard as it assesses prospective transactions." (citations omitted)).

182. *See* Thomas Gryta & Shalini Ramachandran, *FCC Delays Reviews of Two Big Mergers*, WALL ST. J., Mar. 14, 2015, at B4. The Comcast and Time-Warner cable merger was not successful. Roger Yu & Mike Snider, *How Comcast, Time Warner Cable Deal Unraveled*, USA TODAY (Apr. 25, 2015, 12:27 PM), http://www.usatoday.com/story/money/2015/04/24/how-comcast-deal-to-buy-time-warner-cable-fell-apart/26313471/ (providing explanations for why the Time Warner board voted against the deal). AT&T and DirecTV, however, were successful in their merger. Roger Yu, *FCC Approves AT&T's Acquisition of DirecTV*, USA TODAY (July 27, 2015, 10:01 AM), http://www.usatoday.com/story/money/2015/07/24/fcc-approves-ts-acquisition-directv/30626421/.

183. Jeffrey Prince & Shane M. Greenstein, *Measuring Consumer Preferences for Video Content Provision Via Cord-Cutting Behavior* 2 (Telecomm. Policy Research Conference Working Paper No. 41, 2015), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2241680.

184. *See id.* at 13, 37–38 tbl.2.

directly.[185] This move will almost certainly hasten the migration away from traditional cable toward internet-based television services.[186] Others, including Sony, HBO, and Apple, have already announced entry in more limited ways or are contemplating it.[187] At this writing, the FCC has proposed de-linking of cable set-top boxes from cable service. De-linking will enable the use of "generic" tuner boxes that can serve to make cable video more readily interchangeable, and thus competitive, with non-cable video.[188]

Cable companies have not only been laggards in internet service development, but they have also resisted internet alternatives at both the program-content and service-provision levels, in the process restraining innovation significantly. The rationale is not difficult to discern: the Internet is, or can be, both more efficient and more competitive than cable technology. The fear, expressed in Netflix's forceful opposition to the Comcast merger,[189] is that cable television companies will either cap internet bandwidth or price it out in a way that makes Netflix and other internet content streamers more costly.[190] The issue is complex, however. On the one hand, cable companies may not obtain as much revenue from internet data streaming as they do from carrying programs themselves. On the other hand, consumers typically pay an extra fee for their internet access anyway, and sometimes this fee is quite large in relation to the bandwidth that they obtain.[191]

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185. Emily Steel, *Dish Network Unveils Sling TV, a Streaming Service to Rival Cable (and It Has ESPN)*, N.Y. TIMES (Jan. 5, 2015), http://www.nytimes.com/2015/01/06/business/media/dish-network-announces-web-based-pay-tv-offering.html.

186. *See id.*

187. *See* HBO NOW, http://order.hbonow.com/ (describing internet-only service limited to HBO programming); Angela Moscaritolo, *Sony Gearing Up for Official Playstation Vue Launch*, PC MAG (Mar. 12, 2015, 2:10 PM), http://www.pcmag.com/article2/0,2817,2478204,00.asp (describing the cable alternative available to PlayStation users); Emily Steel & Brian X. Chen, *Apple Said to Plan Limited, Low-Cost Streaming Service*, N.Y. TIMES (Mar. 17, 2015), http://www.nytimes.com/2015/03/18/business/media/apple-said-to-plan-limited-low-cost-streaming-service.html (describing Apple's potential range of programing from different networks).

188. *See* Notice of Proposed Rulemaking, *In re* Expanding Consumers' Video Navigation Choices, FCC 16-18 (Feb. 18, 2016), 2016 WL 759903 (F.C.C.), http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0218/FCC-16-18A1.pdf.

189. Cecilia Kang, *Netflix Opposes Comcast's Merger with Time Warner Cable, Calls It Anticompetitive*, WASH. POST (Apr. 21, 2014), https://www.washingtonpost.com/news/the-switch/wp/2014/04/21/netflix-opposes-comcasts-merger-with-time-warner-cable-calls-it-anticompetitive (discussing Netflix's opposition to the Comcast–Time Warner merger).

190. *See id.*; *cf.* C. Robert Gibson, *How a Mid-Sized Tennessee Town Took on Comcast*, HUFFINGTON POST: THE BLOG (May 6, 2015, 5:59 AM), http://www.huffingtonpost.com/carl-gibson/chattanooga-socialism_b_6812368.html (providing an interesting account of one conflict in Chattanooga, Tennessee).

191. *See* Roger Yu, *Cable Companies Cap Data Use for Revenue*, USA TODAY (Oct. 1, 2012, 7:13 PM), http://www.usatoday.com/story/tech/2012/10/01/internet-data-cap/1595683/

The other significant competitive threat is upstream, in the internet service provision market. In the United States, several cable companies offer broadband internet services, but they have resisted the deployment of greater bandwidth.[192] Google, AT&T, and several smaller firms are now installing ultra-high-speed Internet in many communities.[193] However, this Internet is typically not tied to a cable television company at all, although it may be bundled with satellite television.

The upstream situation is somewhat precarious for cable companies because the range and robustness of alternatives is growing larger. Depending on available alternatives, viewers faced with limitations on internet speed or access offered by a cable company may simply drop cable altogether and make a different deal for internet service provision.[194] Nevertheless, large cable companies continue to have a dominant market share in many areas,[195] and they can be expected to resist the fastest and least restricted internet options as long as these large cable companies challenge traditional cable profits. At the same time, however, the business model of the cable companies can be expected to change.[196] How quickly that happens depends on the extent of competition.

In any event, regulatory alternatives other than antitrust are better suited to addressing most of these problems. As far as antitrust is concerned, even a monopolist can generally charge any price or regulate the quality of its output, provided that it does so unilaterally and does not unreasonably exclude rivals. While cable companies may be holding back on internet speed, that is not an antitrust violation in and of itself. Exclusionary practices directed at competitors can be, however. Further, a merger between a cable television provider and an existing broadband company could prove anticompetitive if it threatened to restrain innovation in the broadband market. Additionally, holding back on otherwise available higher speeds could certainly qualify, provided that

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(discussing increasingly expensive data caps employed by Comcast and Time Warner).

192. *See id.*

193. *E.g.*, Mike Freeman, *AT&T Working on Ultra High Speed Internet*, SAN DIEGO UNION TRIBUNE (Apr. 21, 2014, 5:07 PM), http://www.sandiegouniontribune.com/news/2014/apr/21/AT-and-T-high-speed-Internet-DSL-Reports-Google/; Milo Medin, *Ultra High-Speed Broadband Is Coming to Kansas City, Kansas*, GOOGLE BLOG (Mar. 30, 2011, 4:15 PM), http://googleblog.blogspot.com/2011/03/ultra-high-speed-broadband-is-coming-to.html.

194. Prince & Greenstein, *supra* note 183, at 2, 4.

195. *See Research and Markets: USA—Digital TV Market—Broadcasting and IPTV*, BUS. WIRE (Mar. 22, 2011, 1:20 PM), http://www.businesswire.com/news/home/20110322006178/en/Research-Markets-USA---Digital-TV-Market#.Vglco9iFPcs.

196. *See* Ben Popper, *The Great Unbundling: Cable TV as We Know It Is Dying*, VERGE (Apr. 22, 2015, 10:34 PM), http://www.theverge.com/2015/4/22/8466845/cable-tv-unbundling-verizon-espn-apple.

other market conditions for competitive harm were present. The 2010 Federal Horizontal Merger Guidelines discuss such possibilities in a section covering mergers that limit "Innovation and Product Variety."[197]

One of the more harmful sets of regulatory initiatives, rarely reflecting anything more than special interest capture, is efforts at both the federal and state levels to prevent municipalities from creating or expanding their own broadband services by contracting with third parties such as Google for installation.[198] The anti-municipal expansion program gained political momentum in 2004 when the Supreme Court held that federal law did not preempt state statutes that limited the power of municipalities to develop their own telecommunications services.[199] The result was accelerated efforts by cable and existing telephone companies to campaign to state legislatures for such statutes, and approximately twenty states have passed them.[200]

The general thrust of these statutes is to prohibit municipalities from taking greater technological advantage of what the Internet has to offer in situations where existing ISPs have been laggards.[201] These municipally contracted networks are largely, although not entirely, independent of content.[202] As a result, they do not have a significant incentive to discriminate against or otherwise hinder competing programing. The municipal systems can also provide collateral services such as free Wi-Fi in designated downtown areas, city parks, public libraries, other public buildings, and even subways and buses.[203] At the same time, it is not difficult to see why major cable companies have launched a fierce lobbying campaign against the expansion of municipal broadband. First of all, the addition of a municipal alternative increases broadband

197. U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *supra* note 65, § 6.4. The 2010 Guidelines also state in the opening section that "[a] merger enhances market power if it is likely to encourage one or more firms to raise price, reduce output, diminish innovation, or otherwise harm customers as a result of diminished competitive constraints or incentives." *Id.* at § 1; *see* 4 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 900.1c (2015 Supp.).

198. *See* John Blevins, *Death of the Revolution: The Legal War on Competitive Broadband Technologies*, 12 YALE J.L. & TECH. 85, 107–15 (2009) (accounting developments up to its time of publication).

199. *See* Nixon v. Mo. Mun. League, 541 U.S. 125, 128–29 (2004).

200. *See* SUSAN CRAWFORD, CAPTIVE AUDIENCE: THE TELECOM INDUSTRY AND MONOPOLY POWER IN THE NEW GILDED AGE 255–56 (2013).

201. *See id.*

202. One exception is Google Fiber, because Google owns YouTube, but at least as of this writing, it does not seem to be discriminating against alternative program providers. *Behind the Scenes with Google Fiber: Working with Content Providers to Minimize Buffering*, GOOGLE FIBER BLOG (May 21, 2014), http://googlefiberblog.blogspot.com/2014/05/minimizing-buffering.html.

203. *See, e.g.*, Elissa Vallano, *The Five Best Cities for Free Public WiFi*, MY CITY WAY (Aug. 17, 2011), http://www.mycityway.com/blog/2011/08/17/the-five-best-cities-for-free-public-wifi-2/.

competition.[204] Second, because they are not affiliated with cable companies or content providers, the municipal companies lack the incentives that have distorted or hindered broadband development.[205]

To be sure, municipal overinvestment or under-delivery can be a problem.[206] Further, overly subsidized municipal broadband may compete unfairly with existing broadband suppliers.[207] This is most likely to be a problem when the broadband market in an area is competitive to begin with. Municipalities compete with private enterprise all the time in the provision of parking, local transportation, waste disposal, firefighting, electricity, and even education and hospitals.[208] One important difference between many of these services is that, unlike broadband, they are much more likely to be competitively provided to begin with, reducing the need for a municipal market entrant. In any event, to the extent these problems exist, legislation requiring municipal broadband projects to be fiscally responsible is the better away to address them. The benefits of increased broadband entry by non-vertically integrated suppliers of any kind, including municipal, certainly outweigh costs.

Here again, antitrust's role is limited. As a general proposition, the source of the restraint is legislative. As the Supreme Court has recently re-emphasized, even state legislation can be subject to antitrust scrutiny when it gives too much authority to interested market participants whom a public official inadequately supervised[209] or when it fails to authorize specific anticompetitive acts.[210] By and large, however, absolute prohibitions passed by state legislation do not fall into these categories. Rather, combatting anticompetitive efforts to restrain municipal internet provision falls more clearly into the FCC's mandate to further the public interest in internet development, which in this case should preempt practices that restrain either output or innovation.

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204. *See* Joshua J. Romero, *FCC Gives Municipal Broadband Providers (and Internet Competition) a Boost*, IEEE SPECTRUM (Feb. 26, 2015, 6:37 PM), http://spectrum.ieee.org/tech-talk/telecom/internet/municipal-broadband-providers-and-internet-competition-get-a-boost.

205. *See id.*

206. *See* Michael O'Reilly, Comm'r, Fed. Commc'ns Comm'n, Remarks at the American Enterprise Institute Luncheon (Jan. 21, 2014).

207. *Id.*

208. Dennis A. Rondinelli, *Partnering for Development: Government—Private Sector Cooperation in Service Provision*, *in* REINVENTING GOVERNMENT FOR THE TWENTY-FIRST CENTURY: STATE CAPACITY IN A GLOBALIZING SOCIETY 219, 219 (Dennis A. Rondinelli & G. Shabbir Cheema eds., 2003).

209. *See* N.C. State Bd. of Dental Exam'rs v. Fed. Trade Comm'n, 135 S. Ct. 1101, 1111 (2015).

210. Fed. Trade Comm'n v. Phoebe Putney Health Sys., Inc., 133 S. Ct. 1003, 1007 (2013).

V. ANTITRUST AND PATENTS IN INFORMATION TECHNOLOGIES

Today, many view the patent system as not working. Common criticisms are that the U.S. Patent and Trademark Office issues far too many patents and that discerning patent validity and scope is extremely costly and produces uncertain results.[211] These critiques are hardly new, and even Supreme Court Justices asserted some of them more than a century ago.[212] The concerns are not evenly arrayed across all industries, however. In some markets, such as chemical production and pioneer pharmaceuticals, the patent system works relatively well.[213] In others, including electronics, software, and most information technologies, it works very poorly.[214]

In information technologies, the more controversial patent and competition issues concern standard setting, FRAND royalty obligations, the right to an injunction on FRAND-encumbered patents,[215] software and business method patents, as well as issues related to cross-licensing or package licensing. These issues often arise in technologies relating to the creation, formatting, dissemination, and consumption of digital information. One important reason is the crucial importance of networking in information technologies, which demands interoperability, and thus technological compatibility, among the devices and programs of different competitors.

The extent to which antitrust law should address these problems in addition to or instead of patent law has been controversial. To begin with, it is not the purpose of antitrust law to repair defects in other federal government regulatory systems, including the patent system.[216] For most abuses, the patent system itself is quite capable of keeping its house in order. The Patent Act governs all questions about patent validity, scope, and infringement, as well as most questions about improper litigation

211. *E.g.*, JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK, 120–121 (2008); BOHANNAN & HOVENKAMP, *supra* note 129, at xi.

212. *E.g.*, David J. Brewer, *The Patent System*, 3 YALE L.J. 149, 149, 151 (1894) ("[S]o many worthless patents have been issued, suggest[ing] that perhaps the machinery now in use may not be the one adapted to work out the best results."); *see* HOVENKAMP, OPENING OF AMERICAN LAW, *supra* note 145, at 184–205.

213. BESSEN & MEURER, *supra* note 211, at 88–89.

214. *Id.* at 89; *see also* Alan Devlin, *Antitrust Limits on Targeted Patent Aggregation*, 67 FLA. L. REV. 775, 779 (2015) (arguing that antitrust laws can limit abuses of the patent system).

215. *See* discussion *infra* Section V.A.

216. Herbert Hovenkamp, *Antitrust and the Patent System: A Reexamination*, 76 OHIO ST. L.J. 467, 475 (2015) (viewing antitrust and patent systems as two separate regulatory institutions, each with its own principal purpose to correct market failures within their respective institution).

conduct.[217] Questions about entitlement to an injunction for patent infringement or the mechanism for computing royalties are also fundamentally about patent law or even contract law, not antitrust.[218]

On the other hand, the patent system does not have satisfactory tools for permitting *consumer* or end-user challenges to harmful patent practices. Infringement defendants, who are almost always producers, can litigate questions about patent validity and scope as well as overclaiming or litigation misconduct, and they do so all the time. Nothing in the Patent Act, however, gives consumers a general right to challenge such practices. When consumers do obtain such rights, it is most typically under antitrust laws, which permit consumers to challenge anticompetitive practices that raise prices or reduce product quality.[219] For example, while only patent infringement defendants can challenge improper infringement actions directly under the Patent Act—then only by a defense, counterclaim, or request for attorney's fees—consumers can bring an action under antitrust laws for improper infringement actions that result in monopoly and higher prices.[220]

What makes the consumer-action feature of antitrust law particularly important is that consumer welfare is just as central to good IP policy as to good competition policy. Consumers consistently benefit from innovation that reduces costs or improves product or service quality.[221] As a result, they are the optimal surrogates for patent efficiency. The story for producers is more ambiguous. Producers certainly benefit from their own innovation as well from complementary innovations that they can procure from others. However, they can also benefit from practices that

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217. The Patent Act's "exceptional case" provision authorizes judges to discipline improper litigation conduct by assessing attorney's fees against the offender. 35 U.S.C. § 285 (2012); *see also* Octane Fitness, LLC v. ICON Health & Fitness, Inc., 134 S. Ct. 1749, 1758 (2014) (making it easier for federal judges to assess such penalties).

218. *E.g.*, eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 390 (2006) (applying patent law to a patent infringement case in which the court considered permanent injunctions).

219. *See* 15 U.S.C. § 15 (allowing "any person" injured by an antitrust violation to seek treble damages); *see also* 2 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW, ¶ 303d (4th ed. 2014) (describing treble damages as a form of punishment for the defendant's violation); 2A PHILLIP E. AREEDA, HERBERT HOVENKAMP, ROGER D. BLAIR & CHRISTINE PIETTE DURRANCE, ANTITRUST LAW, ¶ 330 (4th ed. 2014) (same).

220. *See* Walker Process Equip., Inc. v. Food Mach. & Chem. Corp., 382 U.S. 172 (1965) (reasoning that a patent infringement lawsuit based on a fraudulently obtained patent could constitute an antitrust violation in a counterclaim brought by infringement defendant); Ritz Camera & Image, LLC v. SanDisk Corp., 700 F.3d 503, 508 (Fed. Cir. 2012) (recognizing a distinction drawn by *Walker Process* between claims that arise under antitrust laws and those that arise under patent laws); *In re* DDAVP Direct Purchaser Antitrust Litig., 585 F.3d 677, 690–91 (2d Cir. 2009) (describing *Walker Process* standing).

221. *See* Herbert Hovenkamp, *Consumer Welfare in Competition and Intellectual Property Law*, 9 COMPETITION POL'Y INT'L 53, 59 (2013).

restrain the competing innovations of other firms or that permit them to profit from the assertion of legal rights that confer no social benefit whatsoever.[222] In sum, consumers are inherently better plaintiffs for enforcing IP rights, just as they are for enforcing antitrust law. No good institutional mechanism for consumer involvement exists in IP law.

Another advantage of antitrust policy for evaluating patent practices is its economic, *ex ante* approach to decision-making. In a welcome development, the Supreme Court's 2013 *Actavis* decision recognized that courts can address some restraints of trade governing patents without addressing issues of patent validity or scope.[223] Antitrust's economic approach to restraints creates appropriate incentives by relying on rational expectations about consequences to guide people's behavior at the time they contemplate it.[224] Thus, the antitrust consequences of a settlement should be based on what the parties reasonably believed about patent validity and infringement at the time they entered into their settlement[225] and on objective indicators about competitive effects. To be useful policy, policy makers must attach incentives to behavior at the time the parties contemplate the behavior.

When it comes to assessing the competitive effects of patent practices, antitrust law has some distinct comparative advantages over patent law. Industrial economists have been studying the effects of industry practices on output and competitiveness for decades. By contrast, neither economic scholarship nor congressional or other government fact-finding has produced much useful information about how patent issuance, duration, scope, or enforcement affect economic welfare. In that state of affairs, it is hardly clear that competition policy should be yielding much territory to patent policy.[226]

A. *Standard Setting and FRAND Encumbered Patents*

"FRAND" refers to a patentee's contract or contract-like obligation to license one or more of its patents on "fair, reasonable and

222. *See id.* at 61.

223. Fed. Trade Comm'n v. Actavis, Inc., 133 S. Ct. 2223, 2236 (2013); *see* Aaron Edlin, Scott Hemphill, Herbert Hovenkamp & Carl Shapiro, *Activating* Actavis, 28 ANTITRUST 16, 19 (2013) (understanding *Actavis* as granting a trial court power "to limit evidence on the validity and scope of the patent and to only hear evidence to the extent that it is highly probative in establishing whether there was 'payment for delay'"); Aaron Edlin, Scott Hemphill, Herbert Hovenkamp & Carl Shapiro, Actavis *and Error Costs*, ANTITRUST SOURCE, Oct. 2014, at 1, 1–2.

224. *See* Edlin et al., *supra* note 79, at 606.

225. *Id.* at 617.

226. Herbert Hovenkamp, *The Rule of Reason and the Scope of the Patent*, 52 SAN DIEGO L. REV. 515 (2015); Herbert Hovenkamp, *Institutional Advantage in Competition and Innovation Policy* 1 (Univ. Iowa Legal Stud. Research Paper No. 13-43, 2013), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2307141.

nondiscriminatory" terms.[227] Such agreements most generally arise in the context of standard-setting organizations (SSOs), particularly in industries such as digital video technology or cellular phones,[228] where compatibility and the ability to interconnect are essential. An SSO is typically created to identify and adopt standards for technology in such industries that enable the devices of various manufacturers to function on a single network.[229] A multi-producer market such as the ones for cellular phones or digital video could not exist without such standards.[230]

Frequently, an SSO will have several choices of technologies to address a particular problem or provide a new feature to the community of producers adopting its standards. At that point, the SSO may ask the owners of these technologies to "bid" for the right to have their technology adopted as a standard.[231] Part of this bid is a FRAND commitment. This means that the technology owner agrees in advance that if its technology is adopted as the standard, it will license the technology to all users on fair, reasonable, and nondiscriminatory terms.[232] Once the technology is selected, two things happen. First, the chosen technology becomes much more valuable in the marketplace. Prior to selection, the technology was perhaps one of many options and had to vie with others, perhaps even unpatented public domain alternatives. Once selection occurs, however, all manufacturers on the network that want to take advantage of that technology will use the one that has been selected. By contrast, unselected technologies generally become less valuable. Some may even become worthless, particularly if they were dedicated to a single use for which there is no longer a market. As a result, rejection of a particular technology has produced some antitrust challenges by disappointed owners.[233]

The winning patents that constitute the selected technology (now called "standard-essential patents" or SEPs) become "FRAND-encumbered," which means that anyone can license them on FRAND

227. Jorge L. Contreras, *A Brief History of FRAND*, 80 ANTITRUST L.J. 39, 39 (2015). For a good introduction to FRAND commitments and the surrounding issues, see generally Thomas F. Cotter, *Comparative Law and Economics of Standard-Essential Patents and FRAND Royalties*, 22 TEX. INTELL. PROP. L.J. 311 (2014).

228. *See* Cotter, *supra* note 227, at 311–13 (discussing the connection between FRAND agreements and the Mobile Devices Patent Wars).

229. *See id.* at 311–12.

230. Herbert Hovenkamp, *Competition in Information Technologies: Standards-Essential Patents, Non-Practicing Entities, and FRAND Bidding* 6 (Univ. Iowa Legal Stud. Research Paper No. 12-32, 2012), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2154203.

231. *Id.* at 7.

232. *Id.*

233. *E.g.*, Golden Bridge Tech., Inc. v. Motorola, Inc., 547 F.3d 266, 269–70 (5th Cir. 2008).

terms[234] The meaning of FRAND encumbrance has led to several litigation issues, a few of which are relevant to competition policy. One has to do with whether the owner of a FRAND-encumbered patent is entitled to obtain an injunction against a user or, relatedly, the circumstances under which such an injunction is appropriate.[235] The second has to do with how a fair, reasonable, and nondiscriminatory royalty obligation is computed.[236]

U.S. law generally limits antitrust to a fairly restricted domain. Therefore, most courts view these problems as presenting issues of patent law or sometimes contract law, not antitrust law. This includes questions about whether the owner of a FRAND-encumbered patent is entitled to an injunction. The principal exception permitting application of antitrust law in U.S. courts is for firms that make legal claims that are so poorly founded that the firms have no reasonable expectation of winning.[237] But most claims for an injunction on a FRAND-encumbered patent have not fallen into this category. In 2014, a decision in the U.S. Court of Appeals for the Federal Circuit split three ways on this issue,[238] indicating that any of three different positions on it is reasonable. Judge Randall Rader, at that time the Chief Judge of the Federal Circuit, wrote in dissent that the owner of a FRAND-encumbered patent should be able to obtain an injunction on the same terms as any other patentee.[239] Most of the important decisions, such as *eBay Inc. v. MercExchange L.L.C.*,[240] which rejected the rule of virtually automatic injunctions against patent

234. *See* Cotter, *supra* note 227, at 311–12; Hovenkamp, *supra* note 230, at 7–8.

235. Hovenkamp, *supra* note 230, at 14.

236. Cotter, *supra* note 227, at 356–59; Hovenkamp, *supra* note 230, at 9–12.

237. *E.g.*, Prof'l Real Estate Inv'rs, Inc. v. Columbia Pictures Indus., Inc., 508 U.S. 49, 51 (1993) (affirming the U.S. Court of Appeals for the Ninth Circuit's holding that the lawsuit was immune from an antitrust challenge unless the litigation was "objectively baseless"); *see also* 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW, ¶ 706 (2d ed. 2002) (discussing the baselessness standard).

238. *See* Apple, Inc. v. Motorola, Inc., 757 F.3d 1286, 1332 (Fed. Cir. 2014) (holding that Motorola is not entitled to an injunction and reasoning that an injunction may be appropriate "where an infringer unilaterally refuses a FRAND royalty"), *overruled on other grounds by* Williamson v. Citrix Online, LLC, 792 F.3d 1339 (Fed. Cir. 2015); *id.* (Rader, C.J., dissenting) (arguing that the district court gave FRAND encumbrance too much weight and that a dispute of material fact existed as to Apple's unwillingness to license); *id.* at 1334 (Prost, J., dissenting) (disagreeing that an alleged infringer's refusal to enter into a licensing agreement justifies an injunction but agreeing that FRAND encumbrance should be a factor in injunction analysis).

239. *See id.* at 1333–34 (Rader, C.J., dissenting).

240. 547 U.S. 388 (2006).

infringers,[241] and the recent round of FRAND cases,[242] are not antitrust cases at all.

This does not mean that antitrust can never have a role. First of all, a lawsuit in conflict with the plaintiff's own contractual obligations could be improper, and to that extent could result in antitrust liability. The Ninth Circuit made that clear in its Apple v. Motorola decision, citing several cases.[243] That fact does not necessarily mean, however, that antitrust is the best vehicle for pursuing such claims. While filing of a baseless, exclusionary lawsuit satisfies the *conduct* element of a monopolization offense, liability also requires proof of monopoly power or a dangerous probability of achieving it. The Patent Act's own remedial measures such as the "exceptional case" provision, would provide a more direct route to relief, although not treble damages.[244] Of course, the contractual obligations to license on FRAND terms would have to be sufficiently clear.

One might imagine a conspiracy among owners of FRAND-encumbered patents to deny relief, or a conspiracy among producers to deny a firm's application for a standard in order to protect their own technologies.[245] But fundamental questions about the meaning and scope of FRAND status is a question of patent law, not of antitrust. By contrast, EU competition law reaches further. The Court of Justice of the European Union has held that the owner of a FRAND-encumbered patent may abuse its dominant position unlawfully under Article 102 when it requests an injunction as a way of forcing a royalty agreement.[246]

B. *Patent Pooling and Related Technology Sharing*

In patent law, a "pool" refers to a situation in which two or more firms share a technology via common licensing.[247] For example, if two

241. *Id.* at 394 (holding that it is within the discretion of the district courts to grant or deny injunctive relief).

242. *E.g.*, *Apple*, 757 F.3d at 1332 (majority opinion); Microsoft Corp. v. Motorola, Inc., 696 F.3d 872, 885 (9th Cir. 2012); Microsoft Corp. v. Motorola, Inc., 963 F. Supp. 2d 1176, 1193–94 (W.D. Wash. 2013).

243. Microsoft Corp. v. Motorola, Inc., 795 F.3d 1024, 1047 (9th Cir. 2015) (no immunity for lawsuits that are in breach of contract); *accord* Powertech Tech., Inc. v. Tessera, Inc., 872 F. Supp. 2d 924, 931 (N.D. Cal 2012); Spear Pharm., Inc. v. William Blair & Co., 610 F. Supp. 2d 278, 288 (D. Del. 2009).

244. *See supra* text accompanying note 217.

245. *E.g.*, Golden Bridge Tech., Inc. v. Motorola, Inc., 547 F.3d 266 (5th Cir. 2008) (rejecting such a claim).

246. Case C-170/13, Huawei Tech. Co., Ltd. v. ZTE Corp., 2015 E.C.R., http://curia.europa.eu/juris/document/document.jsf?text=&docid=165911&doclang=EN.

247. Erik N. Hovenkamp & Herbert Hovenkamp, *Patent Pools and Related Technology Sharing* (Cambridge University Press Antitrust Intellectual Property and High Tech Handbook,

television manufacturers each own some patents that give their own televisions desirable features, they may cross-license, thus enabling both manufacturers to share these features.[248] Such sharing generally improves consumer welfare to the extent that the features are desirable and can be distributed across the entire market.[249] Because patents are non-rivalrous, desirable features can be duplicated an infinite number of times. If the two firms have patent portfolios of roughly equal value, then the cross-licensing might be royalty free; if not, then one firm may pay the other a royalty.[250]

The firms may also agree about whether to license their shared technology to outside firms. Some pools are composed entirely of patent portfolio owners who share their technology with one another. Often, however, a large pool will have both "licensor members," who manufacture and submit their patents to the pool for licensing, and "licensee members," who manufacture one or more products but do not have patents of their own to license to the pool. A good example of such a large pool is MPEG-LA, which has collected thousands of patents related to digital video technology and freely licenses them to outsiders.[251]

Our understanding of the economic rationale for and competitive effects of patent pools has evolved considerably. Today it seems clear that the rationales for pooling in networked information intensive technologies are different from the rationales in more traditional technologies. In a technologically simpler time, the most common explanations were that pools were procompetitive if the patents in the pool were complements to one another but that they were likely to be anticompetitive when patents competed.[252] When two things are complements, such as hardware and software, they are efficiently used

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Roger C. Blair and D. Daniel Sokol, eds., 2016) (forthcoming), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2645905); 12 HOVENKAMP, *supra* note 4, ¶ 2043, at 283.

248. *See id.*

249. U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION 57 (2007).

250. *Id.* at 61 & n.17.

251. MPEG-LA's website lists both its licensor members and its licensee members. *E.g.*, *MPEG-2 Licensees*, MPEG LA, http://www.mpegla.com/main/programs/M2/pages/Licensees.aspx (last visited Apr. 4, 2016); *MPEG-2 Licensors*, MPEG LA, http://www.mpegla.com/main/programs/M2/Pages/Licensors.aspx (last visited Apr. 4, 2016); *see also* U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *supra* note 249, at 68–69 (describing the MPEG-2 pool).

252. *See* Richard J. Gilbert, *Antitrust for Patent Pools: A Century of Policy Evolution*, 2004 STAN. TECH. L. REV. 3, ¶ 5 (suggesting that patents that are not substitutes do not necessarily raise competition concerns); Josh Lerner & Jean Tirole, *Efficient Patent Pools*, 94 AM. ECON. REV. 691, 692 (2004) (noting that while patents are rarely perfect complements or perfect substitutes, generally perfect complements raise welfare, and perfect substitutes harm welfare).

together. By contrast, a user selects one among several competing products. At the atmospheric level, this view of patent pools makes economic sense. For example, if a manufacturer of digital memory devices and another manufacturer of digital displays should pool their patents, each might more efficiently be able to produce a device such as a laptop computer that included both memory and a display. On the other hand, if two patentees of duplicate technology should pool, the rationale is more likely to be price fixing.[253] A licensee would need technology from one of them but not both, and the pool may serve as a price agreement device.

This rationale fails to explain the phenomenon of the widespread pooling of complex digital technologies. Several other characteristics of these markets must be considered as well. First, information technology patents are frequently complex and involve many claims. As a result, they often function as both market substitutes and complements, making this distinction less defensible.[254] A good illustration is the Federal Circuit's 2010 *Princo Corp. v. International Trade Commission*[255] decision. The pooling in that case involved rewritable DVDs, and the problem in controversy involved patented technologies for locating the electronic "stylus" in such a way that it could begin recording precisely where it left off in a previous recording session.[256] One firm had developed and patented an analog technology for solving this problem, while the other had developed a digital alternative.[257] Critics regarded the digital technology as technologically superior, but it was also less stable and somewhat buggy.[258] As a result, manufacturers preferred the analog technology for the time being. In the devices, the two technologies functioned as substitutes rather than complements. A manufacturer would ordinarily require one or the other but not both. In *Princo*, however, practicing the analog technology required infringement of at least one claim in the digital patent as well.[259] In sum, even though the two technologies appeared to be substitutes in the product market, the patents functioned as legal complements to the extent that a firm wishing to use the analog technology had to obtain a license for both.

253. *See* U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *supra* note 249, at 74.

254. *See id.*

255. 616 F.3d 1318 (Fed. Cir. 2010) (en banc); *see* Christina Bohannan & Herbert Hovenkamp, *Concerted Refusals to License Intellectual Property*, 1 HARV. BUS. L. REV. BULL. 21, 21–22 (2011).

256. Bohannan & Hovenkamp, *supra* note 255, at 22.

257. *Princo*, 616 F.3d at 1322.

258. Bohannan & Hovenkamp, *supra* note 255, at 22.

259. *Id.*

The complement–substitute distinction is not a particularly strong explanation for pooling in complex information technology markets. Indeed, a large pool such as MPEG-LA contains thousands of patents whose functional relationship to one another is as both complements and substitutes, as well as many patents whose precise scope has never been determined.[260]

Further, the question of whether patents operate as substitutes, complements, or neither can be quite specific to the particular licensee. To illustrate, the patents in the MPEG-LA pool relate to digital video technology that operates under a common standard.[261] The devices that employ this technology include generators of digital video content, such as cameras and video cameras. But they also include devices that accept digital content generated elsewhere and process it, including displays, storage devices, compilers, editors, and the like. The users also include software that reads and processes digital video content while neither producing nor displaying it. A device such as a smartphone might perform several or even all of these functions, while a device such as a computer monitor (display only) or camera (generation only) performs only a few.

In such markets, the distinction between complementary and substitute patents is largely meaningless. Rather, pooling functions as a mechanism for managing communal ownership when sharing property rights is less costly and more effective than defending individual boundaries.[262] That is to say, the modern digital pool operates more like a common pool resource frequently used in old-fashioned markets such as fisheries, livestock grazing, or irrigation.[263]

Why might the several rights owners of a fishing lake "pool" their rights, giving each member access to all, rather than attempting to divide the lake into individual sectors permitting each one to appropriate its own investment? First, identifying, setting, and defending boundaries can be very costly. Second, dividing the territory in this way could be devastating to the yield.

On the first issue, information technology patents are often characterized by ambiguous claim drafting that makes interpretation costly, often on the order of several thousand dollars per patent, and in

260. MPEG-LA states that it controls more than 5000 patents. *A History of Success—A Future in Innovation*, MPEG LA, http://www.mpegla.com/main/Pages/AboutHistory.aspx (last visited Apr. 4, 2016).

261. *See id.*

262. *See* Hovenkamp, *supra* note 104, at 1130.

263. *See, e.g.*, ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 18–22 (James E. Ault & Douglass C. North eds., 1990) (using an inshore fishery in Alanya, Turkey as an example of pooling functions).

situations where often dozens or even hundreds of patents are in issue.[264] By simply cross-licensing their portfolios or licensing them in the aggregate to manufacturing licensees, the firms can eliminate most of the costly problems that accompany individual patent interpretation.[265] Once they have licensed out everything they own, they have no motive for ascertaining which of their many patents a licensee might be using. This is simply a special, although perhaps not widely appreciated, application of Ronald Coase's well-known article, *The Nature of the Firm*.[266] Coase argued that the firm's continuous comparison of the costs of doing something for itself against those of using the market determine the boundaries of a firm.[267] In this case, the cost of maintaining individual boundaries exceeds the cost of sharing and then managing the shared resources. A firm that is intent on maximizing its profits will choose the marginally less costly alternative.

Patent pools in digital technologies have raised some antitrust problems, although surprisingly few given the amount of power that the larger pools have. Price-fixing or express output-limitation agreements in product markets could certainly provoke antitrust challenges, but such restrictions are uncommon.[268] One important difference between traditional common pool resources and patent pools is that the resources in a traditional commons, such as a fishery, are rivalrous or "subtractive."[269] That is, each member's use reduces the amount left over for others.[270] Further, overuse is an important problem given that individual members do not bear the full cost of resource development. For example, overfishing in fishery commons is to be expected because each member has an incentive to put in as little as possible while taking out as much as possible. For this reason, catch or related use limitations will almost certainly be necessary.[271] There is nothing suspicious about an agreement among ten members of a fishery commons to limit each

264. *See, e.g.*, Nero AG v. MPEG LA, L.L.C., No. 10-cv-3672-MRP-RZ, 2010 WL 4878835, at *2 (C.D. Cal. Nov. 24, 2010) (alleging that it would cost licensee $7 million to determine which patents it would need to license from MPEG); *see also* Ultramercial, Inc. v. Hulu, LLC, 772 F.3d 709, 718–19 (Fed. Cir. 2014) (Mayer, J., concurring) (discussing high costs of claim construction); Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1475–76 (Fed. Cir. 1998) (Rader, J., dissenting) (noting the high costs and reversal rates of claim construction), *abrogation recognized by* Teva Pharm. USA, Inc. v. Sandoz, Inc., 789 F.3d 1335 (Fed. Cir. 2015).

265. U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *supra* note 249, at 57.

266. R. H. Coase, *The Nature of the Firm*, 4 ECONOMICA 386 (1937).

267. BOHANNAN & HOVENKAMP, *supra* note 129, at 331; *see* Coase, *supra* note 266, at 390–92.

268. One good historical example, which condemned product price fixing, is *United States v. Line Material Co.*, 333 U.S. 287, 312–14 (1948).

269. BOHANNAN & HOVENKAMP, *supra* note 129, at 328.

270. *Id.*

271. *Id.* at 332–33.

person's catch to, say, 100 fish per week.[272]

In contrast, IP rights are non-rivalrous. One person's use of a patent does nothing to diminish the quantity left over. As a result, jointly agreed output limitations by the members of a patent pool are inherently more suspicious and should be reviewed for the possibility of price fixing.[273]

Most of the antitrust challenges to patent pools in information technologies have not involved price fixing but rather tying or equivalent claims. For example, the licensee from a large patent pool might complain about being required to take the entire pool of, say, 1200 patents when it believes that its own product infringes no more than a small fraction of that number. For example, Nero AG, an unsuccessful challenger to the MPEG pool, is a software company whose products customers use for photo and video editing but not for creating new content or displaying it.[274] Claims such as Nero's made some sense in a time when the substitutes–complements distinction was the ruling rationale for pooling. By stating that a particular patent was not wanted, the licensee was in fact asserting that this particular patent was not a complementary technology insofar as the licensee's own production was concerned. If it were, the licensee would presumably want it.

But the substitute–complement distinction rarely serves to justify the existence of large patent pools in information technologies. The more central problem is the cost of determining the scope of each patent as well as of examining the licensee's products and determining which of the pool's many patents the devices infringe. Those costs could easily exceed the costs of the licensing agreement itself, which is of course why the patents were licensed in this fashion in the first place. Indeed, when extended over the entire range of licensees, the cost of examining all of the patents and determining which ones every licensee's products infringed would be heroic. If doing this were efficient, pooling would not be expected to exist in the first place.

CONCLUSION

Digital and other information technologies have presented public and private antitrust plaintiffs with daunting challenges. These include the assessment of market power as well as understanding both unilateral and collaborative activity. In the process, the case law and literature have both understated and exaggerated competitive problems.

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272. *See id.*

273. *Id.* at 333.

274. *See* Nero AG v. MPEG LA, L.L.C., No. 10-cv-3672-MRP-RZ, 2010 WL 4366448, at *1 (C.D. Cal. Sept. 14, 2010); News Release, MPEG LA, MPEG LA, Nero Settle Litigation 2 (Apr. 12, 2012), http://www.mpegla.com/Lists/MPEG%20LA%20Legal%20Action%20List/Attachments/47/n-12-04-12.pdf.

There is little reason for thinking that competition cannot work in most markets involving digital and other information technologies. Nevertheless, effective policy design requires careful thought. The trick is to keep the channels open for new entry, resource movement, and consumer choice—things that antitrust policy is capable of doing well. IP rights must be respected, but too often they hinder rather than facilitate the free flow of information. Antitrust and the competition economics that guide it have the advantage of good empirical tools and a rich dataset, as well as judicially directed policy goals that are aligned with the consumer welfare interests in both competition and innovation. At the same time, however, antitrust's domain is limited. First, it requires more than a practice that simply reduces economic welfare. There must also be harm to competition. Finally, courts never intended antitrust to be a tool for policing the behavior of other federal regulatory regimes, although it does have some limited power to police insufficiently transparent regulation imposed by the states.