

*L*earning from Rambus—How to tame those troublesome trolls

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The debate over using antitrust enforcement to prevent patent hold-up remains unresolved. The U.S. Court of Appeals muddied the waters in Rambus, and the European Commission decision clarified only little. The *Broadcom v. Qualcomm* case offers mere ad hoc solutions for standard setting, leaving trolls untroubled. We suggest a return to fundamentals. “Skillful silence” to lure an industry into a lock-in, creating opportunities for hold-up to extract unfair royalties, serves no procompetitive purpose and is not “competition on the merits.” Antitrust law itself should in certain cases create a “duty to alert” manufacturers to patents that are not subject to a promise to license on FRAND terms (or a ban on concealing them). Excessive pricing after hold-up could also be curbed under Article 102(a) TFEU and in certain cases under section 5 of the U.S. FTC Act, limiting patent damages to ex ante value of the technology. This would untether the law from the particular context of SSOs, addressing hold-up more completely and uniformly.

KEY WORDS: *Patent hold-up, Rambus, first-principles approach.*

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I. INTRODUCTION

Standard setting plays an important role in our economy, particularly when product or component interoperability is critical. Selecting a standard often involves competitors evaluating competing technologies and selecting a single technology to be standardized, to the exclusion of other patented or nonproprietary technologies. Standardization thus transforms prestandard competition among alternative technologies into post-standard competition among different, but interoperable implementations of the standard. The *Rambus* case was a prime example.¹

¹ *In re Rambus Inc.*, No. 9302, slip op. at 17 (F.T.C. Aug. 2, 2006) (Comm. Leibowitz, concurring) (holding that Rambus's conduct constituted monopolization under section 2 of the Sherman Antitrust Act). On April 22, 2008, the *Rambus* decision was annulled on appeal, and an application for en banc review was denied as moot on August 26, 2008, without further reasoning. *Rambus Inc. v. FTC*, 522 F.3d 456 (D.C. Cir. 2008). A jury in private litigation found that Rambus had not been in breach of any disclosure obligations. *Hynix Semiconductor Inc. v. Rambus Inc.*, No. 1651, C-05-00331-RMW (N.D. Cal. Mar. 26, 2008); *Hynix Semiconductor Inc. v. Rambus Inc.*, 441 F. Supp. 2d 1066 (N.D. Cal. 2006). *See also* European Commission, Notice Pursuant to Art. 27(4) Council Regulation (EC) No. 1/2003, Case COMP/38.636, *Rambus Inc.*, 2009 O.J. (C 133) 16 (market testing of certain proposed commitments by Rambus and preliminary conclusion of the European Commission that Rambus had violated Article 102 of the Treaty on the Functioning of the European Union (TFEU) by requiring royalties after having breached good faith disclosure obligations); Opinion of the Advisory Committee, *Rambus* 2010 O.J. (C 30) 14, *available at* <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:030:0014:0014:EN:PDF>; Comm'n Decision, *Rambus* (Dec. 9, 2009), *available at* http://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf; Summary of Comm'n Decision, *id.* at 17-18, *available at* <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:030:0017:0018:EN:PDF>; Letter from Neelie Kroes, European Comm'n (Jan. 15, 2010), *available at* http://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1192_5.pdf. *See also* *Samsung Elec. Co. v. Rambus Inc.*, 439 F. Supp. 2d 524 (E.D. Va. 2006); *Micron Tech., Inc. v. Rambus Inc.*, 189 F. Supp. 2d 201 (D. Del. 2002); *Rambus Inc. v. Infineon Tech. AG*, 164 F. Supp. 2d 743 (E.D. Va. 2001), *rev'd in part*, 318 F.3d 1081 (Fed. Cir. 2003). *See also* Press Release, European Comm'n, Commission Confirms Sending a Statement of Objections to Rambus (Aug. 23, 2007), *available at* <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/330>; Press Release, European Comm'n, Commission Market Tests Commitments Proposed by

Despite the social benefits of interoperability, standardizing on a single technology also creates problems. Selecting a particular technology means committing to that choice for that standard and abandoning research tracks involving alternative technologies that may have been good substitutes *ex ante*, i.e., before the standard was set.² Once an industry has committed itself to go down the agreed road, and investments have been sunk into implementation of the standard (*ex post*), firms become locked in.³ Even if holders of patents that read upon the standard impose high license fees or exclusionary terms and conditions, it may be too costly to switch to an alternative. Patent holders may be able to impose royalties up to the level of the switching costs, that is, the direct costs of developing and switching to a dif-

Rambus Concerning Memory Chips (June 12, 2009), *available at* <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/273>; Press Release, European Comm'n, Commission Accepts Commitments from Rambus Lowering Memory Chip Royalty Rates (Dec. 9, 2009), *available at* <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/1897>; Press Release, European Comm'n, Commission Accepts Commitments from Rambus Lowering Memory Chip Royalty Rates—Frequently Asked Questions (Dec. 9, 2009), *available at* <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/544>; and Neelie Kroes, Commissioner, Opening Remarks at Press Conference (Sept. 12, 2009), *available at* <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/09/575>.

² Standards are not always exclusive in nature, and different standards may compete. For example, in the United States, AT&T and T-Mobile use GSM/UMTS radio interfaces, whereas Verizon and other carriers use CDMA2000. In certain cases, such as the standards war between HD-DVD and Blu-ray, the standard that develops network effects will gain the upper hand.

³ *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 310 (3d Cir. 2007) (“Although a patent confers a lawful monopoly over the claimed invention . . . its value is limited when alternative technologies exist That value becomes significantly enhanced, however, after the patent is incorporated in a standard Firms may become locked in to a standard requiring the use of a competitor’s patented technology. The patent holder’s [intellectual property rights], if unconstrained, may permit it to demand supracompetitive royalties.”). *See also* C. Madero Villarejo & Nicholas Banasevic, *Standards and Market Power*, GLOBAL COMPETITION POL’Y, May 2008, at 3. *See also* U.S. FED. TRADE COMM’N, THE EVOLVING IP MARKETPLACE (2011) [hereinafter EVOLVING IP REPORT] (“Patent hold-up can overcompensate patentees, raise prices to consumers who lose the benefits of competition among technologies, and deter innovation by manufacturers facing the risk of hold-up.”).

ferent technology plus the opportunity cost of switching (that is, the profits lost as a result of the delays, higher production costs, and reduced functionality associated with the alternative technology).

With foreknowledge that patents apply, firms have a variety of ways to protect themselves from the patentees' acquiring market power, including upfront licensing negotiations, extracting commitments to license on fair, reasonable and nondiscriminatory (FRAND) terms, or exploring alternatives in order to avoid patents or royalties altogether. When the patent rights are undetected or concealed (so-called submarine patents), however, patentees may acquire the power to "hold up" industry participants, seeking higher royalties or more costly licensing terms that harm not only producers, but also consumers, who ultimately bear these higher costs. If patentees are seen to get away with hold-up, the mere *prospect* that a single owner of one essential patent could hold up an entire industry with impunity can deter investment in innovation or the implementation of a standard, thus depriving consumers of the benefits of innovation. This problem arises in particular if firms have reason to fear not only that patents remain undiscovered, but that patent holders can demand "excessive", that is, supracompetitive (cumulative or individual) royalties or impose exclusionary terms and conditions with impunity, for example, if no FRAND license obligations apply or such obligations are in practice not enforced or considered too vague to be meaningful.

This concern is exacerbated in high-technology industries where multiple patents apply to complex systems, patent ownership is widely dispersed, and technically or commercially essential patents are or could be held by nonpracticing entities that are invulnerable to counterclaims.

Although patent hold-up is acknowledged to be a serious problem, particularly in the standard-setting context, the law in the United States and the European Union (EU) remains unsettled. Cases like *Broadcom v. Qualcomm* and *Rambus* in the United States and *Rambus* in the EU have provided guidance on certain issues, but debate persists over the rules that should be implemented by the standard setting organizations (SSOs) and the courts to effectively address the nondisclosure problem. The *Qualcomm* and *Rambus* cases in the EU moreover suggest that FRAND obligations may be difficult to enforce in practice and may

have less value than expected when they were originally agreed upon. The appropriateness of applying antitrust law to these situations has been contested, although, as some of us have discussed previously,⁴ antitrust law may provide tools to police patent hold-up problems in standard setting. With the globalization of technology and the increase of standard setting efforts, the problems seen in the *Rambus* case show that there is a need for harmonization across jurisdictions, and antitrust law can provide a framework for achieving this goal.

In this article, we first explore the approaches that the United States and EU courts and authorities have taken to address patent hold-up. We then describe the difficulties that those approaches have created, concluding that they are inadequate. Stepping back, we apply a first principles approach to analyzing patent hold-up and a potential duty to disclose, concluding that patent hold-up results in dynamic inefficiency that is contrary to both the goals of the patent system and the antitrust laws. Finally, we address specific issues that may arise in implementing a duty to disclose in the United States and the EU, concluding that these issues are surmountable in both jurisdictions if the political will exists to apply and enforce competition law in an efficient manner.

II. EXISTING APPROACHES IN THE UNITED STATES AND EU

A. *U.S. cases*

The leading cases in the United States stem from patent hold-up conduct by Qualcomm and Rambus after standard setting for mobile wireless device chipsets and memory controllers, respec-

⁴ George S. Cary, Larry C. Work-Dembowski, and Paul S. Hayes, *Antitrust Implications of Abuse of Standard-Setting*, 15 *GEO. MASON L. REV.* 1241, 1253–54 (2008); Maurits Dolmans, *Standard Setting—The Interplay with IP and Competition Laws—How to Avoid False FRANDs*, in 11 *INTELLECTUAL PROPERTY LAW AND POLICY* 791 (2010); Maurits Dolmans, *Standards, IP and Competition: De Aequitate Non Est Disputandum?*, Helsinki, October 7, 2009, available at <http://www.iprinfo.com/tiedostot/Dolmans.pdf>, and Maurits Dolmans, *A Tale of Two Tragedies—A Plea for Open Standards*, 2 *INT’L FREE & OPEN SOURCE SOFTWARE L. REV.* 115 (2010). *But see* Mark Lemley, *Ten Things to Do About Patent Hold-up of Standards (and One Not To)* 48 *B.C. L. REV.* 149, 151–55 (2007) (arguing that antitrust is “a back-stop that’s going to apply only if private efforts in SSOs and [intellectual property] law have already failed us”).

tively.⁵ Although both involved patent hold-up, Qualcomm was accused of more brazen conduct, involving deception in promises it made about licensing terms, while Rambus acted by omission, failing to heed the relevant SSO's patent disclosure policy. In both cases, the courts focused on external law to determine whether a duty to disclose existed, and the most contentious issues in these cases focused on causation.

The Third Circuit considered the antitrust implications of the patent hold-up problem in *Broadcom Corp. v. Qualcomm Inc.*⁶ Broadcom alleged that Qualcomm had monopolized various markets for technology used in the operation of mobile telephones by intentionally making a false promise to the European Telecommunications Standards Institute (ETSI) and other SSOs to offer reasonable and nondiscriminatory (RAND)⁷ license terms to licensees seeking to practice a new standard for third generation mobile wireless devices.⁸ Broadcom also asserted that Qualcomm had violated section 2 of the Sherman Act by leveraging its new-found monopoly power in these technology markets to impose discriminatory licensing terms in an attempt to monopolize a downstream market for standard-compliant chipsets.⁹

The district court dismissed Broadcom's monopolization claims on the theory that the creation of the standard, not Qualcomm's alleged deception, eliminated competition in the relevant markets.¹⁰ However, this ignored the fact that the availability of a RAND license for the technology was a key factor in the selection of the technology for inclusion in the standard. The Third Circuit reversed. Noting that the district court had not addressed "the possibility that the FRAND commitments that [the SSOs] required of vendors were intended as a

⁵ See *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 310 (3d Cir. 2007) and *In re Rambus Inc.*, No. 9302 (F.T.C. Aug. 2, 2006).

⁶ 501 F.3d 297.

⁷ FRAND and RAND are equivalent terms, the latter used in the United States and the former elsewhere.

⁸ *Qualcomm*, 501 F.3d at 304.

⁹ *Id.*

¹⁰ *Id.* at 305.

bulwark against unlawful monopoly,” the Third Circuit held that Broadcom had alleged a viable monopolization claim under section 2, holding that:

(1) in a consensus-oriented private standard setting environment, (2) a patent holder’s intentionally false promise to license essential proprietary technology on FRAND terms, (3) coupled with an [SSO]’s reliance on that promise when including the technology in a standard, and (4) the patent holder’s subsequent breach of that promise, is actionable anticompetitive conduct.¹¹

As the Third Circuit noted, “[d]eception in a consensus-driven private standard-setting environment harms the competitive process by obscuring the costs of including proprietary technology in a standard and increasing the likelihood that patent rights will confer monopoly power on the patent holder.”¹² Thus, Broadcom’s claim that Qualcomm falsely promised to license its patents on RAND terms “adequately alleged that Qualcomm obtained and maintained its market power willfully, and not as a consequence of a superior product, business acumen, or historic accident.”¹³ The Third Circuit went on to conclude that “[d]eceptive FRAND commitments, no less than deceptive nondisclosure of [[intellectual property rights], may result in . . . [competitive] harm” and therefore warrant antitrust scrutiny.¹⁴

That deceptive conduct in the standard setting process may be an antitrust violation is also consistent with antitrust precedent outside the standard setting context. For example, in *Conwood Co. v. U.S. Tobacco Co.*, the Sixth Circuit held that U.S. Tobacco violated section 2 by, among other things, providing retailers with false sales data that convinced retailers to stock U.S. Tobacco’s products over those of its competitors.¹⁵ Likewise, it is well established that a section 2 violation

¹¹ *Id.* at 314.

¹² *Id.*

¹³ *Id.* at 315.

¹⁴ *Id.* at 314. Following the court of appeals judgment, the case was eventually settled. See *infra* note 46 and accompanying text, although an investigation is still pending in the EU with respect to alleged exclusionary clauses in Qualcomm’s license agreements, based on a complaint from Icera/NVidia.

¹⁵ 290 F.3d 768, 783 (6th Cir. 2002).

can arise from enforcing intellectual property rights that have been obtained by fraud in order to exclude competitors from the market,¹⁶ submitting a false listing to the Food and Drug Administration to exclude generic competitors,¹⁷ or engaging in other forms of deception that lead to monopoly power.¹⁸

The Federal Trade Commission (FTC) has also brought several enforcement actions based on the concept that deceptive conduct by a patent holder resulting in the misappropriation of the monopoly power created by a standard constitutes anticompetitive conduct in violation of the antitrust laws. Of these various enforcement actions, the most notable is *In re Rambus Inc.*,¹⁹ which the FTC ultimately lost in the D.C. Circuit. In *Rambus*, the FTC accused Rambus of intentionally failing to disclose to the Joint Electron Device Engineering Council (JEDEC) patents and patent applications that covered designs under consideration for adoption as new standards for computer memory chips.²⁰ Rambus was also accused of amending its pending patent applications to ensure that the patents that would eventually issue would closely match the contours of the standards, using information obtained from a participant in JEDEC called Secret Squirrel and Deep Throat.²¹

When the matter came before the FTC after having been dismissed by an FTC administrative law judge,²² the FTC unanimously

¹⁶ See, e.g., *Walker Process Equip., Inc. v. Food Mach. & Chem. Co.*, 382 U.S. 172, 174 (1965); *Knickerbocker Toy Co. v. Winterbrook Corp.*, 554 F. Supp. 1309, 1321 (D.N.H. 1982).

¹⁷ See, e.g., *In re Buspirone Patent Litig.*, 185 F. Supp. 2d 363, 376–77 (S.D.N.Y. 2002); Complaint at 135–39, *Bristol-Myers Squibb Co.*, No. C-4076 (F.T.C. April 14, 2003), available at <http://www.ftc.gov/os/2003/04/bristolmyerssquibbcmp.pdf>.

¹⁸ See, e.g., *United States v. Microsoft Corp.*, 253 F.3d 34, 76–77 (D.C. Cir. 2001); *Caribbean Broad. Sys. Ltd. v. Cable & Wireless PLC*, 148 F.3d 1080, 1087 (D.C. Cir. 1998); *Int'l Travel Arrangers, Inc. v. W. Airlines, Inc.*, 623 F.2d 1255, 1262–63, 1270–72 (8th Cir. 1980).

¹⁹ Complaint, *In re Rambus Inc.*, No. 9302 (F.T.C. June 18, 2002).

²⁰ *Id.* ¶¶ 70–75.

²¹ *Id.* ¶ 86.

²² Initial Decision at 6–7, *In re Rambus Inc.*, No. 9302 (F.T.C. Feb. 24, 2004), available at <http://www.ftc.gov/os/adjpro/d9302/040223initialdecision.pdf>.

reversed and held that Rambus's deceptive conduct violated section 5 of the FTC Act and section 2 of the Sherman Act.²³ The FTC concluded that Rambus had intentionally created the misimpression that it was not seeking relevant patents on the technologies under consideration and thereby misled JEDEC's members about the actual price of the technology to be included in the new standards, which prevented them from being able to make informed choices.²⁴ This deception led to Rambus's gaining monopoly power over four technology markets—power that the FTC concluded either would not have existed (because JEDEC could have chosen alternative technologies) or would have been restrained by negotiations that would have been conducted before the adoption of the standard if not for the deception.²⁵

Rambus appealed the FTC's decision to the D.C. Circuit, which reversed.²⁶ The court explicitly recognized the problem of lock-in, which may allow patent holders to gain monopoly power through the inclusion of their technologies in a standard.²⁷ The court nevertheless overturned the FTC's decision because the FTC had failed to find as a factual matter that, absent Rambus's alleged deception, an alternative to Rambus's technology would have been selected by the SSO.²⁸ Rely-

²³ Opinion of the FTC at 3, *In re Rambus Inc.*, No. 9302 (F.T.C. Aug. 2, 2006), available at <http://www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf>.

²⁴ *Id.* at 67.

²⁵ *Id.* at 72–79.

²⁶ *Rambus Inc. v. FTC*, 522 F.3d 456, 459 (D.C. Cir. 2008).

²⁷ *Id.* (“Before an SSO adopts a standard, there is often vigorous competition among different technologies for incorporation into that standard. After standardization, however, the dynamic typically shifts, as industry members begin adhering to the standard and the standardized features start to dominate.”).

²⁸ *Id.* at 466. Note that the European Commission came to the opposite factual finding, namely that several patented and nonpatented alternatives existed that would have been chosen. See Comm'n Decision, *Rambus Inc.* ¶ 46 (Dec. 9, 2009), available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf (“Moreover, it was the preliminary view of the [European] Commission that there was significant evidence that during Rambus' membership of JEDEC, a broad range of alternative technologies to those that were eventually included in the JEDEC [dynamic random access

ing on *NYNEX Corp. v. Discon, Inc.*,²⁹ the court explained that, in the absence of such a finding, Rambus was presumed to be a lawful monopolist and thus its deceptive conduct leading to higher prices alone was not sufficient to establish liability under section 2.³⁰

The seemingly disparate holdings of *Rambus* and *Broadcom v. Qualcomm* highlight the underlying issue of causation. In both cases, the court struggled to effectively define what facts need to be present for the conduct to be anticompetitive, stumbling in particular on what evidence the plaintiff needed to show for the court to conclude that the failure of the defendant to disclose its patent holdings had resulted in monopoly power. In *Rambus*, the D.C. Circuit required that a nonproprietary alternative to the patented standard exist and faulted the FTC for failing to find that an alternative to Rambus's technology would actually have been selected by the SSO absent Rambus's questionable conduct.³¹

The D.C. Circuit's insistence on a patent-free alternative for a finding of anticompetitive conduct fails to recognize the disciplining

memory (DRAM)] standard was available. The alternative technologies to the ones which were eventually included in the standard were technically and commercially feasible. There is no evidence indicating that there were patents reading on the alternatives that could have been incorporated into the standards.”).

²⁹ 525 U.S. 128 (1998). In *NYNEX*, the defendant (a lawful monopolist telephone company) was accused of violating sections 1 and 2 of the Sherman Act by deceptively avoiding price regulations through a scheme of shifting costs from its nonregulated business to its regulated business, which led to its regulator approving higher prices for customers. *Id.* at 131–32. The Supreme Court held that NYNEX did not violate the antitrust laws through realizing the higher prices because the U.S. antitrust laws permit a lawful monopolist to charge what it chooses. *Id.* at 135–36. It is surprising that the court relied on *NYNEX* in *Rambus*, because Rambus did not have a legally created monopoly, and NYNEX's cost allocation policy was not intended to create a monopoly, but to circumvent price regulation.

³⁰ *Rambus*, 522 F.3d at 466.

³¹ *Id.* at 463–64 (“We assume without deciding that avoidance of the first of these possible outcomes was indeed anticompetitive; that is, that if Rambus's more complete disclosure would have caused JEDEC to adopt a different (open, non-proprietary) standard, then its failure to disclose harmed competition and would support a monopolization claim.”).

effect of ex ante competition on licensing terms. Even if all alternatives are patented, ex ante competition among proprietary alternatives is what leads one party to offer a RAND or other lower-royalty commitment. If Rambus had been open about its patent before JEDEC members had sunk investments into Rambus's technology, JEDEC might have selected different technologies (given that JEDEC considered several equivalent and royalty-free technologies) or might still have chosen Rambus's technology for the final standard, but secured better licensing terms by threatening to use an alternative. The royalty payable for the chosen technology would likely have been close to the incremental value that JEDEC members derived from the use of the technology over the next best alternative. The court also did not address the possibility that the SSO could have chosen a different proprietary technology (presumably with a RAND commitment), delayed adopting a standard, or declined to adopt a standard at all, all of which could have resulted in Rambus not obtaining the market power it obtained through its deceptive nondisclosure and (if a different technology was chosen) not receiving any royalties at all.³²

B. *European Commission cases*

Based on the facts set out above, the European Commission (Commission) sent a Statement of Objections to Rambus on July 30, 2007, in which it took the preliminary view that Rambus had infringed the

³² See, e.g., Thomas F. Cotter, *Patent Hold-up, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1194 (2009); Christopher Hardee, *Single-Firm Opportunism and the FTC's Rambus Defeat: Implications for Section 2 of the Sherman Act*, 18 TEX. INTELL. PROP. L.J. 97, 103–04 (2009); Cary, Work-Dembowski & Hayes, *supra* note 4, at 1253–54. Commentators have also questioned whether the D.C. Circuit imposed an impermissibly stringent causation standard in *Rambus*—one that is arguably inconsistent with the causation standard the court employed in *Microsoft*. See, e.g., Ankur Kapoor, *What Is the Standard of Causation of Monopoly?*, ANTITRUST, Summer 2009, at 39 (“[T]he D.C. Circuit’s but-for causation analysis in *Rambus* appears at odds with its analysis in *Microsoft*, where the court rejected Microsoft’s but-for causation argument and upheld liability for acts that ‘reasonably appear capable of making a significant contribution’ to monopoly.”) (citation omitted); Michael Carrier, *The D.C. Circuit’s Excessively High Causation Standard in Rambus* (Apr. 10, 2008), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1586430.

European Community Treaty (now TFEU) rules on abuse of dominant position “by claiming unreasonable royalties” for the use of certain patents that read on computer memory chips subsequent to a “so-called ‘patent ambush.’”³³ Although the statement of objections is based largely on the same facts as the FTC’s enforcement action, the Commission ran into a difficulty that is peculiar to European law. Contrary to U.S. antitrust law, European rules on abuse of dominance do not prohibit unilateral fraudulent monopolization (or an attempt to monopolize by fraud) by a nondominant firm, but only exclusionary or exploitative practices by a firm *after* it acquires a dominant position.³⁴ Because European rules did not allow the Commission to sanction Rambus’s acquisition of dominance in the relevant technology market through deceitful means, the Commission relied on a charge of excessive pricing, arguing that “without its ‘patent ambush,’

³³ Press Release, European Comm’n, Antitrust: Commission Confirms Sending a Statement of Objections to Rambus (Aug. 23, 2007), *available at* <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/330>. For other recent interesting cases, see Federal Court of Justice, July 13, 2004, Standard-Spundfass II, WuW DE-R 1329, GRUR 2004, 966 (F.R.G.); Regional Court of Düsseldorf, Feb. 13, 2007, Case 4a O 24/05, Siemens v Amoi (Zeitlagen-multiplexverfahren); District Court Düsseldorf, Nov. 30, 2006, Case 4b O 346/05, Video Signal Encoding; German Supreme Court, May 6, 2009, KZR 39/06, Orange Book (on appeal from Court of Appeal Karlsruhe, Dec. 13, 2006, Case 6 U 174/02, Orange Book-Standard); District Court of Mannheim, Feb. 18, 2011, Case 7 O 100/10, IPCo v. Nokia; Case COMP/39.615, Nokia/Bosch+IPCo, Dec. 10, 2009 (announcement of undertaking); Koninklijke Philips Electronics N.V. v. SK Kassetten GmbH & Co. KG, District Court of The Hague, The Netherlands, March 17, 2010, Joint Cases No. 316533/HA ZA 08-2522 and 316535/HA ZA 08-2524; LG Elecs. Inc v. Sony Supply Chain Solutions (Europe) B.V., District Court of Breda, The Netherlands, Feb. 28 2011, Case No. 231657 KG RK 11/189; Apple v. Samsung, District Court of The Hague, The Netherlands, Aug. 24 2011, Joined Cases 396957 / KG ZA 11-730 and 396959 / KG ZA 11-731. For a discussion of some of these cases, see Ari Laakkonen, Defences to Patent Infringement in a Standards Context, *available at* fordhamipconference.com/wp-content/uploads/2011/04/Laakkonen.pdf.

³⁴ This distinction may come as a surprise to American readers. Article 102 TFEU, however, requires a finding of “dominant position” as a precondition. Thus, while European competition law does not prohibit a firm from monopolization by means of deception (provided it was not dominant at that time), it is illegal for it to charge the monopoly prices made possible by such deception.

Rambus would not have been able to charge the royalty rates it currently does.”³⁵ Therefore the Commission had to assess the value of Rambus’s technology in order to determine whether it was excessive, which (as discussed below) is not an easy task.

To avoid this difficulty, the Commission could have defined a *sui generis* form of abuse, in addition to or instead of relying on the ban on excessive pricing, recognizing that the abuse in question was the last link of a chain of events, beginning with Rambus’s participation in JEDEC, its decision to leave JEDEC, its letter to JEDEC creating the misleading impression that Rambus had and would have no patent reading on the technology that JEDEC considered for the standard, and the adjustment of its patent claims based on the information received from Secret Squirrel—all of which occurred before the industry was locked in and before Rambus became dominant as a result—and continuing with Rambus’s decision to demand royalties for its patents once the industry was locked in. At the time Rambus demanded royalties, it was dominant. It is arguably an abuse of that dominance to demand royalties *at all* after a patent ambush in the context of a situation where JEDEC would have chosen a different technology and Rambus would have collected no fee whatsoever had it informed JEDEC of its patent plans.

There is no final decision, because Rambus offered commitments, but there are some indications that the Commission might have taken this approach in a final decision, to avoid the need to assess the value of Rambus’s technology. First, the Commission stated (not very clearly, unfortunately) that “[t]he finding of abuse would rather be conditioned by the conduct that has necessarily influenced the standard process, in a context where suppression of the relevant information necessarily distorted the decision making process within a standard-setting body.”³⁶ Second, the Commission extracted from

³⁵ Press Release, *supra* note 33.

³⁶ Comm’n Decision, *Rambus Inc.* ¶ 39 (Dec. 9, 2009), *available at* http://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf. *See also id.* ¶¶ 43–44 (“In the preliminary assessment, the Commission considered that, save for Rambus’ alleged deceit, JEDEC Members were likely to have designed a ‘patent-free’ standard around Rambus’ patents. The Commission provisionally concluded that a number of factors pointed clearly

Rambus a commitment “not to charge any royalties for the [synchronous dynamic random access memory (SDRAM)] and [double-data-rate synchronous dynamic random access memory (DDR)] standards that were adopted during the time in which Rambus was a member of JEDEC.”³⁷ This suggests that Rambus was not entitled to any royalty in respect of these standards regardless of the inherent value of its technology, and supports the *sui generis* abuse discussed above. The decision to allow Rambus to charge royalties for later versions of the standard while requiring that the rate be lowered, on the other hand, suggests that the Commission would have relied instead on excessive pricing as the theory of harm. It should be recalled, however, that an Article 9 commitment is in the nature of a compromise and that both parties therefore made concessions without setting a precedent.

The Commission officially closed its investigation of Rambus’s practices in December 2009 without an official finding of abuse, following commitments by Rambus to license its patents worldwide at either a zero royalty rate (for technology reading on standards that were adopted when Rambus was a member of JEDEC) or a 1.5% royalty rate (for the later generations of JEDEC DRAM standards) for a period of five years.³⁸

At this occasion, the Commission reiterated its view that “standards bodies have a responsibility to design clear rules respecting these principles and hence reduce the risk of competition problems,

in this direction The Commission took the preliminary view that there was wide-ranging evidence that the industry was concerned about costs associated with any [dynamic random access memory (DRAM)] interface technology. In this regard, the Commission provisionally concluded that payment of royalties on memory interfaces has been very much the exception, rather than the rule, in the [dynamic random access memory (DRAM)] industry, showing a disposition against including patents in standards.”). The quote suggests that the zero royalty commitment could have been extracted on the basis of this finding. *See also supra* note 28.

³⁷ *Id.* ¶ 55.

³⁸ *See* Comm’n Decision, Rambus Inc. ¶ 55 (Dec. 9, 2009), *available at* http://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf.

such as patent ambushes.”³⁹ At the same time, however, perhaps mindful that the U.S. courts had found that the JEDEC rules did not unambiguously require disclosure of all patents and patent applications, it stated that Rambus was bound by an “underlying duty of good faith that is binding on a participant in a standard-setting process.”⁴⁰ This suggests that the breach of an SSO policy is not a precondition for a finding of abuse and that disclosure obligations are binding on all SSO participants except those who promise not to engage in hold-up, perhaps by making FRAND commitments with respect to all patents that are technically essential for the standards created by the SSO. The Commission Decision in *Rambus* does not specify the basis for the good faith obligation. One possible basis is Article 101(3) TFEU, which exempts restrictive agreements, including standard setting agreements, from the prohibition of Article 101(1) TFEU provided that they meet four conditions, namely that they achieve efficiencies or “improve technical or economic progress,” are not more restrictive than necessary to achieve these goals, benefit consumers, and do not completely eliminate competition.⁴¹

A few months after sending a statement of objections to Rambus, on October 1, 2007, the European Commission announced the opening of formal proceedings against Qualcomm in relation to an alleged

³⁹ Press Release, *Frequently Asked Questions*, *supra* note 1; *see also* Stanley M. Besen & Robert J. Levinson, *Standards, Intellectual Property Disclosure, and Patent Royalties After Rambus*, 10 N.C. J.L. & TECH. 233 (2009), and Stanley M. Besen & Robert J. Levinson, *Economic Remedies for Anticompetitive Hold-up: The Rambus Cases*, 56 ANTITRUST BULL. 583 (2011).

⁴⁰ The Commission found that Rambus had “knowledge of the requirements of the JEDEC patent policy and of the underlying *duty of good faith* that is binding on a participant in a standard-setting process.” Commission Decision, *Rambus* ¶ 42 (emphasis added). The Commission also reiterated “that an intellectual property right holder would act in bad faith if it was aware that its intellectual property read on a standard in development and did not disclose its intellectual property rights until after the adoption of the standard.” *Id.* ¶ 32 (citing *Commission Communication, Intellectual Property Rights and Standardisation*, ¶ 4.2.10, COM (1992) 445).

⁴¹ *See also* Commission Notice, *Guidelines on the Applicability of Article 101 TFEU to Horizontal Co-operation Agreements*, 2011 O.J. (C 11) ¶¶ 257–335.

breach of the European Community Treaty rules on abuse of dominance following complaints lodged by Ericsson, Nokia, Texas Instruments, Broadcom, NEC, and Panasonic. The complaints alleged that Qualcomm was abusing its dominant position in the market for code division multiple access (CDMA) and wideband code division multiple access (WCDMA) technology by licensing its essential patents reading on those standards under non-FRAND terms, in spite of its explicit promise to do so.⁴² The Commission took the view that “patent holders should not be able to exploit the extra power they have gained as a result of having technology based on their patent incorporated in the standard.”⁴³ A parallel investigation by the Korea Fair Trade Commission found that Qualcomm had abused its dominance by imposing terms and conditions that restricted downstream competition and that differed depending on whether or not the licensee purchased Qual-

⁴² Complainants explained that to avoid hold-up, a contract of mutual restraint is necessary. Participants in standards bodies cannot reasonably be expected to agree to a standard including patents to which they have no access on terms that are (1) fair and reasonable and (2) the same terms as other companies implementing the standard (including the patentee itself). This mutual restraint was the intent of the intellectual property rights (IPR) rules adopted by ETSI in the 1990s, ETSI, Intellectual Property Rights, <http://www.etsi.org/WebSite/AboutETSI/IPRsInETSI/IPRsInETSI.aspx>, which required that before a standard is finalized, at a time that intertechnology and interstandard competition is still viable, essential IPR owners commit to charge “fair and reasonable” royalties. See ETSI 3GPP/PCG Meeting 1, Document 3GPP/PCG#1(99)11, Third Generation Mobile Communications: The Way Forward for IPR (Mar. 1–4, 1999), available at www.3gpp.org/ftp/PCG/PCG_01/Docs/PCG1_11.pdf. See also Press Release, 3G.co.uk, 3G WCDMA Mutual Understanding Between Big 4 (Nov. 7, 2002), available at <http://www.3g.co.uk/PR/November2002/4377.htm>. These principles are also applied to long-term evolution (LTE), the fourth generation of Europe’s mobile telecommunications standard. See Press Release, Ericsson, Wireless Industry Leaders Commit to Framework for LTE Technology IPR Licensing (Apr. 14, 2008), available at <http://www.ericsson.com/ericsson/press/releases/20080414-1209031.shtml>; and Press Release, Nokia Corp., Wireless Industry Leaders Commit to framework for LTE Technology IPR Licensing (Apr. 14, 2008), available at <http://press.nokia.com/2008/04/14/wireless-industry-leaders-commit-to-framework-for-lte-technology-ipr-licensing/>.

⁴³ Press Release, European Comm’n, Commission Initiates Formal Proceedings Against Qualcomm (Oct. 1, 2007), available at <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/389>.

comm's chipsets.⁴⁴ The Japan Fair Trade Commission found that Qualcomm had extracted inadequately remunerated cross-licenses.⁴⁵ Following these decisions and the judgment on appeal against Qualcomm in *Broadcom v. Qualcomm*, Qualcomm settled with several of the complainants.⁴⁶ Following withdrawal of the complaints, the European Commission closed the case on November 24, 2009.⁴⁷

The closure of the Qualcomm case in the EU may have left the impression that the Commission would take no action under competition law against alleged violations of FRAND promises. Nevertheless, on January 14, 2011, the Commission adopted its *Guidelines on Horizontal Agreements* stating that SSO policies would need to ensure effective access to the standard on FRAND terms.⁴⁸ Accordingly, SSOs must require participants to unambiguously disclose their rights covering technically essential patents, so as to allow the SSO to design around patents that are not available for license on FRAND terms, or require

⁴⁴ Press Release, Korea Fair Trade Comm'n, Qualcomm's Abuse of Market Dominance (Sept. 2, 2009), available at <http://eng.ftc.go.kr/bbs.do?command=down&sn=422> (imposing corrective orders on Qualcomm for "abusing its dominant position by charging discriminatory royalties and offering conditional rebates"). The decision is on appeal.

⁴⁵ Press Release, Japan Fair Trade Comm'n, Cease and Desist Order Against Qualcomm Inc. (Sept. 30, 2009), available at <http://www.jftc.go.jp/e-page/pressreleases/2009/September/090930.pdf> (on appeal).

⁴⁶ See Chris Nuttall & Rob Minto, *Qualcomm Hails Nokia Settlement*, FIN. TIMES, July 24, 2008, available at <http://www.ft.com/intl/cms/s/0/0683cada-59a7-11dd-90f8-000077b07658.html#axzz1bp0XUs6G>; Crayton Harrison & Susan Decker, *Qualcomm Rises on New Sales Goal, Dispute Settlement (Update 4)*, BLOOMBERG.COM, July 24, 2008, available at http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aVOsS_AAft0&refer=home; and Press Release, Broadcom Corp., Qualcomm and Broadcom Reach Settlement and Patent Agreement (Apr. 26, 2009), available at <http://www.broadcom.com/press/release.php?id=s379764>.

⁴⁷ Press Release, European Comm'n, Commission Closes Formal Proceedings Against Qualcomm (Nov. 24, 2009), available at <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/516&format=HTML&aged=0&language=EN&guiLanguage=en>.

⁴⁸ European Comm'n, *Guidelines on the Applicability of Article 101 TFEU to Horizontal Co-operation Agreements*, 2011 O.J. (C 11) 55–56 (standardization agreements).

SSO participants to provide irrevocable commitments to license their technically essential intellectual property rights on FRAND terms.

III. PROBLEMS WITH EXISTING APPROACHES

One of the basic failings of both the U.S. and EU approaches is the requirement that some external law—such as a contractual obligation from an SSO membership agreement or a good faith obligation—create the duty to disclose.⁴⁹ However, looking to external law for this support has significant costs, both in judicial efficiency and in effective enforcement. Moreover, as the *Rambus* litigations demonstrate, SSOs' patent disclosure policies are frequently vague and do not call for patent searches that would be too burdensome or impractical, and SSO members may not have incentives to formulate disclosure policies that are aligned with the public interest. Finally, these approaches fail to address the problems of patent hold-up by non-SSO members at all.

In the context of SSOs, where most patent hold-up has occurred, relying on patent disclosure policies has produced frustration. In particular, in a proceeding related to the D.C. Circuit's *Rambus* decision, the Federal Circuit's frustration with JEDEC is evident:

⁴⁹ Other concerns are the apparent need in the United States to show an "intentionally false promise to license essential proprietary technology on FRAND terms," *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 314, and the continuing dispute about the definition of "fair and reasonable" and "non-discriminatory" license terms. See sources cited *supra* note 4, and Joseph Farrell, John Hayes, Carl Shapiro & Theresa Sullivan, *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L.J. 603, 636 (2007). The notion that the promise must be "intentionally false" might be read to suggest that evidence of *ex ante* intent is needed. To the extent this is based on U.S. criteria for attempted monopolization, which do not apply in the European Economic Area, the requirement should not be applied under Articles 101(3) and 102 TFEU. Evidence of intent can be concealed and destroyed and is extremely difficult to discover, especially in the European Economic Area, where discovery is limited. The European Court of Justice has held that abuse is an "objective concept" and that intent is not required for a finding of infringement. *Case 85/76, Hoffmann-La Roche v. Comm'n*, 1979 E.C.R. 461, ¶ 91. In the European Economic Area, it may be enough that the intellectual property owner acts falsely in that it knowingly violates the FRAND promise by refusing to license, demanding injunctive relief without objective justification, or imposing restrictive or exploitative terms.

In this case there is a staggering lack of defining details in the [Electronic Industries Alliance]/JEDEC patent policy. When direct competitors participate in an open standards committee, their work necessitates a written patent policy with clear guidance on the committee's intellectual property position. A policy that does not define clearly what, when, how, and to whom the members must disclose does not provide a firm basis for the disclosure duty necessary for a fraud verdict. Without a clear policy, members form vaguely defined expectations as to what they believe the policy requires—whether the policy in fact so requires or not. JEDEC could have drafted a patent policy with a broader disclosure duty. It could have drafted a policy broad enough to capture a member's failed attempts to mine a disclosed specification for broader undisclosed claims. It could have. It simply did not.⁵⁰

Nor has the concern with patent disclosure policies been confined to JEDEC.⁵¹ Faced with vague policies, courts will be forced to conduct detailed examinations of members' behaviors to clarify how the policies operated in practice. It is hard to believe that anyone involved is well served by the burdens of additional discovery and advocacy to root out these factual issues.

However, even if SSO disclosures policies were clear, there is little reason to believe that SSO members necessarily share consumers' interests as they draft these policies. Both consumers and society as a whole are likely to benefit from more disclosure than an SSO member

⁵⁰ *Rambus Inc. v. Infineon Techs.* AG, 318 F.3d 1081, 1102 (Fed. Cir. 2003).

⁵¹ Mark Lemley, for instance, found significant variations in policies among the different SSOs and stated that the variation was even greater with respect to disclosure obligations, in particular as to what must be disclosed. Mark Lemley, *Intellectual Property Rights and Standard Setting Organizations*, 90 CAL. L. REV. 1889, 1904–05 (2002) (“Where patents are concerned, most SSOs considered only issued patents . . . [without discussing] pending patent applications. A few SSOs considered the issue, but did not require the disclosure of pending applications, which are ordinarily kept confidential. Four SSOs (the ITU [International Telecommunications Union], the ECMA [European Computer Manufacturers' Association, the Joint Electronics Devices Engineering Council's (JEDEC), and OSGi [Open Services Gateway initiative]) required disclosure of all pending patent applications. Two other SSOs had an intermediate policy: the ATM Forum required disclosure of published patent applications, but not unpublished ones, while the Open Mobile Alliance required disclosure even of unpublished patent applications, but only from a member who was also the proponent of a standard.”) (footnotes omitted).

would choose, while SSO members may be loath to incur the cost of patent disclosures and may fail to internalize the consumer welfare lost and the deadweight loss when a patent disclosure policy fails to prevent hold-up. Indeed, because most SSO members also have substantial patent portfolios of their own, each member may be tempted *ex ante* to reserve the possibility of participating in a patent hold-up, if only in order to maintain the ability to extract a cross-license from other patent-owning manufacturers not participating in the SSO (and therefore not bound by the IPR policy).⁵²

Finally, no amount of clarity in SSO patent disclosure policies can address hold-up by nonmembers. Although hold-up by SSO members has been more common in the past, hold-up by nonmembers and nonpracticing entities (NPEs) can be just as damaging or even more so.⁵³ Nor is the concern purely theoretical: Rambus itself withdrew

⁵² Defensive suspension should be an appropriate way to deal with such problems. Clause 6.1 of the ETSI Rules, for instance, allow a member to refuse to license on FRAND terms and to seek injunctions where the licensee refuses to license its essential patents to the licensor (“defensive use” against a “reverse hold-up”). See ETSI, Intellectual Property Rights, <http://www.etsi.org/WebSite/AboutETSI/IPRsinETSI/IPRsinETSI.aspx>.

⁵³ In March 2006, BlackBerry-maker Research in Motion Ltd. (RIM) agreed to pay \$612 million to NTP Inc., an NPE, to settle a six-year-long patent dispute. The parties settled their dispute after Judge James R. Spencer of the United States District Court for the Eastern District of Virginia increased the jury damages award to \$53 million for willful infringement and issued an injunction ordering RIM to cease and desist infringing NTP’s patents. Even after *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006), came to limit their availability, the threat of permanent injunctions or International Trade Commission exclusion orders (to which *eBay* does not apply) is a powerful tool for NPEs to obtain higher royalty rates than they would otherwise have received. Most recently, at the time of writing, Intellectual Ventures, an NPE with a portfolio of more than 35,000 patents, has filed a patent suit against Motorola Mobility, a suit that comes as Google is proceeding with the purchase of the mobile phone maker. A recent study has found that NPE lawsuits are associated with \$500 billion of lost wealth to defendants from 1990 through 2010, at an average over \$80 billion per year in the last four years. This study also found that very little of this loss represents a transfer to small inventors. James E. Bessen, Michael J. Meurer & Jennifer Laurissa Ford, *The Private and Social Costs of Patent Trolls* (Boston Univ. School of Law Working Paper No. 11-45, Sept. 19, 2011), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1930272.

from JEDEC following the controversy surrounding its earlier actions, but has returned to the same well with fresh patents to assert against DRAM manufacturers and customers before the International Trade Commission.⁵⁴

IV. PROPOSED FIRST-PRINCIPLES APPROACH

As we have described above, current approaches to tackling patent hold-up using the antitrust laws have been haphazard and ineffective. Rather than continue down the road already carved out by these decisions, we believe that a return to first principles is in order. Despite divergent individual histories, both section 2 of the Sherman Act and Article 102 TFEU seek to maximize consumer welfare by deterring output-reducing behavior, while also taking care not to deter output-enhancing behavior by mistakenly sanctioning aggressive competition. Thus, we ask whether strategic nondisclosure that results in the patentee attaining or preserving significant market power is “competition on the merits” and whether prohibiting this behavior has the potential to “chill” procompetitive outcomes.

Patent hold-up reduces dynamic efficiency by deterring otherwise productive investments without any countervailing benefits. Although antitrust arguments are often met with the rebuttal that the patent system is designed to trade static for dynamic efficiency, these dynamic efficiency losses can be directly compared against any potential dynamic efficiency gains from patent hold-up. Moreover, apart from any consideration of the losses, the returns from patent hold-up do not create any incentives that further the dynamic-efficiency goals of the patent system.⁵⁵ Finally, we consider the potential costs of false positives from imposing a duty to disclose patent rights where the failure

⁵⁴ *In re Certain Semiconductor Chips and Products Containing Same*; Notice of Investigation, No. 337-TA-753, 76 Fed. Reg. 384 (Jan. 4, 2011).

⁵⁵ See *supra* note 53. Brian J. Love found that “the costs of NPE litigation outweigh their benefits [I]t seems [that] NPEs overwhelmingly wait to assert their rights until the underlying technology is stale and unlikely to be of much use to accused infringers, who very likely independently developed the technology years earlier.” Brian J. Love, *An Empirical Study of Patent Litigation Timing: Could a Patent Term Reduction Decimate Trolls Without Harming Innovators?* (Aug. 30, 2011), available at <http://ssrn.com/abstract=1917709>.

to do so would result in attaining or preserving significant market power and find that they are trivial. As a result, we believe that antitrust policy creates a “duty to disclose” patent rights in these situations and duties not to impose excessive terms and conditions, including royalties that exceed the ex ante value of the essential patents. The remedy should be a ban on assertion of the patent (under Article 102 TFEU and section 2 of the Sherman Act) in cases where the good faith duty to disclose was violated and a ban on excessive pricing (under Article 102(a) TFEU and section 5 of the FTC Act) where the hold-up is opportunistic rather than the result of a breach of a duty to disclose.

A. *First-principles law in the United States and EU*

Despite significant debates over the proper scope of unilateral-conduct liability in both the United States and Europe, first-principles case law for unilateral conduct in both jurisdictions is relatively simple. In both cases, antitrust authorities look to whether the conduct at issue is, in general, likely to create efficiencies through lower costs or superior products or whether it serves to create (in the United States), maintain, or enhance (and, in the EU, exploit) market power. In conducting this analysis, authorities are or should be sensitive to the fact that they may erroneously judge “aggressive competition” as exclusionary conduct and so reduce the very competition they are trying to preserve. As a result, any advocacy of sanctioning unilateral conduct must demonstrate both that the conduct lacks potential efficiencies and that sanctions are unlikely to chill conduct that does create potential efficiencies.

In the United States, under *Grinnell*, a defendant violates section 2 of the Sherman Act if it willfully acquires or maintains monopoly power, “as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.”⁵⁶ In *Trinko* and, later, *linkLINE*, the U.S. Supreme Court clarified that monopoly profits provide a significant incentive to innovate and cautioned that unilateral-conduct analysis must put significant weight on the potential that sanctioning conduct might chill aggressive competition.⁵⁷

⁵⁶ United States v. Grinnell Corp., 384 U.S. 563, 570–71 (1966).

⁵⁷ Pac. Bell Tel. v. linkLINE Commc’ns, Inc., 129 S. Ct. 1109, 1118 (2009); Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 414 (2004).

The European Commission has indicated that it will, in principle, intervene under Article 102 TFEU only where, “the allegedly abusive conduct does not constitute competition on the merits, that is to say, competition on price, quality and functionality.”⁵⁸ In cases of exclusionary abuse, this includes unilateral action that “is likely to lead to anti-competitive foreclosure.”⁵⁹ The term “anti-competitive” in turn encompasses situations where “effective access of actual or potential competitors to supplies or markets is hampered or eliminated as a result of the conduct of the dominant undertaking whereby the dominant undertaking is likely to be in a position to profitably increase prices to the detriment of consumers.”⁶⁰ In addition, the Commission has the right to intervene against exploitative abuse under Article 102(a) TFEU where consumer harm occurs as a result of a dominant firm “directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions.”

B. Sunk-cost opportunism reduces dynamic efficiency

Patent hold-up is a straightforward example of sunk-cost opportunism: The patentee lies in wait until the infringer has sunk his investment in the patented technology and then springs the trap, extracting the producer surplus relative to the next best alternative. In the words used in litigation in the late 1990’s, when Qualcomm objected to an Ericsson request for injunctive relief:

[T]he holder of essential patents, after identifying its patents [,] . . . could stand idly by after adoption of the standard as others invested huge sums of money in the development of products compliant with the standard. Once those others began to enjoy some commercial success, the patent holder could then demand the payment of royalties for the allegedly

⁵⁸ Case 85/76 *Hoffmann-LaRoche Ltd.*, 1979 E.C.R. 461 ¶ 91 (“behaviour . . . which, through recourse to methods different from those governing normal competition in products or services on the basis of [performance] of commercial operators, has the effect of hindering the maintenance of the degree of competition still existing in the market or the growth of that competition”). See also Case 322/81, *Michelin I*, 1983 E.C.R. 3461 ¶ 57.

⁵⁹ European Comm’n, *Guidance on the Commission’s Enforcement Priorities in Applying Article 82 of the EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings*, 2009 O.J. (C 45) 7, 10.

⁶⁰ *Id.* (footnote omitted).

essential patents. Those who had invested in the standard would either have to accept the patent holder's claims and terms without challenge or risk having their investment destroyed And that is, of course, precisely what open standards are meant to prevent.⁶¹

Before a potential infringer sinks the cost of an investment in a particular technology, he or she will consider the cost of investment in that technology, including the potential patent royalties if known, relative to other, alternative technologies. However, once the potential infringer has sunk the cost of investment, the calculation changes, because the potential infringer must take into account the cost of switching to the alternative technology.

For example, suppose the potential infringer is evaluating two alternative technologies: one that costs 10, but is expected to have a benefit of 15; and one that costs 9, but is expected to have a benefit of 10. Before sinking the cost of the investment, the first alternative has a net benefit of 5 and the second a net benefit of 1. If the holder of a patent on the first alternative were to approach the potential infringer at this point, he or she would be willing to pay up to 4 to use the first alternative, as that would leave a net benefit of 1 and make him or her indifferent between the alternatives. After sinking the cost of the first investment, however, the picture changes dramatically. The net benefit of the second alternative remains the same, but the net benefit of the first is now 15, as its cost has already been incurred. If the holder of a patent on the first alternative were to approach the potential infringer at this point, that infringer would be willing to pay up to 14 to use the first alternative, as that would leave a net benefit of 1 and make him or her indifferent between the alternatives. In other words, the patentee would be able to seize not only the value of its innovation, but also a large portion of the value of the contribution made by the licensee in bringing the product to market.⁶² The prospect of such a hold-up is a deterrent to investment.

⁶¹ Reply in Support of its Motion for Partial Summary Judgment to Limit Ericsson's Requested Relief at 8–9, *Ericsson v. Qualcomm Inc.*, No 2:96-CV183 (E.D. Tex. filed Mar. 12, 1998). The case was settled in 1999.

⁶² See *EVOLVING IP REPORT*, *supra* note 3, at 190 (“A reasonable royalty damages award that is based on high switching costs, rather than the ex ante value of the patented technology compared to alternatives, overcompensates the patentee. It improperly reflects the economic value of investments by the infringer . . .”).

As a response to these inefficiencies, the law in other areas has provided mechanisms that allow parties to protect themselves from opportunism. Perhaps every law student in the United States is familiar with the textbook case, *Alaska Packers' Association*.⁶³ There, a crab-fishing company prepared for the upcoming season by renting and outfitting vessels, expanding the capacity of its cannery, and, of course, hiring a number of fishermen to crew its boats for the upcoming season.⁶⁴ However, when the fishermen arrived in Alaska (after it was too late to hire new laborers), they refused to fish unless their wages were increased and, facing the loss of entire fishing season, the company capitulated.⁶⁵ Had the fishermen prevailed on those facts, it would be difficult to see how anyone could afford to run a crab-fishing business. As a result, to facilitate investment in contract relationships, the classic pre-existing duty rule prevents contracting parties from renegotiating the terms of their contracts without additional consideration.⁶⁶ Similarly, even during the days of antitrust law's extreme hostility to exclusive-dealing contracts, the danger of hold-up in the presence of transaction-specific investments has always been viewed as a justification for them.⁶⁷

C. *Patent law prevents recourse to traditional methods of dealing with sunk-cost opportunism*

As described above, the law is generally sensitive to the problem of sunk-cost opportunism. Unfortunately, patent law's prohibition on unknowing infringement, as well as the potential for multiple, overlapping claims, prevents parties from taking steps to protect themselves from opportunistic behavior. Thus, without a mechanism that allows

⁶³ *Alaska Packers' Ass'n v. Domenico*, 117 F. 99 (9th Cir. 1902).

⁶⁴ *Id.* at 102.

⁶⁵ *Id.*

⁶⁶ Of course, modern contract law has taken a much more nuanced approach, recognizing that there are reasons other than opportunistic hold-up to renegotiate. *See, e.g., Wis. Knife Works v. Nat'l Metal Crafters*, 781 F.2d 1280, 1285 (7th Cir. 1986) (Posner, J.).

⁶⁷ *See, e.g., Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320 (1961); *Standard Oil Co. v. United States (Standard Stations)*, 337 U.S. 293 (1949).

potential infringers to find and bind all potential patentees, potential infringers are likely to forgo some socially beneficial investments.

Theoretically, the patent system should protect potential infringers with its public-disclosure requirement.⁶⁸ In practice, however, patent disclosures are often too complex and too numerous to provide effective notice, and the secrecy and long pendency of patent applications, continuations, and divisions, as well as the proliferation of low-quality patents, frustrate any efforts to discover patent rights.⁶⁹ Thus, in the absence of effective public disclosure, patentees generally have a much better understanding of the scope of potential infringement than do potential infringers.

Given that a forgone investment means that there is no revenue stream to hold-up, one would think that patentees would have an incentive to come forward and identify themselves. However, several factors encourage patentees to sit back. First, the costs of hold-up run across the spectrum, from a very small piece of the overall investment to nearly all of it, so while hold-up discourages some socially beneficial investments, it does not discourage them entirely.⁷⁰ Second, the fact that there can be multiple patents that cover the same technology creates a classic “tragedy of the anticommons” problem—each patentee has an incentive to allow the others to come forward and compromise, waiting to extract the bulk of the revenue itself.⁷¹ Finally,

⁶⁸ See 35 U.S.C. § 112 (2011).

⁶⁹ See EVOLVING IP REPORT, *supra* note 3, at 119–25. See also Bessen, Meurer & Ford, *supra* note 53, at 23 (noting that software patents “have ‘fuzzy boundaries’: they have unpredictable claim interpretation and unclear scope, lax enablement and obviousness standards make the validity of many of these patents questionable, and the huge number of software patents granted makes thorough search to clear rights infeasible, especially when the patent applicants hide claims for many years by filing continuations. This gives rise to many situations where technology firms inadvertently infringe . . .”).

⁷⁰ Indeed, the incentives here are similar to those under traditional monopoly. The patentee knows that hold-up will discourage some investment, leading to a loss of royalties on those investments, but that loss will be more than made up for the higher royalty it can charge on the investments that are not forgone.

⁷¹ See, e.g., Francesco Parisi, Norbert Schulz, & Ben Depoorter, *Simultaneous and Sequential Anticommons* (John M. Olin Center for Studies in Law, Economics, and Public Policy Working Papers No. 279, 2003).

even if all patentees do come forward to negotiate, the complexity of the patent system and liability for unknowing infringement means that a potential infringer has no way of knowing that the collection of patentees attempting to negotiate are, in fact, all of them. The FTC made a number of recommendations for changes to patent law to improve transparency for manufacturers, but it remains to be seen whether these will be adopted by the courts.⁷²

D. Patent law defenses fall short of preventing patent hold-up

Patent law has historically relied on various mechanisms to prevent late or inequitable enforcement of patent rights. Among these are the concepts of laches, equitable estoppel, and inequitable conduct. Unfortunately, these defenses appear to fall short of fully defeating patent hold-up.

The doctrine of laches prevents a patent owner who unreasonably and inexcusably delayed filing for infringement from claiming damages for infringement that occurred prior to the filing of the suit when the delay materially prejudiced the alleged infringer.⁷³ Such prejudice may manifest itself in the investment made by the alleged infringer in the allegedly infringed technology during the period of delay.⁷⁴ The

⁷² See FTC, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (Oct. 2003), available at <http://ftc.gov/os/2003/10/innovationrpt.pdf>. The FTC recently made additional recommendations in relation to two areas of patent law in particular: patent notice (mainly directed to the Patent and Trademark Office and lawmakers) and remedies (e.g., rejection of entire market value, rejection of dual awards of lost profits and reasonable damages, award of reasonable royalty damages based on the hypothetical negotiation analysis, use of incremental value of the patented invention over the next-best alternative as the maximum amount that a willing licensee would pay in a hypothetical negotiation, setting the hypothetical negotiation at an early stage of product development, when the infringer is making design decisions and before it has sunk costs into using the patented technology). See *EVOLVING IP REPORT*, *supra* note 3.

⁷³ *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020 (Fed. Cir. 1992).

⁷⁴ *Hearing Components, Inc. v. Shure Inc.*, Nos. 09-1364-1365 (Fed. Cir. Apr. 1, 2010); *Cancer Research Tech. Ltd. v. Barr Labs., Inc.*, 625 F.3d 724 (Fed. Cir. 2010).

starting point for the calculation of the unreasonable delay is the moment that the patent owner knows or should have known of the infringement.⁷⁵ Unfortunately, in the context of a patent hold-up, infringement may occur months, or even years, after the manufacturers are committed to the selected technology and costs are sunk. Even if the patent owner starts infringement proceedings promptly after the first commercialization of a product implementing the infringing technology, hold-up may still result. Even though the doctrine of laches creates a duty of diligent inquiry on the patent owner, it probably does not impose on it a duty to disclose the patent it owns before the alleged infringer sinks costs in the development of the infringing technology, certainly not if it is unaware of it.⁷⁶

The defense of equitable estoppel may successfully bar a patent owner's claim when (1) the patent owner, through misleading conduct (statements, actions, inaction, or silence), leads the alleged infringer to reasonably believe that the patent owner does not intend to enforce its patent against him, (2) the alleged infringer relies on that conduct, and (3) due to its reliance, the alleged infringer will be materially prejudiced if the patent owner is allowed to proceed with its claim.⁷⁷ However, the application of the doctrine of equitable estoppel to patent hold-up would arguably require the existence of an independent duty on each participant to disclose its existing patent applications, absent any express contractual disclosure policy. Such a duty to speak may be derived from the circumstances. In *Stambler v. Diebold, Inc.*, for instance, the district court found that Stambler "sat on an American National Standards Institute standards committee after concluding that the proposed Thrift and MINTS standards [relating to ATM technology] infringed his patent" and held that, "[u]nder these circumstances, plaintiff had a duty to speak out and call attention to his patent" even though the SSO did not have a disclosure policy. The

⁷⁵ *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1559, 42 U.S.P.Q.2d 1737, 1745 (Fed. Cir. 1997) ("[D]elay begins when the plaintiff knew, or in the exercise of reasonable diligence should have known, of the defendant's allegedly infringing activity.").

⁷⁶ *Wanlass v. Gen. Elec. Co.*, 148 F.3d 1334 (Fed. Cir. 1998); *Wanlass v. Fedders Corp.*, 145 F.3d 1461 (Fed. Cir. 1998).

⁷⁷ *Aukerman*, 960 F.2d at 1325.

court emphasized that “[p]laintiff could not remain silent while an entire industry implemented the proposed standard and then, after the standard was adopted, assert that his patent covered what manufacturers had believed to be an open and available standard.”⁷⁸ While the court did not outline the source of such a duty to speak, it nevertheless stated clearly that such a duty existed.

It is difficult to argue that a duty to speak derived from explicit or implicit arrangements within an SSO could bind patentees who did not participate in the standard setting. However, the defense of inequitable conduct may provide relief in some circumstances. In *Kingsdown Medical v. Hollister Inc.*, the Federal Circuit defined inequitable conduct as the “failure to disclose material information, or submission of false material information, with intent to deceive.”⁷⁹ A successful showing of inequitable conduct has the effect of rendering the entire patent unenforceable not only against the alleged infringer but also against any other party. If a patentee uses confidential information obtained from an SSO or from participants in the standard setting to file a patent application reading on the technology discussed within the SSO, failure to inform the prosecuting patent office of any prior art that would derive from the works of the SSO could lead to a finding of inequitable conduct. Although this could prevent patentees from taking advantage of the standard-setting process to hold participants up by filing new applications or applying for divisions or continuations, it does not address the issue of participants that fail to disclose existing patents and applications to the SSO.⁸⁰

Perhaps the most significant recent attempts at curbing patent hold-up are the Supreme Court’s landmark ruling regarding injunctions in *eBay v. MercExchange* and the FTC’s recommendation regarding the calculation of reasonable royalty damages awards. In *eBay v.*

⁷⁸ *Leon Stambler v Diebold, Inc.*, 11 U.S.P.Q.2d 1709, 1715 (E.D.N.Y. 1988), *aff’d*, 878 F.2d 1445 (Fed. Cir. 1989).

⁷⁹ *Kingsdown Medical v. Hollister Inc.*, 9 U.S.P.Q.2d 1384, 1389 (Fed. Cir. 1988).

⁸⁰ The recent patent law reforms in the United States have somewhat reduced the risk of hold-up, by replacing the first-to-invent rule with a first-to-file principle, thus encouraging inventors to file as soon as possible and reducing the often long periods of patent risk.

MercExchange, the Supreme Court significantly limited the availability of permanent injunctions to patent owners claiming infringement of their patents, thereby preventing the threat of injunction to be employed for undue leverage in hold-up negotiations.⁸¹ Shapiro observes that “the courts can reduce or eliminate the hold-up component of negotiated patent royalties by selectively denying, or staying, permanent injunctions in patent cases involving non-competing patent holders whose damage claims are based on reasonable royalties.”⁸² European courts are considering similar solutions, although the case law is patchy, and its implementation is impractical, particularly under German law.⁸³ Even if such limitations on the application of injunctive relief reduce the immediate pressure from hold-up, the principles of damage calculation as set out in *Georgia-Pacific* still allow a patentee to demand damages calculated on an ex post basis, that is to say, to demand an award substantially higher than it would have obtained in voluntary license negotiations before the manufacturer was committed and locked in.

To deal with this, the FTC recently recommended that courts, in the calculation of reasonable royalty damages award, “set the hypothetical negotiation at an early stage of product development, when the infringer is making design decisions,” rather than when the infringer has already sunk significant costs into the infringing technology.⁸⁴ The FTC’s recommendation is based on the finding that “[t]he case law on damages places the hypothetical negotiation at ‘the time infringement began’ but does not precisely define that point in

⁸¹ eBay, Inc. v. MercExchange, L.L.C., 547 U.S. 388 (2006).

⁸² Carl Shapiro, *Injunctions, Hold-Up, and Patent Royalties*, 12 AM. L. & ECON. REV. 509 (2010).

⁸³ See, e.g., Orange Book, Bundesgerichtshof [BGH] [Federal Court of Justice] May 6, 2009, KZR 39/06 (F.R.G.). See also Joined Cases Nos. 316533/HA ZA 08-2522 & 316535/HA ZA 08-2524, Koninklijke Philips Electronics N.V. v. SK Kassetten GmbH & Co. KG, District Court The Hague, Mar. 17, 2010 (Neth.); Case No. 231657 KG RK 11/189, LG Electronics Inc. v. Sony Supply Chain Solutions (Europe) B.V., District Court Breda, Feb. 28, 2011 (Neth.); and Joined Cases Nos. 396957 / KG ZA 11-730 & 396959 / KG ZA 11-731, Apple Inc. v. Samsung Elecs. Co., District Court The Hague, Aug. 24, 2011 (Neth.).

⁸⁴ EVOLVING IP REPORT, *supra* note 3, at 191.

time.”⁸⁵ The FTC acknowledged that a reasonable royalty damages award should reflect the economic value of the invention rather than the economic value of investments by the infringer since the latter overcompensates the patentee.⁸⁶ It remains to be seen whether patent courts are prepared to follow these recommendations.

E. Returns from patent hold-up do not further the goals of the patent system

The patent system trades static efficiency for enhanced dynamic efficiency in a number of ways, but none of these are advanced by patent hold-up. First, by prohibiting copying, patents protect the patentee from opportunism by preventing third parties from free riding on the patentee’s investment in innovation, increasing investment. Second, by excluding all but the first of independently filed inventions, patents encourage a “patent application race” that may accelerate innovation. Whatever the merits of these potential benefits, neither is advanced by patent hold-up.

To develop an invention, the innovator must make investments. Absent copying, the innovator would expect to generate rents sufficient to cover the cost of the initial investment. However, if copying costs are sufficiently low, third parties will copy the invention, driving the price down to marginal cost and preventing the innovator from recouping the upfront costs. Knowing this ahead of time, innovators will refuse to make the initial investments and the invention will never be created. This aspect of the patent system is particularly important in areas such as pharmaceuticals, where molecules are difficult to discover but easy to copy, and where other intellectual property rights may not apply. It is less important in the software sector, where other rights apply (copyright in particular, as well as trade secrets); where alternative models of revenue generation exist that encourage investment, such as service-funded innovation (especially

⁸⁵ *Id.* at 190 (footnote omitted).

⁸⁶ This recommendation is noteworthy as reasonable royalties are the most frequent kind of damages awards in patent cases, amounting to approximately eighty-nine percent from 2006 to 2010). PRICEWATERHOUSECOOPERS, 2011 PATENT LITIGATION STUDY 14 (2011).

important for open-source products⁸⁷) and advertising-funded innovation (especially important for consumer-facing web-based services); and where first-mover advantages reduce the value of copies.

Eliminating patent hold-up has no effect on the patent system's ability to foster innovation by preventing free riding. By definition, hold-up problems arise only in situations where the potential infringer independently develops a product using what turns out to be the patented technology—incurring the often very substantial risk of bringing the product to market and investment in production facilities and marketing of the product, generating demand—only to be surprised (once the product is a success) that the patentee has a claim on it. In particular, in the case of independent invention, the potential infringer has duplicated the patentee's investment in developing the technology and so is not free riding. Thus, allowing patent hold-up does not enhance this aspect of the patent system. To the contrary, it creates a situation where the patentee can free ride on the risk taken and cost incurred by the manufacturer in taking the basic idea for a technology and implementing it, producing it, and marketing it to clients, all of which add to the value of the patented technology.

Patents, however, go further than copyrights in excluding not only copying, but also later independent inventions. Although this aspect partially exists to avoid the burdens of proving copying, it is also thought to encourage firms to invest in research and development more quickly and intensively so as to win the "patent race" and disclose the patented teaching.⁸⁸ For this accelerated invention to benefit society, it has to be diffused into the marketplace. The patentee can do this by releasing a product incorporating the invention to the marketplace or licensing others to do so.

⁸⁷ See Yochai Benkler, *Coase's Penguin, or, Linux and the Nature of the Firm*, 112 YALE L.J. 369 (2002).

⁸⁸ See, e.g., Stephen M. Maurer & Suzanne Scotchmer, *The Independent Invention Defence in Intellectual Property*, 69 ECONOMICA 535 (2002). Although the patent race is often cited as a benefit of applying patents to independent innovations, empirical support for increased dynamic efficiency has been relatively weak, and patent races can also result in socially wasteful duplicative research and development. See generally *id.* Nonetheless, whether empirically supported or not, patent hold-up does not advance this benefit.

Not only does patent hold-up fail to advance the patent race goal of the patent system, it actively frustrates it. Additional returns from patent hold-up certainly do increase the “prize” at the end of the patent race. However, by definition, patent hold-up requires delaying educating others about the patent until independent manufacturers have already diffused the technology into the marketplace. Thus, the process of patent hold-up itself negates the benefit of the race, which is to accelerate the social benefits from invention.

F. Little cost to false positives

As described above, an important component of the unilateral-conduct analysis in both the United States and the EU is determining whether false positives might chill procompetitive conduct. In this context, a false positive would occur if a patentee were forced to disclose its rights to a potential infringer when its failure to do so would not have led to market power or if the patentee were sanctioned for failing to disclose under these circumstances. However, even if it has no effect on the patentee’s market power, disclosure does not frustrate the goals of the patent system. Should the patentee fail to make the disclosure, then (1) if it has not engaged in any other wrongful conduct, its royalties are limited to an amount calculated on an ex ante basis, depriving it only of the returns from any hold-up (which, again, does not frustrate the goals of the patent system); or (2) if the patentee has engaged in otherwise wrongful conduct to create the possibility of hold-up, such as where the conditions of *Broadcom v. Qualcomm* are met or the patentee deliberately set a patent trap, it loses its right to relief, and the penalty still serves a public benefit by deterring socially wasteful rent-seeking behavior, even if it was not necessary to remedy the acquisition of market power. Given the limited nature of the duty to disclose and the limited effects of these false positives, we believe that such a “falsely positive” finding is unlikely to chill procompetitive conduct.

First, the duty here is limited. In keeping with a duty to disclose as a creation of *competition law* and not of patent law, it is important to recall that the goal of an antitrust duty to disclose is limited to situations in which failure to disclose would result in (1) significant power in the upstream technology market (“monopoly power” in the United States or a “dominant position” in the EU) and (2) excessive ex post

royalties or restrictive terms, and, thus, consumer harm. This limitation reduces the number of potential situations where such a duty might apply.

Second, in any case, the social costs of false positives are likely to be low. Although a proposed duty to license on ex ante reasonable terms would apply only to situations where the failure to disclose would lead to significant market power, hold-up in general does not further any goals of the patent system, so loss of returns from hold-up is not a cost of false positives. Rather, the main cost that such a duty imposes on patentees is the opportunity cost of not being able to claim damages above the ex ante value of the technology, or the cost of locating and informing potential infringers that their rights exist, when traditionally the burden would be on potential infringers to discover patent rights. Given that the duty applies only when failure to disclose would result in significant market power, potential infringers are probably not hard to locate, as the activity would have to be relatively widespread. NPEs and firms with offensive patent programs are almost certainly conducting this analysis already to determine whether a case is worth bringing.

Third, the risk that a false positive would deprive the patentee of all royalties is very limited. To reach this conclusion, the court would need to establish either (1) that the conditions of *Broadcom v. Qualcomm* were fulfilled or (2) that the firm deliberately set a patent trap and waited until the defendant was well and truly locked in before springing that trap (as was alleged in *Rambus*).

Thus, in the limited situations in which the duty to disclose would come into play, the risks and costs of false positives are trivial. Accidentally deterring patent hold-up that does not create market power does not eliminate any procompetitive conduct. Shifting the cost to patentees not only makes sense given the superior information that they have, but also likely can leverage off analysis they already do internally. This asymmetry is most stark in the context of standard-setting organizations, which generally conduct their activities with the knowledge of industry participants who own relevant intellectual property.

Finally, the restrictions on the patentee's recourse are limited (absent evidence of an "intentionally false promise to license on FRAND terms" or a deliberate plan to set a patent trap). The patentee

could not seek injunctive relief and would be limited to seeking damages equal to the royalties that would have been negotiated between a willing licensee and licensor before lock-in occurred and the manufacturer was committed, that is, the incremental value for the licensee over the next best alternative before the infringer took the decision as to which technology to use.⁸⁹ There are good arguments, as set out in the FTC's Evolving IP Report,⁹⁰ that this is the appropriate level of damages in any event (except in situations where the infringer is acting in bad faith). This *ex ante* reward is the right level to encourage investment in innovation.

In avoiding the but-for world, the patentee's conduct may create some evidentiary problems in proving the correct level of *ex ante* royalty. However, to the extent that the *ex ante* royalty is ambiguous but liability is established, "the defendant should suffer the uncertain consequences of its own undesirable conduct,"⁹¹ and the royalty should be set at the lower bound established by the available evidence.

V. IMPLEMENTATION CHALLENGES

We recognize the approach here may be superficially foreign to antitrust and competition law, especially in the United States. In the United States, although there are no issues with applying the duty to incipient monopolists, there may be some temptation to analogize a duty to disclose to a duty to deal, to which the courts have been particularly hostile. In the EU, we face the opposite challenge, as forced disclosure by companies with a dominant position is well-accepted if the "exceptional circumstances" test is met, but applying competition law to unilateral conduct by companies to achieve a dominant position is still novel. Nonetheless, we see no reason why these challenges cannot be overcome.

⁸⁹ Note that this could be close to zero, if the next best alternative is equally good, or zero if it is clear that with adequate notice, the SSO or the infringer would have chosen a noninfringing technology and avoided the patent. That is not, however, free riding. In a free market, patent law does not entitle the patentee to reward in all situations, but only if its invention has value over all alternatives (which admittedly may not be easy to determine).

⁹⁰ EVOLVING IP REPORT, *supra* note 3, at 22

⁹¹ *United States v. Microsoft Corp.*, 253 F.3d 34, 79 (D.C. Cir. 2001).

A. Implementation challenges in the United States

Under U.S. law, it is well accepted that monopolization includes not only conduct by existing monopolists to preserve or enhance their market power, but also conduct by nonmonopolists to acquire monopoly power in the first place. In particular, the incipient monopolist need not achieve monopoly power before a case is brought, so long as the conduct poses a “dangerous probability” of creating a monopoly.⁹² That said, the courts have long been hostile to forced dealing between firms. As the Supreme Court described in *Trinko*, the “outer bounds” of liability for a monopolist’s refusal to deal with a rival were set in *Aspen Skiing*, where a previous course of profitable dealing already existed and was terminated with an eye toward securing additional market power.⁹³

In the case of patent hold-up, there will not have generally been a previous, let alone profitable, course of dealing between the patentee and potential infringer, as the entire enterprise revolves around strategic nondisclosure. Nevertheless, we believe that treating strategic nondisclosure as a refusal to deal is improper, especially in situations where patentees are bound by a contract or an SSO policy requiring a license on RAND terms. Unlike actual compelled dealing, a disclosure that patent rights exist and may apply to the potential infringer’s technology need not involve continued entanglement between competitors or excessive monitoring. A practicing entity that wishes to reserve the right to practice the patented invention itself (that is, who speaks up as soon as possible because it is not looking for ex post damages and hold-up royalties, but to maintain exclusive rights) has the right to refuse to license (unless it voluntarily participated in an SSO with a RAND license rule),⁹⁴ and a nonpracticing entity that complied with its duty to speak has the right to refuse to license a manufacturer who cannot pay or will not accept terms that are reasonable

⁹² *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 457–59 (1993).

⁹³ *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 409 (2004) (citing *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985)).

⁹⁴ Subject to the application of Article 102 TFEU in exceptional circumstances, for instance, where lack of interoperability curbs innovation. See Case T-201/04, *Microsoft v. Comm’n*, 2007 E.C.R. II-3601.

on an *ex ante* basis. Once the possibility that the patent may apply to the technology has been highlighted, the potential infringer has all the information necessary to avoid hold-up, because it is the lack of knowledge of the existence of patent rights, rather than the lack of a license, that allows hold-up to occur.

Rather than attempt to analogize strategic nondisclosure to other forms of conduct, we think it better to assess this conduct on its own with reference to first principles. Given that imposing a duty to disclose here does not create the dangers of chilling procompetitive conduct, or the remedial difficulties posed by compelled dealing between rivals, drawing a parallel solely because both impose liability for failing to do something is a mistake.

Additionally, we recognize that courts may be hesitant to extend section 2 liability to cases in which the patentee's conduct was not obviously wrongful at the time. For example, the Patent Act itself requires that a patentee keep a technology under development out of public use until within a year of its patent application, potentially necessitating some secrecy.⁹⁵ That said, the economic effect might be the same regardless of whether the patentee has legitimate or illegitimate reasons for delaying public notification of its rights. In these situations, where two sets of conduct have the same economic effect, but face different legal treatment under the Sherman and Clayton Acts, section 5 of the FTC Act⁹⁶ may be an appropriate tool to bridge the gap. Section 5 prohibits "unfair methods of competition" and empowers the FTC to pursue violations with cease and desist orders, but does not enable private plaintiffs to bring suit or to seek treble damages.⁹⁷

⁹⁵ 35 U.S.C. § 102(b) (2011). We are skeptical that this situation would arise very often—if enough information is public to make hold-up possible, then the invention should likely be deemed to be in public use. It might also be argued that prospective patentees will keep their claims secret during the application process to preserve their ability to keep the technology as a trade secret if patent protection is not granted. We are even more skeptical of this case—if enough information is public to make hold-up possible, it is doubtful that the invention could be kept as a trade secret.

⁹⁶ 15 U.S.C. § 45 (2011).

⁹⁷ The FTC can seek disgorgement and restitution, but only on proceeding in court, rather than its own administrative process. 15 U.S.C. §§ 45(b), 53(b) (2011); *see, e.g.*, *FTC v. Mylan Labs., Inc.*, 62 F. Supp. 25, 36–37 (D.D.C. 1999).

Although the Supreme Court has made clear that section 5 of the FTC Act reaches conduct beyond the antitrust laws, the FTC's success in applying outside the antitrust laws has been limited to "invitation to collude" cases.⁹⁸ Our view coincides with FTC Chairman Leibowitz's statements regarding the scope of section 5,⁹⁹ as well as with the views of a number of others in the bar who have a more skeptical view of the application of section 5.¹⁰⁰

Similarly, applying section 2 may be challenging in cases where hold-up is purely the result of later opportunism. For example, in the FTC's *N-Data* case, N-Data's predecessor company had earlier promised the Institute of Electrical and Electronics Engineers that it would offer a license to its NWay technology for the Ethernet standard at \$1000 per licensee, which resulted in that technology's being included in the standard.¹⁰¹ However, after N-Data acquired the predecessor (and implementors' sinking of investments to use NWay), it reneged on the licensing promise and used its newfound leverage to demand

⁹⁸ See *FTC v. Sperry & Hutchinson Co.*, 405 U.S. 233, 244 (1972). By contrast, when the FTC has sought to go well beyond the reaches of the Sherman Act, it has been unsuccessful. See *Official Airline Guides v. FTC*, 630 F.2d 920 (2d Cir. 1980); *Boise Cascade Corp. v. FTC*, 637 F.2d 573 (9th Cir. 1980); *E.I. du Pont de Nemours & Co. v. FTC*, 729 F.2d 128 (2d Cir. 1984).

⁹⁹ Jon Leibowitz, *Tales from the Crypt Episodes '08 and '09: The Return of Section 5*, Remarks at FTC Section 5 Workshop (Oct. 17, 2008), available at <http://www.ftc.gov/bc/workshops/section5/docs/jleibowitz.pdf> ("Reasonable people can disagree over whether N-Data violated the Sherman Act because it was never clear whether N-Data's alleged bad conduct actually caused its monopoly power. However, it was clear to the majority of the Commission that reneging on a [FRAND] commitment . . . could seriously undermine standard-setting, which is generally procompetitive, and dangerously limit the benefits that consumers now get from the wide adoption of industry standards for new technologies.").

¹⁰⁰ See, e.g., Susan A. Creighton & Thomas G. Krattenmaker, *Some Thoughts about the Scope of Section 5*, Remarks at FTC Section 5 Workshop (Oct. 17, 2008), available at <http://www.ftc.gov/bc/workshops/section5/docs/screighton.pdf>.

¹⁰¹ Press Release, FTC, *FTC Challenges Patent Holder's Refusal to Meet Commitment to License Patents Covering "Ethernet" Standard Used in Virtually All Personal Computers in U.S.* (Jan. 23, 2008), available at <http://www.ftc.gov/opa/2008/01/ethernet.shtm>.

much higher royalties.¹⁰² In such a case, it is likely that the courts would invoke *NYNEX Corp. v. Discon, Inc.*¹⁰³ to dismiss a section 2 claim, noting that the selection of the technology to be part of the standard created a lawful monopoly and would point to contract remedies as the appropriate relief. However, in those cases in which the activity also creates a threat to competition, and particularly where immediate customers may not have good incentives to litigate (for example, where their own intellectual property in the standard might be similarly vulnerable), we think section 5 may also be an appropriate tool.

B. *Implementation challenges in the EU*

The implementation of this suggested approach under the EU's competition law would not require extending the application of the rules regarding abuse of dominance from the moment an undertaking acquires dominance, as is currently the case, to the process leading to the acquisition of dominance. All that is needed is either (1) to apply the existing principles of excessive pricing under Article 102(a) TFEU to situations where the failure to speak up was justified or not part of a deliberate plan to set a patent trap, or (2) for the Commission to define a *sui generis* abuse along the lines described above, to the effect that a dominant patent owner must not demand royalties in a situation where its failure to speak was part of a hold-up plan and led to a chain of events leading to dominance in the relevant technology market. The dominant firm might be allowed rebut the abuse claim by showing that the SSO or the manufacturer would have negotiated the same price *ex ante* and could not or (assuming rational conduct) would not have chosen a different proprietary or royalty-free technology even if it knew that the patentee would demand royalties after lock-in.¹⁰⁴

¹⁰² *Id.*

¹⁰³ 525 U.S. 128, 131–32 (1998).

¹⁰⁴ *Cf.* *Motorola v Rockwell Int'l Corp.*, No. 95-575-SRL (D. Del. 1995). *Motorola* should be distinguished from the Commission's 2004 decision in *Microsoft*, which concerned software interoperability, was a remedy, and in which patents were not *ex ante* essential. In that case, the Commission appropriately distinguished between two types of "value" transferred to competitors by the compulsory license that the Commission imposed in a way that is

Article 102(a) TFEU prohibits dominant firms from “directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions.” An “unfair price” is one that is excessive in relation to the economic value of the service provided or the good supplied.¹⁰⁵ In *Port of Helsingborg*, the European Commission confirmed the “value” criterion and used various proxies to conclude that no violation had occurred in that particular case.¹⁰⁶ Unlike section 2 of the Sherman Act in the United States, Article 102(a) and (c) TFEU prohibit unfair pricing or unjustified discrimination even in the rare case in which no ex ante competition exists, as long as consumer harm (e.g., a Cournot problem in the pricing of complements¹⁰⁷) ensues from discriminatory or excessive pricing.

As discussed above, the “fair and reasonable” value of a technology can be defined as the lower of (1) the rate that the IPR owner could have obtained in an ex ante intertechnology auction, with different

also relevant to standards cases. It differentiated between (1) “ ‘strategic value’ stemming from Microsoft’s market power,” and (2) value derived from true innovation. The former is the amount that Microsoft could extract in a hold-up of the users of its interoperability information; the industry cannot avoid that information because their servers must communicate with Microsoft clients and servers on footing equal to that of Microsoft’s servers. The latter is the value derived from true innovation, i.e., the ex ante incremental value (if any) over the next best alternative had there been open standardization and an auction before Microsoft became dominant in client personal computer operating systems and the industry was locked in. See Case COMP C-3/37.792, *Commission v. Microsoft Corp.*, 2007 O.J. (L 32) 23–28, ¶ 1008. The question whether Microsoft’s penultimate royalty offer was “fair and reasonable” was addressed by the Commission in 2008, Case COMP/C-3/37.792, *Microsoft Corp.*, C(2008) 764 final (Feb. 27, 2008), fixing the definitive amount of the periodic penalty payment imposed on Microsoft. This decision has been appealed. Case T-167/08, *Microsoft v. Comm’n*, 2008 O.J. (C 171) 41.

¹⁰⁵ See Case 26/75, *Gen. Motors v. Comm’n*, 1975 E.C.R. 1367, and Case 27/76, *United Brands v. Comm’n*, 1978 E.C.R. 207.

¹⁰⁶ Case COMP/A.36.568/D3, *Scandlines Sverige AB v. Port of Helsingborg* (European Comm’n July 23, 2004). See also Marcus Glader & Sune Chabert Larsen, *Excessive Pricing and Article 82*, COMPETITION LAW INSIGHT, July 2006, at 3–5.

¹⁰⁷ A Cournot problem occurs when royalty stacks on complementary patents result in the imposition of multiple monopoly rents, reducing output to a level below even what a single monopolist would impose.

technologies competing to be included in the standard or incorporated in the product, before the investments have been sunk or finalized¹⁰⁸ (ignoring any anticompetitive actions by the patentee, such as price fixing or acquisitions by the intellectual property owner of substitutable technologies with the result of diminishing ex ante intertechnology competition, in which the ex ante rate would still be excessive); or (2) if the intellectual property owner had an ex ante blocking patent, a share of the royalties that is proportionate to the technical contribution the intellectual property owner made to the standard or product in question compared to that of other essential patent owners and taking into account the investments made and risks borne by the manufacturer. If actual ex ante market data are not available, economists may be able to do a Shapley value analysis¹⁰⁹ or use proxies, such as¹¹⁰:

¹⁰⁸ The FTC held in *Rambus* that a reasonable royalty “is or approximates the outcome of an auction-like process appropriately designed to take lawful advantage of the state of competition existing ex ante . . . between and among available IP options.” Opinion of the Commission on Remedy at 17, *In re Rambus Inc.*, Docket No. 9302 (FTC Feb. 5, 2007) (quoting Daniel G. Swanson & William J. Baumol, *Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1, 7 (2005)). For further refinements, see also Besen & Levinson, *Standards*, *supra* note 39. See also EVOLVING IP REPORT, *supra* note 3, at 22–23 (“Courts should recognize that when it can be determined, the incremental value of the patented invention over the next-best alternative establishes the maximum amount that a willing licensee would pay in a hypothetical negotiation To prevent damage awards based on switching costs, courts should set the hypothetical negotiation at an early stage of product development, when the infringer is making design decisions and before it has sunk costs into using the patented technology Courts should apply the hypothetical negotiation framework to determine reasonable royalty damages for a patent subject to a RAND commitment. Courts should cap the royalty at the incremental value of the patented technology over alternatives available at the time the standard was chosen.”)

¹⁰⁹ A Shapley value analysis describes a way to fairly allocate gains derived from cooperation among several actors, such as (1) owners of complementary patents or (2) a patentee and a manufacturer investing in bringing the product to market. Each obtains a share of the gain that is roughly proportionate to the relative value of his or her contribution. Lloyd S. Shapley, *A Value of N-Person Games: Contributions to the Theory of Games II*, 2 ANNALS MATH. STUD. 307, 307–317 (H. Kuhn & A. Tucker eds., 1953).

¹¹⁰ See *United Brands v. Comm’n*, 1978 E.C.R. 207 and subsequent cases on excessive pricing. See also EVOLVING IP REPORT, *supra* note 3, at 24 (“Courts

- A comparison with royalties and terms that the patent owner itself charges for the same technology in a competitive environment (e.g., in another country or another SSO), or for *other*, comparable, technologies in a competitive environment (proxy analysis); or
- A consistent comparison with royalties and terms that *other* owners of essential patents reading on the same standard or product charge for their complementary patents (proportionality analysis) or for *other*, comparable, technologies in a competitive environment.

Courts have in the past relied on other comparators, such as the Goldscheider analysis, which suggested on the basis of Goldscheider's experience in licensing and litigation that intellectual property owners in the aggregate should generally be entitled to about twenty-five percent of the downstream gross profits made on the licensed product.¹¹¹ However, this rule of thumb has recently been severely criticized, and its credibility has suffered very significantly from indiscriminate use.¹¹²

should admit expert testimony based on comparable licenses as reliable only upon a satisfactory showing of similarity between the licensed patent and the infringed patent, and between the non-price terms of the comparable license and hypothetical license. That showing should be sufficient to support an inference that the royalty rate for the comparable license provides a reliable indicator of the royalty that would be reached in the hypothetical negotiation.”).

¹¹¹ ROBERT GOLDSCHIEDER, *NEW COMPANION TO LICENSING NEGOTIATIONS: LICENSING LAW HANDBOOK* ¶ 7.02[8][b] (2003–04 ed.). In determining the final percentage, adjustments should also be made for the enforceability and essentiality of the patents, the geographic scope of various patents and their remaining life, the costs of complementary technology needed, the value conveyed by the patents compared to the next best *ex ante* alternative, the risk borne and investments made by the licensee relative to the costs and risks borne by the licensor, the volume of sales expected in the market, and so forth. It should be adjusted downward for instance, in situations in which the licensees take more than the usual risk or there were adequate alternatives for the patents in question.

¹¹² *See Uniloc USA Inc. v. Microsoft Corp.*, No. 2010-1035 (Fed. Cir. Jan. 4, 2011) (“This court now holds as a matter of Federal Circuit law that the 25 percent rule of thumb is a fundamentally flawed tool for determining a baseline royalty rate in a hypothetical negotiation. Evidence relying on the 25 percent rule of thumb is thus inadmissible under *Daubert* and the Federal Rules of Evidence, because it fails to tie a reasonable royalty base to the facts of the case at issue.”).

Proxies are imperfect, but if an intellectual property owner believes that its patents are worth more than a proportionality or proxy analysis suggests, it can (and bears the burden to) prove that its patents are less vulnerable to challenge, have broader geographic scope or a longer life, or convey more value compared to the next best ex ante alternative than the other essential patents, or that it bore greater risk than usual compared to licensees. There is precedent for this switch in the burden of proof.¹¹³ Indeed, the Commission could further harmonize its approach in these cases with the sentiment echoed by the D.C. Circuit in *Microsoft*, that “the defendant should suffer the uncertain consequences of its own undesirable conduct,”¹¹⁴ and the royalty should be set at the lower bound established by the available evidence.

VI. CONCLUSION

Although intellectual property and antitrust are often seen in tension, we continue to believe that this need not be the case. Existing approaches in the case law have failed to gain traction because they rely too heavily on external sources of law and too little on antitrust first principles. As patent hold-up is simply an ordinary form of sunk-cost opportunism that is enabled by the unique circumstances of the patent system, it creates dynamic inefficiency that is contrary to the goals of both antitrust law and the patent system and can be cured by disclosure to potential infringers when failing to do so would lead to significant market power.

In this article, we have focused on the standards-setting context, but similar reasoning applies in other contexts as well. For example, if a patentee knew that its invention was being used innocently before the user had made irreversible investments, but nevertheless failed to alert the user of this fact, the patentee would be exploiting its information advantage to obtain ex post market power. This market power derives from the switching costs that the user could have avoided ex ante had the intellectual property owner informed the user of its

¹¹³ See Case C-395/87, *Ministère Public v Tournier*, 1989 E.C.R. 2521, 4 C.M.L.R. 248, ¶ 38 (1991).

¹¹⁴ *United States v. Microsoft Corp.*, 253 F.3d 34, 79 (D.C. Cir. 2001).

rights. Our view is that, in such cases, Article 102(a) TFEU and section 5 of the FTC Act could be used to limit damages and royalties to (1) the ex ante value of the patented technology or (2) the switching costs faced by the user at the moment when the patentee became aware of innocent use of his patent. The extent to which such a duty would be merited in less extreme cases, for example, when the patentee arguably “should have known” that the user was innocently employing its technology, is a subject that deserves further analysis and debate.

Although there are certainly some extant issues in implementing such duties to disclose in the United States and EU, we believe that these challenges are surmountable. We think it fitting that intellectual property trolls, like their mythological namesakes, might also be vanquished by a bit of sunlight.