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## ARTICLE

TYING, EXCLUSIVITY, AND STANDARD-ESSENTIAL PATENTS<sup>†</sup>Erik Hovenkamp<sup>\*</sup>

*When a technological standard is adopted, implementers must pay to license all “standard-essential patents” (SEPs)—those patents covering core features of the standard—although the particular price terms usually cannot be negotiated before adoption. To allay implementers’ fear of being “held up,” SEP owners usually make commitments to offer licenses on “fair, reasonable, and nondiscriminatory” (FRAND) terms. Among other things, this acts as a contractual price control for SEP licenses, albeit an imprecise one that is subject to judicial interpretation.*

*Aside from licenses, an SEP holder may further supply an important “collateral input”—one that is not subject to the FRAND pledge, but which implementers nevertheless require in order to market a viable product, such as a physical component. The SEP holder might tie its SEP rights to the collateral input. It might also engage in exclusive dealing or related practices, such as a “loyalty discounting” arrangement that imposes larger royalties on implementers who buy the input from competing providers. Importantly, FRAND pledges create a distinct impetus for tying and exclusive dealing: to circumvent the price control on licenses by diverting the desired markup to the collateral input. The result may be to foreclose competitors’ input sales.*

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*Such restraints have received little attention in the FRAND literature, but they are an emerging concern for innovation and competition policy. They have recently been attacked in two high-profile complaints filed against Qualcomm: one by the Federal Trade Commission and the other by Apple. Against this backdrop, this Article provides a legal and economic evaluation of tying and exclusive dealing arrangements in FRAND licensing. Such practices may act to undermine the FRAND price control, potentially violating the SEP holder's commitment. The case for antitrust intervention is harder to make, but in principle the arrangement could act to exclude actual or potential competition in the collateral input market, bringing it within the scope of antitrust law. Several policy recommendations for how courts and standard setting organizations might address these tying and exclusivity arrangements are offered at the end of this Article.*

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## I. INTRODUCTION

A company selling a patent usually has the right to set whatever price it wants. But in the standard setting process, many patent holders make early commitments to license their patents on

“fair, reasonable, and nondiscriminatory” (FRAND) terms.<sup>1</sup> Among other things, this acts as a price control on royalties that patentees can charge for patents deemed “essential” to an adopted standard. However, some recent legal disputes highlight an emerging concern of patentees attempting to circumvent this price control by tying their patent licenses to some complementary input that is not subject to any price control, such as a physical component of the final product. Such efforts may include exclusivity requirements that restrain implementers of the standard from buying the tied input from competing sources, potentially resulting in foreclosure of rivals’ sales. This Article offers a legal and economic analysis of such practices, and suggests a set of policies to address them.

When a complex technology requires widespread interoperability among different components, firms usually coordinate through a standard setting organization (SSO). Members vote to adopt one particular technological standard<sup>2</sup> and then design their own goods and services around its defining attributes. The implementers will ultimately have to pay royalties for any applicable “standard-essential patents” (SEPs)—those that are necessarily practiced by implementations of the standard. However, it is usually impossible to negotiate royalty rates prior to adoption; there is simply too much uncertainty at this early stage.<sup>3</sup> In particular, implementers are uncertain as to what their applications of the standard will look like when fully “fleshed out;” what roles various patented technologies will ultimately play; the

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1. There is a large and very active literature on FRAND and the licensing issues it is designed to address. See, e.g., Thomas F. Cotter, *Comparative Law and Economics of Standard-Essential Patents and FRAND Royalties*, 22 TEX. INTELL. PROP. L. J. 311 (2014); Joseph Farrell et al., *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L. J. 603 (2007); Daniel G. Swanson & William J. Baumol, *Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L. J. 1 (2005); Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2007); Anne Layne-Farrar, A. Jorge Padilla & Richard Schmalensee, *Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of FRAND Commitments*, 74 ANTITRUST L. J. 671 (2007).

2. Familiar examples are the 3G and 4G cellular telecommunications standards, which were adopted by a consortium of seven SSOs collectively known as 3GPP.

3. Doug Lichtman, *Seventh Annual Baker Botts Lecture: Understanding the RAND Commitment*, in 47 HOUS. L. REV. 1023, 1025 (2010); Anne Layne-Farrar, *The Economics of FRAND*, THE CAMBRIDGE HANDBOOK OF ANTITRUST, INTELLECTUAL PROPERTY, AND HIGH TECH (Roger D. Blair & D. Daniel Sokol eds.) (forthcoming 2017).

likelihood that such patents are valid and infringed; or how valuable the standard's applications will prove to be. Thus, licensing negotiations will not occur until later, after implementers are already "locked in" to the standard.<sup>4</sup> SSOs attempt to deal with this concern by requiring SEP owners to make FRAND commitments.<sup>5</sup>

This Article addresses these (common) situations in which the SEP owner is vertically integrated,<sup>6</sup> supplying not only SEP rights but also some complementary "collateral input" used in products manufactured by implementers. "Collateral input" refers to a device or service that is not within the scope of the patentee's FRAND commitments but which is nevertheless critical for products utilizing the standard. As such, the patent rights and collateral input are complementary; implementers require both. For example, in the lawsuits discussed below, Qualcomm sells licenses for both cellular telecommunications SEPs and high-end chipsets used in premium smartphones.<sup>7</sup> When an SEP holder is vertically integrated, it may attempt to interweave the terms of its licensing and input sales, raising questions about FRAND compliance and potential antitrust concerns.

Such integration is not *inherently* concerning. In fact, it is likely to be efficient in cases where SEP licensing and input sales occur on wholly independent terms.<sup>8</sup> The potentially problematic cases arise when the SEP holder ties the input to its licenses. This

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4. "Lock-in" arises when a user has invested in using a particular good, and it would be very difficult or expensive to switch to a competing alternative.

5. William F. Lee & A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 CORNELL L. REV. 385, 429-30 (2016) ("SSOs are mindful of the lock-in effects of their decisions to include particular technologies in their standards. Thus, most SSOs require their members to commit to license any SEPs they hold on [FRAND] terms."). These are contracts between the patentee and the SSO. See, e.g., Koren W. Wong-Ervin & Jorge Padilla, *Portfolio Licensing at the End-User Device Level: Analyzing Refusals to License FRAND-Assured Standard-Essential Patents at the Component Level* (Oct. 19, 2016) (unpublished manuscript) (providing an overview of judicial determinations that FRAND commitments form binding contracts between SEP holders and SSOs).

6. A firm is vertically integrated if it operates at two different levels of the supply chain. For example, a car manufacturer might also produce the engines installed in its cars.

7. See Part II, *infra*.

8. In contemporary antitrust economics, it is generally accepted that most (but not all) instances of vertical integration are procompetitive. See Michael H. Riordan & Steven C. Salop, *Evaluating Vertical Mergers: A Post-Chicago Approach*, 63 ANTITRUST L. J. 513, 519 (1995) ("[M]any if not most vertical mergers are either procompetitive or competitively neutral.").

may manifest as an exclusive dealing arrangement,<sup>9</sup> with implementers being denied licenses unless they agree to buy the input exclusively from the SEP holder. A closely related possibility—loyalty discounting—involves no direct refusals to license implementers, but rather requires them to pay larger royalties (potentially above FRAND level) if they buy the input from competing suppliers. These practices may violate the SEP holder’s FRAND commitments. Under the right circumstances, they may also effect widespread foreclosure of rivals’ sales, potentially violating antitrust laws.<sup>10</sup> However, contemporary antitrust law generally sets a high bar for establishing such violations,<sup>11</sup> and it is important not to presume or infer an injury to competition based solely on the violation of a FRAND agreement.<sup>12</sup>

A complicating issue is that FRAND commitments are quite general and open-ended, leaving many of the details open to judicial interpretation.<sup>13</sup> As such, there is ongoing disagreement as to precisely what violates such commitments.<sup>14</sup> In particular, FRAND agreements shed limited light on how it applies to vertically-integrated SEP holders’ potential practices. For example, is tying prohibited? What if the tie is facilitated through “bundled discounting,” with implementers getting a lower per-sale royalty for every device utilizing an input made by the SEP holder?<sup>15</sup> In

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9. Exclusive dealing is an agreement in which a buyer agrees to purchase the relevant good exclusively from the other party (and not such party’s rivals) for a predetermined period of time, usually in exchange for a lower per-unit price. The potential concern with such arrangements is that they necessarily divert consumer demand away from competitors, which may prevent such competitors from continuing to operate profitably.

10. For discussion of the potential antitrust concerns, see Part V.B, *infra*.

11. This is because tying and exclusive dealing often have procompetitive explanations. For example, exclusive dealing can enable a seller to commit to a larger and more efficient production scale, lowering costs and expanding output.

12. See Part V.B.1, *infra*.

13. See, e.g., Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1906 (2002) (noting that “relatively few SSOs gave much explanation of what [FRAND] terms mean”); Dennis W. Carlton & Allan L. Shampine, *An Economic Interpretation of FRAND*, 9 J. COMPETITION L. & ECON. 531, 531 (“Unfortunately, SSOs have not defined what FRAND means, leaving its interpretation to courts and regulators.”).

14. E.g., Swanson & Baumol, *supra* note 1, at 5 (“It is widely acknowledged that, in fact, there are no generally agreed tests to determine whether a particular license does or does not satisfy a [FRAND] commitment.”).

15. Note that this is presumably less restrictive than loyalty discounting, since it applies on a per-unit basis, and thus implementers need not buy the input exclusively from the SEP holder in order to benefit from the discount.

many cases, such arrangements are likely to be benign or procompetitive, but some vertical restraints may undermine FRAND's broader objectives or injure competition.

Notwithstanding FRAND's ambiguity, scholars agree that at least two of its general objectives are (1) to prevent SEP holders from engaging in "patent holdup"—relying on implementers' pre-commitment to demand royalties substantially in excess of what they could have obtained in an arm's length bargain; and (2) to ensure that all parties who need SEP licenses are afforded access on reasonable terms, even if they compete with the SEP holder.<sup>16</sup> Some well-known federal court opinions have reached substantially the same conclusions about FRAND's underlying purpose.<sup>17</sup>

To accomplish these objectives, FRAND agreements must impose certain limitations on the relief available to SEP owners through litigation, which alters the shadow of litigation in which licensing terms are negotiated. This helps to countervail the enhanced bargaining position SEP holders would otherwise maintain as a result of the implementer's pre-commitment. For example, the SEP holders should be precluded from obtaining injunctive relief—a position that many courts and scholars have widely endorsed.<sup>18</sup> Further, since a FRAND commitment anticipates implementers' inability to negotiate fees prior to adoption, treble damages for willful infringement are generally inappropriate. More generally, the FRAND commitment signals the parties' mutual willingness to deal, as well as their contemplation of a potential holdup problem, and these considerations can help guide the court to fashion an appropriate remedy.

Two high-stakes lawsuits have recently challenged tying and exclusive dealing arrangements in the context of FRAND licensing. Both involve Qualcomm. The two plaintiffs—the

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16. See, e.g., Farrell et al., *supra* note 1; Carlton & Shampine, *supra* note 13; Swanson & Baumol, *supra* note 1. These points are discussed in more detail in Parts II.V.A, *infra*.

17. See, e.g., Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 WL 2111217, at \*10-11 (W.D. Wash. Apr. 25, 2013) (concluding that the purpose of FRAND is to facilitate efficient widespread adoption by eliminating threats posed by patent holdup and royalty stacking).

18. *Id.* at \*10; Apple v. Motorola, Inc., 869 F. Supp. 2d 901, 913-15 (N.D. Ill. 2012) (Posner, J., sitting by designation), *aff'd in part, rev'd in part and remanded*, 757 F.3d 1286 (Fed. Cir. 2014); Cotter, *supra* note 1, at 321; Lemley and Shapiro, *supra* note 1, at 1991; Lee & Melamed, *supra* note 5, at 434-47.

Federal Trade Commission (FTC)<sup>19</sup> and Apple<sup>20</sup>—separately asserted that Qualcomm engaged in unlawful tying and exclusive dealing.<sup>21</sup> The loyalty discounting arrangement allegedly utilized a “rebate” system<sup>22</sup> in which Apple agreed to pay a large upfront royalty rate, but then received large lump sum rebate payments so long as it bought chips exclusively from Qualcomm.<sup>23</sup> Qualcomm disputed this; it refused to describe its payments as a “rebate,” instead describing the payments as serving some other purpose.<sup>24</sup>

Apple and the FTC further asserted that Qualcomm has refused to offer rival chipmakers exhaustive licenses.<sup>25</sup> Since the relevant chipsets read on at least some of Qualcomm’s SEPs, this means that implementers who buy rivals’ chips must still pay royalties to Qualcomm for the relevant licenses. Apple and the FTC claimed that this combination of practices unlawfully excludes competition in the chipset market.<sup>26</sup> Aside from this antitrust claim, Apple further alleged that Qualcomm violated its FRAND commitments, and that it unlawfully demanded royalties for exhausted patents, among other claims.<sup>27</sup>

The complaints were filed only months ago, and most of the important fact issues are still in dispute. As such, this Article will not comment on the merits of the plaintiffs’ cases. Rather, the complaints will be used as a platform for addressing some important new issues emerging at the interface of innovation and competition policy. Of course, once the factual disputes are resolved, this Article’s analysis may help answer the legal questions surrounding Qualcomm’s practices.

What distinguishes the tying arrangements in question is that the seller’s primary good (SEP licenses) is subject to a price

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19. Federal Trade Commission’s Complaint for Equitable Relief, Federal Trade Commission v. Qualcomm, Inc., 5:17-CV-00220 (N.D. Cal 2017) [hereinafter FTC Complaint].

20. Redacted Complaint for Damages, Declaratory Judgment, and Injunctive Relief, Apple, Inc. v. Qualcomm, Inc., No. 17-CV-00108-GPC-NLS (S.D. Cal. June 20, 2017) [hereinafter Apple Complaint].

21. *Id.* at ¶ 94-96; FTC Complaint, *supra* note 19, at ¶ 147.

22. Discussed in Part IV.B.2, *infra*, is the potential strategic usefulness (to the SEP holder) of such a rebate system.

23. Apple Complaint, *supra* note 20, at ¶ 94-96.

24. Qualcomm’s preferred descriptions have been redacted from Apple’s complaint. *Id.* at ¶ 99.

25. *Id.* at ¶ 52; FTC Complaint, *supra* note 19, at ¶ 147.

26. Although both of these antitrust claims are targeting the same conduct, the FTC’s claim arises under the FTC Act, while Apple’s arises under the Sherman Act. For further discussion, see Part III, *infra*.

27. See Part III, *infra*.

control, while the secondary good (the collateral input) is not. This creates a unique incentive to sell the two goods as a tie: to overcome the FRAND price control by diverting most or all of the desired monopoly markup to the input.<sup>28</sup> In most commercial settings, there are no analogous price controls, and thus the full markup could simply be applied to the primary good directly. In such cases, tying may not enable the seller to capture any additional profits.<sup>29</sup> Existing research has thus far failed to recognize how the price-controlling function of FRAND practices creates this novel incentive for tying and exclusive dealing.

However, research on vertical integration by regulated monopolies has addressed situations with substantially similar concerns. These cases all involve a price-regulated monopolist (usually a utility) that has vertically integrated into an unregulated market for some complementary good or service.<sup>30</sup> The firm then ties the unregulated good to the regulated one. A number of authors have recognized that this provides a potential means for evading the price control.<sup>31</sup>

The legal implications of these tying and exclusive dealing practices are twofold.<sup>32</sup> First, they may inherently violate the SEP holder's FRAND commitments. This Article presents a number of theories for FRAND breach that might apply in these cases. The strongest will tend to be those asserting impermissible discrimination through loyalty discounting or a refusal to license rivals.<sup>33</sup>

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28. *Accord* Riordan & Salop, *supra* note 8, at 518 (noting that if a monopolist sells a price-controlled good, then "vertical merger can be used to evade price control regulations").

29. *See infra* note 100 and accompanying text.

30. For example, in *IT&T*, the defendant was a regulated monopoly provider of telephone service in Hawaii, which had integrated into the market for unregulated telephone equipment (switches, relays, etc.). The court condemned its practice of supplying its service provider subsidiaries exclusively with its own equipment, remarking that "[p]erhaps the single most alarming aspect of [defendant's] vertical integration and . . . in-house dealing is the use of its monopoly leverage in the telephone operating market to foreclose competition in the telecommunications equipment industry, an area . . . that is not regulated. In short, . . . [defendant] . . . has betrayed its public trust in operating a public utility by misusing its power to destroy competition in another economic area." *IT&T v. GTE Corp.*, 449 F. Supp. 1158, 1183 (D. Haw. 1978).

31. *See, e.g.*, Riordan & Salop, *supra* note 8, at 518; Timothy J. Brennan, *Why Regulated Firms Should be Kept Out of Unregulated Markets: Understanding the Divestiture in United States v. AT&T*, 32 ANTITRUST BULL. 741 (1987).

32. *See* Part V, *infra*.

33. *See* Part V.A.1-2, *infra*.

As explained below,<sup>34</sup> the most problematic results arise when the SEP holder was initially a monopolist in the collateral input market, with competing alternatives emerging only later.<sup>35</sup> In this case, the SEP holder has substantial bargaining power at the standard's inception. The SEP holder can threaten to cut off the input supply unless implementers agree to a loyalty discounting arrangement in which non-loyal implementers must pay an above-FRAND royalty if they buy inputs from any rival suppliers that emerge. In lieu of this initial monopoly power, the SEP holder would likely be unable to secure input exclusivity without offering a below-FRAND royalty rate. But this manner of conditional discounting is arguably not a FRAND violation, provided that no implementer is made to pay more than the FRAND level.<sup>36</sup>

In cases where the SEP holder initially maintains monopoly power in the collateral input market, a threat to cut off implementers' input supply operates exactly like a refusal to provide licenses—but only the latter is precluded by FRAND. In this case, the SEP holder can still exploit “lock-in” to extract supracompetitive rents—it just does this using its input instead of its patents. To that end, this Article concludes with some policy recommendations that could assist courts and SSOs in dealing with vertically-integrated SEP holders with substantial power over an important collateral input. If some SEP licenses are valuable only by virtue of authorizing use of the input, then these licenses and the input are not valuable independently of one another. SSOs may benefit from expanding their FRAND commitments to cover both the licenses and the input in these cases. If not, the FRAND commitment becomes largely impotent.

This Article also explains the importance of judicial restraint in relying on established royalties when remediating FRAND disputes. For example, if the royalty rate was negotiated under threat by the SEP holder to cut off the input supply, then this agreement is not at arm's length, and the royalty is artificially high.

## II. THE FRAND PRICE CONTROL

As noted above, there is general agreement that FRAND practices are designed to allay implementers' concerns over

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34. See Part IV.C, *infra*.

35. To the extent that the input embodies (or closely relates to) the SEP technologies invented by the vertically-integrated SEP holder, it is not surprising that this firm might beat its prospective input rivals to market.

36. See Part V.A.2, *infra*.

committing to a standard before licensing terms can be effectively negotiated. One such concern is that an SEP holder may discriminate against particular implementers, such as those who compete with it in some relevant product market.<sup>37</sup> Other concerns relate to the SEP holder's ability to exploit the fact that implementers are locked in before the license fees are negotiated, thereby enabling it to extract excessive license fees. The latter concerns create two motivations for SSOs to require a contractual price control on SEP licenses. The first is that implementers want to prevent SEP holders from amortizing the costs they have already sunk in its patented technologies—costs that the SEP holder could not have extracted in an *ex ante* (pre-adoption) bargain. Second, implementers want to ensure that the royalty negotiated *ex post* will not fail to reflect *ex ante* competition among different candidate technologies.

#### A. Patent Holdup

Patent holdup can occur when an unintentional infringer or prospective licensee has already made some irrecoverable investment in the patented technology by the time it negotiates with the patent holder. For example, an unintentional infringer might have implemented a production process designed specifically around using the invention. The patentee can then use the threat of litigation—and particularly the threat of injunctive relief—to extract much larger license fees than the user would have ever agreed to pay in an arm's length (*i.e.*, pre-investment) licensing negotiation.<sup>38</sup> Specifically, it can appropriate the user's sunk cost investment, as well as any “switching costs” the user would have to incur in order to revert to a non-infringing production process.

Because royalty rates cannot realistically be set before implementers commit to a standard, the standard-setting process creates substantial opportunities for patent holdup by SEP owners.<sup>39</sup> Many different firms build production processes designed specifically around the particular standard adopted by the SSO. This creates substantial inertia, making it difficult or impossible to revert to a different standard. As Judge Robart

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37. Legal interpretation of FRAND's nondiscrimination provision is left to a later section. See Part V.A.2-3, *infra*.

38. See, *e.g.*, Lemley & Shapiro, *supra* note 1; Carl Shapiro, *Navigating the Patent Thicket: Cross-Licenses, Patent Pools, and Standard Setting*, in 1 INNOVATION POL'Y & THE ECON. 119 (2000).

39. See, *e.g.*, Farrell et al., *supra* note 1.

observed in *Microsoft*, “[t]he threat of hold-up increases as the standard becomes more widely implemented and firms make sunk cost investments that cannot be recovered if they are forced to forego implementation of the standard or the standard is changed.”<sup>40</sup>

The result is that, in lieu of preventative measures, SEP owners could rely on this lock-in to appropriate excessive royalties from implementers. Therefore, one widely-accepted purpose of FRAND practices is to prevent—or at least diminish—the ability of SEP holders to exploit holdup opportunities in order to impose excessive royalty obligations on implementers.<sup>41</sup> As discussed in a later section, this is often advanced as the principal implication of FRAND’s “fair and reasonable” prong.<sup>42</sup> The standard that comes out of this interpretation is quite sensible: the SEP holder should not be able to demand larger royalties than it could have garnered in a hypothetical ex ante negotiation in which the parties had all relevant information about the standard and its SEP technologies.

#### B. Accounting for Ex Ante Competition

Once a standard is adopted, the associated SEPs do not face competition by any substitute technologies; if they did, they would not be “essential.” However, this apparent market power is an ex post phenomenon. At the ex ante (pre-adoption) stage, there are often several candidate standards in competition for adoption—each with a set of distinct SEPs. If not for the information deficiencies that preclude royalties from being negotiated ex ante, this competition would put downward pressure on the royalties that SEP owners could demand in an arm’s length bargain.

However, in practice, SEP royalties are very rarely negotiated at arm’s length. And, because it is so difficult to switch away from a standard after implementers have committed to it, the foregone ex ante alternatives cease to create any significant competitive pressure at the ex post stage. FRAND commitments can help to mitigate this problem by directing courts to contemplate the degree

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40. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 2111217, at \*10 (W.D. Wash. Apr. 25, 2013).

41. Farrell et al., *supra* note 1, at 637 (“FRAND rules should be interpreted as a mechanism by which SSO participants address the problem of patent hold-up when ex ante negotiation was absent or inconclusive”); *accord* Carlton & Shampine, *supra* note 13, at 532 (arguing that “a proper economic interpretation of FRAND” should serve to eliminate “hold-up and strategic behavior”).

42. See Part V.A.1, *infra*.

of ex ante competition when appraising the reasonableness of a given royalty rate.<sup>43</sup>

As a heuristic, consider a more familiar phenomenon that presents some similar challenges: the natural monopoly problem. A natural monopoly arises when, due to significant economies of scale,<sup>44</sup> the market trends to monopoly.<sup>45</sup> In lieu of some preventative measures, this will produce monopoly prices and, by extension, deadweight loss. And yet, in most such cases, the firm that ultimately obtains this monopoly is not uniquely qualified to serve the market. Some other firms might have done just as well, or at least nearly so, if only they had been first to enter. Thus, at the ex ante stage, there is a field of competitors that could serve the market. The challenge is to try and make sure ex post prices will reflect this ex ante competition.

The canonical solution to this problem is regulating monopoly. Public utilities are a familiar example. However, in his well-known 1968 article, economist Harold Demsetz famously questioned why regulation is treated as the unique solution to natural monopoly—let alone the best solution.<sup>46</sup> His core insight is that the usual perspective on natural monopoly—that it will necessarily elicit monopoly pricing unless they are regulated—fails to account for ex ante competition and the potential for using contracts to channel it efficiently. He goes on to suggest that bidding contracts could solve the problem without requiring any ex post regulation. In this system, an auctioneer would solicit bids from a field of candidate firms, each stipulating what price the firm promises to charge if it is selected. The lowest bid will win, inducing firms to try and undercut each other's price offerings. The result is that this ex ante competition—properly channeled through auction-based contracting—creates the desired inverse relationship between

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43. Swanson & Baumol, *supra* note 1, at 10 (arguing that a FRAND royalty “must be defined and implemented by reference to ex ante competition”); accord Carlton & Shampine, *supra* note 13, at 536 (noting the “FRAND commitments have been used by SSOs to preserve the benefits of the ex ante competition”).

44. Production of a good exhibits economies of scale if per-unit production costs are lower when the firm produces more units. Entry barriers, such as large fixed costs, are a common source of scale economies.

45. Utilities are a good example of natural monopolies. A utility—say, an electricity provider—must build a large network of wires that extend to all homes and other buildings in the relevant region. No second firm would incur the substantial costs of building a second such network in the same territory, knowing that it will then have to engage in aggressive price competition with the first provider.

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

competition and price. And it does so without government regulation.

There are a few instructive similarities between SEPs and a natural monopoly—and between Demsetz’s bidding proposal and FRAND practices. It is most efficient to have a single standard. Indeed, the purpose of adopting a standard is to provide interoperability among the goods produced by many different firms. However, at the *ex ante* stage, there are often multiple candidate standards that could be chosen, each comprising a distinct set of essential technologies. As such, when a standard is chosen, SEP royalties would preferably reflect this *ex ante* competition among candidate standards. Ideally, FRAND pledges would help to solve this problem in a manner similar to Demsetz’s suggestion—through contracts that induce *ex post* prices to reflect *ex ante* competition.<sup>47</sup>

Of course, in the FRAND case, a literal auction with precise royalty bids would not work. Indeed, such commitments are made precisely because it is generally infeasible for firms to agree on royalty rates until after implementers have already committed to the standard. However, FRAND commitments can indeed be made *ex ante*, and they still give implementers the ability to challenge the SEP holder’s royalty demands in the event that they become unreasonably high. Thus, although much less precise than a specific price bid, the FRAND commitment similarly acts like an enforceable promise not to charge too much later on. Ideally, courts interpreting FRAND terms in such challenges would consider *ex ante* competition among standards in the course of rendering judgments.

### III. THE QUALCOMM FRAND LITIGATIONS

This section provides a concise overview of the FTC and Apple actions recently filed against Qualcomm insofar as they relate to the practices addressed here.<sup>48</sup> Qualcomm owns many

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47. See Swanson & Baumol, *supra* note 1, at 21 (noting that a FRAND royalty rate should attempt to replicate “the outcome of an auction-like process appropriately designed to take lawful advantage of the state of competition existing *ex ante*”).

48. Omitted is discussion of similar actions brought against Qualcomm overseas, such as the recent unfair competition investigation by the Korean Fair Trade Commission (KFTC). The KFTC determined that Qualcomm had engaged in unfair competition, and imposed sanctions of approximately US\$ 850 million. Press Release (unofficial translation), *Strict Sanctions on Qualcomm’s Abuse of Cellular SEPs*, KOREA FAIR TRADE COMM’N (Dec. 28,

SEPs relating to cellular telecommunications and technologies utilized by premium mobile devices like smartphones and tablets. It is also a leading developer and manufacturer of baseband processors (also referred to as “chipsets,” or simply “chips”). Current iterations of these high-end chipsets comply with one of two technology standards—“Code Division Multiple Access” (CDMA) or “Long-Term Evolution” (LTE). Qualcomm sells chips complying with both sets of standards.

In early 2017, the FTC brought an action<sup>49</sup> against Qualcomm asserting unfair competition in violation of the FTC Act.<sup>50</sup> The FTC alleged that Qualcomm employs a “no licenses-no chips” policy in which Qualcomm’s cellular chipsets are tied to its SEP licenses; that it engages in exclusive dealing with respect to chipset sales; and that it refuses to provide rival chip sellers with exhaustive licenses for its FRAND-encumbered SEPs.<sup>51</sup> Qualcomm moved to dismiss this action for failure to state a claim for relief under the FTC Act, but this motion was recently denied.<sup>52</sup>

Soon after the FTC’s filing, Apple brought its own suit against Qualcomm.<sup>53</sup> Apple’s action is far broader than the FTC’s. It alleged breach of contract (FRAND-noncompliance); breach of implied covenant of Good Faith and Fair Dealing; various violations of California statutory law; claims of patent exhaustion; and an antitrust claim of monopolization arising under Section 2 of the Sherman Act.<sup>54</sup> It also sought declaratory judgments of

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2016), <https://www.qualcomm.com/documents/kftc-issued-press-release-dated-december-28-2016-unofficial-english-translation>).

49. FTC Complaint, *supra* note 19. One Commissioner, Maureen K. Ohlhausen, dissented from the decision to bring the enforcement action. See Dissenting Statement of Commissioner Maureen K. Ohlhausen, *In re Qualcomm, Inc.*, File No. 121-0199 (Jan. 17, 2017).

50. 15 U.S.C. § 45(a) (2012) (prohibiting unfair methods of competition and empowering the FTC to prevent such conduct).

51. See FTC Complaint, *supra* note 19, at ¶ 147.

52. Order Denying Motion to Dismiss, *Federal Trade Commission v. Qualcomm, Inc.*, No. 17-CV-00220-LHK, 2017 WL 2774406 (N.D. Cal. June 26, 2017).

53. Apple Complaint, *supra* note 20. Apple’s original complaint was filed January 1, 2017, but was recently amended. The biggest difference in the amended complaint appears to be a heightened emphasis of Apple’s exhaustion claims, which may have been bolstered by the Supreme Court’s recent exhaustion decision in *Impression Products*. *Impression Products, Inc. v. Lexmark International, Inc.*, 137 S. Ct. 1523, 1535 (2017) (holding that a patent is automatically and unavoidably exhausted when the patent holder or its licensee sells a good embodying the patented technology).

54. See Apple Complaint, *supra* note 20, Counts I-LXIII.

noninfringement and invalidity for many of Qualcomm’s patents, as well as a declaration of FRAND royalties. Apple’s monopolization claim is directed at the same practices challenged by the FTC.

Apple alleged that in 2011 Qualcomm began tying its chipsets to SEP licenses, requiring de facto exclusivity in chip purchases.<sup>55</sup> In particular, Apple asserted that Qualcomm demands “exorbitant” royalties upfront, and then provides rebates—lump sum payments to Apple, reducing Apple’s effective royalty payment—if Apple behaves in accordance with certain conditions, such as buying chips near-exclusively from Qualcomm.<sup>56</sup> This alleged practice is what antitrust refers to as “loyalty discounting” or “conditional discounting.” This involves conditioning a lower price (or a rebate on the default price) on the buyer’s agreement to buy exclusively (or near-exclusively) from the seller.

Apple and Qualcomm offered inconsistent representations as to the purpose of the alleged rebate. Qualcomm refused to characterize the conditional payments as “rebates,” and instead described them using some alternative (redacted) terms.<sup>57</sup> Apple dismissed these alternative portrayals as “window dressing,” and maintained that the rebate’s “sole purpose . . . was to reduce Apple’s royalty burden in exchange for exclusivity.”<sup>58</sup>

In 2013, Apple and Qualcomm entered into a “Business Cooperation and Patent Agreement” (BCPA) that expanded the scope of this conditional rebate arrangement.<sup>59</sup> The BCPA calls for quarterly rebate payments to Apple, which Apple described as providing “a cap on the [net] royalties that Apple pays to Qualcomm.”<sup>60</sup> Apple averred that these rebates were conditioned on various restrictions on Apple’s “ability to sue or induce certain kinds of lawsuits or enforcement actions against Qualcomm.”<sup>61</sup> This portion of the complaint is heavily redacted, but later passages suggest that the restricted litigation activity includes claims that: Qualcomm has violated its FRAND commitments, its patents are exhausted, or it has infringed Apple’s patents.<sup>62</sup> Apple alleged the rebate was further conditioned on Apple’s agreement not to

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55. *Id.* at ¶ 94-96.

56. *See id.*

57. *Id.* at ¶ 99.

58. *Id.*

59. *Id.* at ¶ 102-06.

60. *Id.* at ¶ 102

61. *Id.* at ¶ 106.

62. *Id.* at ¶ 184-85.

bring antitrust concerns surrounding Qualcomm's conduct to courts or regulators.<sup>63</sup>

Apple claimed that it objected to these restrictions, but ultimately acquiesced due to Qualcomm's dominance in the premium chipset market at the time.<sup>64</sup> In its answer, Qualcomm conceded that the BCPA imposed litigation restrictions on Apple, but contended that such restrictions were necessary "to limit Apple's ability to abuse its leverage over Qualcomm."<sup>65</sup> When Apple was finally able to divert some of its chipset purchases to an alternative supplier (Intel) in 2016, this allegedly resulted in Apple foregoing (some redacted amount of) "royalty relief," since Apple was no longer in compliance with Qualcomm's exclusivity condition.<sup>66</sup>

The chipsets at issue read on at least some of Qualcomm's SEPs, meaning that rival chipmakers have to obtain a right to make the chips from Qualcomm. To that end, both the FTC and Apple alleged that Qualcomm violated its FRAND commitment by refusing to offer its rivals *exhaustive* SEP licenses<sup>67</sup>—those that would pass through to the implementers buying rivals' chips via the exhaustion doctrine.<sup>68</sup> Qualcomm acknowledged that it does not sell exhaustive licenses to rival chipmakers.<sup>69</sup>

The result is that implementers who buy a rival's chips must still get the relevant SEP rights (licenses for any SEPs covering the chips) separately from Qualcomm.<sup>70</sup> The alleged loyalty

63. *Id.*

64. *Id.* at ¶ 108.

65. Qualcomm Incorporated's Redacted Answer and Defenses; Redacted Counterclaims for Damages, Declaratory Judgment and Injunctive Relief, Apple, Inc. v. Qualcomm, Inc., No. 17-cv-0108-GPC-MDD at ¶ 27 [hereinafter Qualcomm's Answer].

66. *Id.* at ¶ 97.

67. FTC Complaint, *supra* note 19, at ¶ 112 ("In breach of its FRAND commitments . . . Qualcomm has consistently refused to license its SEPs to competing suppliers of baseband processors."); Apple Complaint, *supra* note 20, at ¶ 624 (alleging that "Qualcomm's exclusionary conduct includes . . . refusing to deal with competitors, in contravention of its FRAND commitments").

68. The exhaustion doctrine—and Apple's claims that Qualcomm is acting contrary to what the doctrine requires—is discussed in the next section. See notes 75-83, *infra*, and accompanying text.

69. Qualcomm's Answer, *supra* note 65, at ¶ 154 (acknowledging that "Qualcomm has entered into non-exhaustive patent agreements, including non-exhaustive licensing agreements, with modern chipmakers"). However, Qualcomm does not expressly concede that it has "refused" to provide exhaustive licenses to rivals, as the FTC and Apple allege.

70. See FTC Complaint, *supra* note 19, at ¶ 68 (asserting that "Qualcomm is unique in requiring a [implementer's manufacturer], as a condition of sale, to

discounting program could make it unreasonably expensive for implementers to do this. Apple alleged it will be forced to pay “exorbitant” royalties if it breaks the loyalty condition by purchasing rival chips.<sup>71</sup> This loyalty discounting arrangement underpins both the FTC’s and Apple’s theories of anticompetitive exclusive dealing, with both plaintiffs arguing that the practice has caused unlawful exclusion of rival chip sellers.<sup>72</sup> Apple further alleged that Qualcomm maintained its market dominance through additional rebate conditions restricting Apple’s ability to initiate FRAND litigation against Qualcomm.<sup>73</sup>

#### A. Significance of the Exhaustion Claims

One of Apple’s central claims is that some of Qualcomm’s royalty demands are barred by the patent exhaustion doctrine.<sup>74</sup> The doctrine stipulates that an authorized sale<sup>75</sup> of a patented good serves to “exhaust” the patent, meaning that the buyer cannot be sued for patent infringement based on what it does with the patented good after buying it.<sup>76</sup> This means that patent litigation cannot be used to enforce any post-sale restraints (such as a royalty obligation) on the buyer’s use or commercialization of the patented good. However, the patentee can still rely on contract law to enforce any agreed-upon restraints.<sup>77</sup> Exhaustion applies to all

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secure a separate patent license requiring royalty payments for handsets that use a competitor’s components”).

71. Apple Complaint, *supra* note 20, at ¶ 623 (alleging that Qualcomm “threaten[s] disloyal chipset customers with exorbitant SEP royalties”).

72. FTC Complaint, *supra* note 19, at ¶ 128 (“Qualcomm’s exclusive deal with Apple excluded competition from other baseband processor suppliers and harmed competition.”); Apple Complaint, *supra* note 20, at ¶ 630 (“By evading its FRAND commitment, Qualcomm gained the power to exclude competition in the chipset market.”).

73. *Id.* (“[B]y penalizing Apple’s ability to challenge Qualcomm’s FRAND evasion, Qualcomm maintained [monopoly] power.”).

74. *Id.* at ¶ 89.

75. Unlike sales, leases of patented goods do not trigger exhaustion.

76. *Impression Products, Inc. v. Lexmark International, Inc.*, 137 S. Ct. 1523, 1531 (2017) (“The limit [created by exhaustion] functions automatically: When a patentee chooses to sell an item, that product ‘is no longer within the limits of the monopoly’ and instead becomes the ‘private, individual property’ of the purchaser, with the rights and benefits that come along with ownership.” (quoting *Bloomer v. McQuewan*, 55 U.S. 539, 549-50 (1853))).

77. *Id.* (“A patentee is free to . . . negotiate contracts with purchasers, but may not, ‘by virtue of his patent, control the use or disposition’ of the product after ownership passes to the purchaser.” (quoting *United States v. Univis Lens Co.*, 316 U.S. 241, 250 (1942) (emphasis added))).

“authorized sales,” including those made by licensee-manufacturers who are fully licensed to make, sell, and use the patented technology. However, if the patentee merely gives a manufacturer a limited right to make the good,<sup>78</sup> this is not an exhaustive license, and it does not trigger exhaustion. As such, consumers who buy the good from the manufacturer are still vulnerable to patent litigation by the patentee.

Apple claimed that, by imposing royalty obligations on implementers who buy its chips, Qualcomm violated the exhaustion doctrine. This is underpinned by the fact that the relevant chips (including the versions made by rivals) read on at least some of Qualcomm’s SEPs. Apple has suggested that there may not be any SEPs that would not be exhausted upon a sale of a Qualcomm chip, or at least that Qualcomm has not made any showing to the contrary.<sup>79</sup> It further argued that, to the extent that some patents are indeed not exhausted, Qualcomm still violated both exhaustion limitations and its FRAND commitments by continuing to demand royalties for its entire SEP portfolio, notwithstanding that some of the included patents are exhausted.<sup>80</sup>

As this suggests, an important question is whether sales of the relevant chipsets exhaust *all* of Qualcomm’s SEP technologies, or merely some of them.<sup>81</sup> The SEP portfolio would not be fully exhausted if there are some elements of Apple’s devices other than

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78. This limited right could manifest as a covenant not to sue the manufacturer for making the patented good. When a product infringes a patent, the patentee can choose to sue purchasers of the infringing product rather than the infringing seller. The covenant not to sue preserves the latter right while giving up the former.

79. Apple Complaint, *supra* note 20, at ¶ 11 (“Qualcomm has failed to identify . . . [any SEP] not exhausted by the authorized sales of Qualcomm baseband chipsets.”).

80. *Id.* at ¶ 90 (“To the extent that any portion of Qualcomm’s portfolio is not exhausted by the sale of Qualcomm chipsets, Qualcomm demands that its customers pay for exhausted patents in order to obtain a license for patents that are not exhausted—again, forcing its customers to pay for a license to exhausted patents, which they do not need and would construct an illegal tie.”); *id.* at ¶ 88-89 (“By requiring Apple’s [equipment manufacturers] to take a separate patent license for the same components that they purchase, Qualcomm is double-dipping. This double dipping . . . has long been prohibited by the patent exhaustion doctrine.”).

81. This issue is unresolved. Apple seems to suggest that all of Qualcomm’s SEP technologies are embodied in the relevant chipsets. But it argues in the alternative that, if some of the SEPs are not exhausted by Qualcomm’s chip sales, then Qualcomm is still violating its FRAND commitment. *Id.* at ¶ 11.

the chipsets that read on some of the SEPs.<sup>82</sup> This is important to Apple's exhaustion claims and to the significance of Qualcomm's alleged refusal to sell rivals exhaustive licenses. The latter allegation may or may not be the sole reason that implementers buying rival chips still need to obtain SEP rights from Qualcomm separately. If some of Qualcomm's SEP technologies are *not* embodied in its chips, then implementers buying rival chips would necessarily need to negotiate separate licenses for these patents with Qualcomm—even if rivals had exhaustive licenses for the other SEPs (the ones infringed by rival chips). But if *all* SEP technologies are embodied in premium chipsets, then implementers who buy rival chips would not need to pay any royalties to Qualcomm, provided that such rivals were sold exhaustive licenses for all of the SEPs. Nor could Qualcomm demand royalties from purchasers of its own chips.<sup>83</sup> In this case, Qualcomm could not engage in loyalty discounting: buyers of competing chips do not transact with Qualcomm at all, leaving Qualcomm no leverage with which to penalize such buyers.

For example, suppose Qualcomm has just two SEPs, which cover technologies  $\alpha$  and  $\beta$ , both of which are utilized in Apple's devices. And suppose that chipsets embody technology  $\alpha$ , but not  $\beta$ . Then, rival chipmakers are concerned only about the SEP on  $\alpha$ . Whether or not they get an exhaustive license for  $\alpha$ , implementers will still need a license from Qualcomm to use technology  $\beta$ . Further, Qualcomm can still charge royalties for the  $\beta$  patent even to implementers that buy chips from Qualcomm, because in this case a chip sale exhausts only the  $\alpha$  patent. But suppose instead that the chips read on both patents. Then, every authorized chip sale exhausts both of Qualcomm's SEPs. That means if Qualcomm sold exhaustive licenses to rival chipmakers, then implementers buying rivals' chips would not need to pay any royalties to Qualcomm. But if rivals get only non-exhaustive licenses to make competing chips, then implementers who buy rivals' chips must still go to Qualcomm for licenses.

Importantly, the tying and exclusive dealing practices examined in this Article are ultimately facilitated by the SEP holder's integration into a collateral input market and by the tying

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82. Note this is impliedly true if some SEPs are not embodied in the chipsets, assuming that all SEPs are embodied by some method or apparatus within Apple's devices.

83. The caveat, mentioned above, is that Qualcomm could still use a *contract* to impose post-sale restraints on implementers who buy its chips. The point is that it cannot use *patent litigation* to enforce such restraints.

incentive created by a FRAND price control. They have little or nothing to do with exhaustion. This is certainly true of the antitrust claims against Qualcomm. Allegations of monopolization, such as unlawful exclusive dealing, have no direct legal connection to exhaustion. Antitrust claims are offensive (as opposed to defensive) and hinge on establishing an injury to competition itself. By contrast, exhaustion is a defense to infringement whose application flows entirely from the sales of a patented good. It pays no attention to competitive effects. Thus, if a court makes a determination on the exhaustion issue, this should not be dispositive with respect to any applicable antitrust issues. Rather, these are independent legal issues that frequently happen to be bound up in the same series of events.

#### IV. LICENSOR INTEGRATION INTO A COLLATERAL MARKET

An SEP holder may sell not only licenses for its essential patents, but also some important collateral input—one that is not subject to the FRAND commitment but which is still needed by licensees to manufacture the downstream product. This could be a physical component of the downstream product (which may read on some of the SEP), such as the chipset that Qualcomm offers alongside its patent licenses. Alternatively, the input could be some kind of important service or network utilized by the downstream product, such as a cellular network that makes use of some SEP-covered technologies. This Article will focus on to collateral inputs that are highly complementary—if not indispensable—to the downstream product.<sup>84</sup> Note that this probably excludes most non-essential patent licenses from consideration.

There may be a number of firms that can produce a version of the collateral input. But implementers who buy the input must always obtain licenses for the applicable SEPs, regardless of from whom they buy the input. This could be accomplished in two ways. The more straightforward way involves the SEP holder providing exhaustive licenses to input producers, so that licensing rights are automatically transferred to buyers of the input. Alternatively, the SEP holder may provide input makers with non-

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84. If implementers are not particularly reliant on the collateral input, then its inclusion in a tie is much less likely to raise competition policy concerns, for control of such input gives only nominal power to the SEP holder.

exhaustive licenses that do not pass licensing rights through to implementers.<sup>85</sup>

Because the SEP holder sells both licenses and the collateral input, it can elect to sell them as a tie. In a tying arrangement, the seller conditions the availability of one good, *A* (the “tying” or “primary” product), on the buyer’s agreement to buy some other good, *B* (the “tied” or “secondary” product), as well.<sup>86</sup> Thus, a consumer cannot buy good *A* alone (although she may still be able to buy *B* alone).<sup>87</sup> Historically, antitrust law took an aggressive position against tying, regarding it as generally anticompetitive.<sup>88</sup> But courts have increasingly softened on this position over time, viewing tying as competitively benign or procompetitive.<sup>89</sup>

There are good reasons for this shift in judicial attitudes toward tying. Because tied goods are virtually always complementary,<sup>90</sup> tying can produce efficient results by eliminating a “double marginalization” problem, which arises when two complementary products are assigned separate markups by separate providers.<sup>91</sup> The result of this problem is that the total price of the two goods is

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85. The FTC’s complaint suggests that, with respect to smartphone components, Qualcomm is “unique” in doing this. FTC Complaint, *supra* note 19, at ¶ 68 (“Qualcomm is unique in requiring an [implementer] . . . to secure a separate patent license . . . for handsets that use a competitor’s components.”). However, one recent article suggests that this is in general not uncommon. Wong-Ervin & Padilla, *supra* note 5, at 2 (stating that it is a “common industry practice” to license “at the end-user device level”).

86. For a discussion of tying arrangements and their antitrust implications, see, e.g., Erik Hovenkamp & Herbert Hovenkamp, *Tying Arrangements and Antitrust Harm*, 52 ARIZ. L. REV. 924 (2010).

87. In a related practice known as “bundled discounting,” the consumer can still buy *A* alone, but its price will be higher than if she also purchases *B*.

88. For example, in a 1949 case, the Supreme Court remarked that “tying agreements serve hardly any purpose beyond the suppression of competition.” *Standard Oil Co. of California et al. v. United States*, 337 U.S. 293, 305 (1949). For an overview of the court’s shift to a much more conservative position, see Christian Ahlborn, David S. Evans, & Jorge Padilla, *The Antitrust Economics of Tying: A Farewell to Per Se Illegality*, 49 ANTITRUST BULL. 287 (2004).

89. Daniel A. Crane, *Chicago, Post-Chicago, and Neo-Chicago*, 76 U. CHI. L. REV. 1911, 1912-14 (2009) (discussing the “antitrust retrenchment” with respect to various kinds of vertical restraints, including tying, that began in the 1970s).

90. Two goods are complementary if consumers often (or always) want both of them. For example, cable service and televisions are strongly complementary.

91. In the context of intellectual property, double marginalization is sometimes called “royalty stacking.” See Lemley & Shapiro, *supra* note 1, at 2010.

higher than if a single firm supplied it.<sup>92</sup> In some cases, tying may also facilitate procompetitive price discrimination, allowing a broader set of consumers to buy a package of goods that suits their particular needs.<sup>93</sup>

In many ties, the seller has monopoly power over the tying good, but not initially over the tied good. This led some scholars to worry that tying the two goods will lead to diminished competition in the tied product market. To that end, a common argument made against tying is that it allows a firm to “leverage” its market power over one product to achieve additional market power over the second good.<sup>94</sup>

The leverage theory came under attack from a number of economists and legal scholars, particularly those associated with the Chicago School of antitrust thought.<sup>95</sup> A core aspect of the “single monopoly profit” theory asserts that tying cannot be used to extract larger profits than the firm would earn by selling just *A* (or by selling both goods separately). Consumers care only about the *combination* of goods, and by extension, they care only about the total price of obtaining both components. Hence there is just a single monopoly markup to be applied to the combination, and it does not matter how such markup is divided between the two constituent goods. As such, the firm could just assign the entire markup to the tying good, and hence its motivation for tying must be something other than an expansion of its market power in the tied market.

However, as economic theory has grown more sophisticated, economists have recognized that the single monopoly profit theory is not as categorical a vindication of tying as its original proponents had suggested.<sup>96</sup> In particular, the theory requires some strong necessary conditions, such as that the two goods are always

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92. See, e.g., ERIK HOVENKAMP & HERBERT HOVENKAMP, TYING ARRANGEMENTS, in 2 OXFORD HANDBOOK OF INTERNATIONAL ANTITRUST ECONOMICS, at 339-41 (Roger D. Blair & Daniel Sokol, eds., 2014).

93. See, e.g., Richard Schmalense, *Monopolistic Two-Part Pricing Arrangements*, 12 BELL J. ECON. 445, 448 (1981).

94. See, e.g., REPORT OF THE ATTORNEY GENERAL’S NATIONAL COMMITTEE TO STUDY THE ANTITRUST LAWS 145 (Mar. 31, 1955) (asserting that tying creates anticompetitive injury by “artificially extending the market for the ‘tied’ product beyond the consumer acceptance it would rate if competing independently on its merits”).

95. E.g., Ward S. Bowman, *Tying Arrangements and the Leverage Problem*, 67 YALE L. REV. 19 (1957).

96. Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 AM. ECON. REV. 837, 838-39 (1990).

purchased in fixed proportions (e.g., one-to-one), and that there are no consumers who wish to consume the tied product without the tying product.<sup>97</sup> If these conditions are not satisfied, tying can sometimes produce an exclusionary effect, at least if production of the tied product is subject to economies of scale.<sup>98</sup> In such cases, tying may lead tied-market rivals to exit, which may enable the seller to capture additional profits.

Nevertheless, it could be that the aforementioned conditions underpinning the single monopoly profit theory are satisfied when an SEP holder ties licenses to a collateral input.<sup>99</sup> For example, two recent articles argue that the theory implies Qualcomm's alleged tie could not enable it to extract larger profits.<sup>100</sup>

However, on closer inspection, the single monopoly profit theory cannot be usefully applied to the ties in question. The reason is that the FRAND commitments act as a price control on

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97. See *id.* at 840; Riordan & Salop, *supra* note 8, at 543.

98. An immediate consequence of scale economies is that production may not be profitable unless the producer is able to sell a sufficiently high number of units to keep its costs down.

99. These conditions are arguably satisfied in the Qualcomm tie alleged by Apple and the FTC. The SEP-licenses and chipsets are purchased in a one-to-one ratio (one each per iPhone and iPad), and the SEP licenses may lack any valuable applications that do not require chipsets as well. *Accord*, Koren W. Wong-Ervin, Evan Hicks, & Ariel Slonim, *Tying and Bundling Involving Standard-Essential Patents*, GEORGE MASON L. REV. (forthcoming 2017), at 21 (noting that SEP licenses and chipsets are used in fixed proportions).

100. *Id.* (“With respect to tying or bundling SEPs and components . . . the one-monopoly-profit theory suggests that SEP holders would be unable to increase their profits by collecting rents on the tied product, because the license and the chips are used in fixed proportions.”); Koren W. Wong-Ervin et al., *A Comparative and Economic Analysis of the U.S. FTC’s Complaint and the Korea FTC’s Decision Against Qualcomm*, COMPETITION POL’Y INT’L (forthcoming 2017) (“[T]he one-monopoly-profit theory suggests that Qualcomm would be unable to increase its profits by collecting rents on the tied product (the license) because the license and the chips are used in fixed proportions.”). Note that the authors of the latter article regard SEP licenses as the *tied* product. However, for reasons discussed below, they must be regarded as the tying product, because there are no competing firms capable of supplying these SEP licenses, while the collateral input could be supplied by rival firms. This is consistent with how a tying and tied good are usually distinguished. See *infra* notes 87-89. Both of the just-mentioned articles also neglect to account for how FRAND constrains the SEP holder’s pricing and profits (on licenses) in the absence of tying, which is ultimately why this Article reaches a different conclusion as to the capacity for tying to extract larger profits in the present context. Aside from this, this Article agrees with much of what the authors say.

the tying product (SEP licenses),<sup>101</sup> which generally prevents the SEP holder from charging all of its desired markup on the tying good alone. It has unqualified control over the price of its collateral input, however. This gives the SEP holder a distinct incentive to tie and potentially to exclude actual or potential competition in the collateral input market. This distinguishing factor, and some related ones, are discussed in the next sections.

*A. Tying with a Price-Controlled Good*

In most tying cases, the defendant has a monopoly power over the tying good. An SEP holder similarly maintains monopoly power over licenses to its SEPs; no one else can sell them (or any substitutes),<sup>102</sup> after all. A critical difference is that an SEP holder has made a FRAND commitment that acts as a price control on its licenses. A conventional tying defendant faces no analogous constraint on the price of its tying good, while, the SEP holder is more limited in how it can maximize its profits. The SEP holder cannot apply its most preferred overcharge to its licenses, and thus it cannot maximize its profits by selling the licenses alone. By contrast, the single monopoly profit theory envisions a firm that, in lieu of tying, can simply apply the full monopoly markup to its primary product—thereby maximizing profits without any need for tying.

Antitrust and regulatory authorities have confronted some tying cases in regulated industries that closely analogize ties involving SEPs. In their article on vertical mergers, Professors Riordan and Salop recognized that such integration “can permit a firm to evade

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101. SEP licenses should be regarded as the tying product because it is over these licenses that the SEP owner necessarily faces no competition; it is the sole owner of the SEPs, after all. The only difference here is that the tying good is subject to a price control. By contrast, there may be competing firms capable of offering the collateral input. And, importantly, the absence of apparent competition in the collateral input market does not necessarily suggest that no rival firms are capable of producing it. An SEP holder may be able to prevent consumers from buying competing versions by making it prohibitively expensive to get licensing rights when using a rival's collateral input. For example, Apple alleges that Qualcomm's dominant position in the chipset market is a result of Qualcomm's refusal to license rival chipset makers and its pricing practices that discourage buyers from transacting with those rivals. Apple Complaint, *supra* note 20, ¶ 96 (alleging that “[t]he monopoly power that Qualcomm enjoys today in the market for premium LTE chipsets is directly related to Qualcomm's foreclosure of Apple's business to actual and potential competitors in the premium LTE chipset market”).

102. If such substitutes existed, these patents would not be standard-essential.

a variety of pricing regulation . . . [and] to evade statutes or regulations that prohibit price discrimination.”<sup>103</sup> The mechanism is simple: the firm ties the unregulated complement to its price-controlled good so that consumers must buy them as a pair. It then applies its desired overcharge to the unregulated good instead of its primary regulated good. Whatever price-reducing effect regulation has on the tying product can be offset by applying a commensurate overcharge to the unregulated tied product.<sup>104</sup>

For example, consider AT&T’s former practice of tying physical telephone equipment to its telecommunication service, which was condemned in the Federal Communications Commission’s (FCC’s) *Carterfone* decision.<sup>105</sup> Prior to this decision, AT&T had prohibited its consumers from connecting to its price-regulated telephone service with third-party equipment whose prices were not regulated, such as telephones. Consumers were thus obliged to use AT&T or its subsidiaries’ equipment. It is easy to see how this arrangement could enable a telecommunications service provider to circumvent a regulatory price control: it could require its customers to lease its own telephones for a monthly fee and then charge most of the monopoly markup on the rental fee while providing service at the regulated rate.

Tying arrangements may also naturally foreclose rivals’ sales, although the extent depends on whether the tie is mandatory or

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103. Riordan & Salop, *supra* note 8, at 561.

104. Timothy Brennan gives a colorful numerical example of this: “Consider a hot dog monopolist, whose profit-maximizing price would be \$1, but due to regulation it can charge only [75 cents]. It would be worthwhile to this monopolist to find some way to reap an extra quarter for each hot dog sold. One way to do this might be for the monopolist to sell mustard along with the hot dogs at a quarter per serving over cost, and require anyone who buys a hot dog to buy its mustard as well . . . The quarter per hot dog profit previously precluded by regulation is reaped through the tied sales of mustard.” Brennan, *supra* note 31, at 751.

105. *Matter of Carterfone*, 13 F.C.C.2d 420 (1968). In this case, the FCC condemned AT&T’s efforts to prohibit consumers of its (regulated) telephone service from using any competitors’ equipment (including physical telephones) in conjunction with such service; *id.* at 421 (condemning a tariff stipulating that “[n]o equipment, apparatus, circuit or device not furnished by the telephone company shall be attached to or connected with the facilities furnished by the telephone company, whether physically, by induction or otherwise”). See also Lawrence A. Sullivan and Ellen Hertz, *The AT&T Antitrust Consent Decree: Should Congress Change the Rules?*, 5 BERK. TECH. L.J. 233, 250 (1990) (noting that, following *Carterfone* and subsequent cases, “it became increasingly clear that AT&T could no longer successfully leverage its local service monopoly by tying end-line equipment to service provision”).

achieved through a conditional discount. If the tie is mandatory in the sense that the firm refuses to sell a unit of the primary good without an accompanying unit of the secondary good, then buyers will not make any purchases from rivals.<sup>106</sup> In contrast, foreclosure may be less widespread if the firm relies on loyalty discounting, with the primary good's price discounted for buyers who also buy the secondary good from the tying firm. In this case, consumers can still buy the primary good from the tying firm and go elsewhere for the secondary good. However, if the undiscounted price for the primary good is substantially higher than what loyal buyers pay—so that virtually no buyers will turn down the loyalty discount, even if competitors sell the tied good at cost—then this may not be meaningfully different from the mandatory tie.

There are some differences between these cases of regulatory price controls and those created by FRAND commitments. In the regulation cases, the tying and tied goods are necessarily priced separately, since the tying good's price is individually scrutinized by the price regulator. Typically, the tie is then enforced through a post-sale restraint stipulating that the tying good is not to be used with any competing brands of the tied good. An integrated SEP holder may be unable to tie in this manner. Suppose that the SEP holder's rivals offer inputs at reasonably competitive prices, while the SEP holder applies a substantial markup to its own input. This would not be an issue if the licensing agreement included an enforceable restraint mandating that the licensed SEP technologies cannot be used alongside rivals' chips. But a court might find that this violates FRAND commitments, since it effectively refuses licenses to implementers who want to use rivals' chips.<sup>107</sup>

Another important consideration is whether rival input makers have access to exhaustive licenses for all SEPs embodied in the collateral input. In the tying discussion above, the tying good is sold at a price that complies with the price control, while the desired supracompetitive overcharge is applied to the tied good. But this simple approach may not be adequate for tying SEPs and may need to be adjusted in order to deal with the FRAND commitments. To see why, suppose that the SEP holder

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106. Assume the two goods are consumed in fixed proportions.

107. For example, in *Microsoft*, Judge Robart concluded that “[t]he purpose of the [FRAND] commitment is to encourage widespread adoption of the standard.” *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 2111217, at \*10 (W.D. Wash. Apr. 25, 2013). And, in evaluating a particular SSO's FRAND policy, the court found that SEP technologies “must be accessible to everyone.” *Id.* at \*7.

announces a FRAND royalty rate for its SEPs, but then sets a supracompetitive price for its input. Rival input makers may then be able to demand the same established FRAND royalty charged to implementers (discussed further below). In that case, the rivals can then market their own inputs at reasonably competitive prices, perhaps lower than what the SEP holder is charging for its own input. But then implementers will simply divert their input demands to the lower-priced competitors and rely on the FRAND commitments to demand that they continue to receive licenses at the reasonable rate already established. And as was just explained, the SEP holder probably cannot attempt to deter this by refusing to license implementers who divert their input demands to competing sources.

Further, in the special case where all of the SEPs are embodied in the input, all of these patents are exhausted by rivals' input sales because the rivals received exhaustive licenses. That would mean the SEP holder cannot rely on patent litigation to enforce any restraints on implementers' use of rival-made chips.<sup>108</sup> In principle it could rely on contracts with implementers to achieve a similar result. But, the SEP holder in this case ostensibly lacks any power to induce implementers to forego rival inputs. Indeed, they have no need to deal with the SEP holder: all SEPs are exhausted when rivals sell their chips, leaving implementers free and clear of all potential patent claims by the SEP holder.

As this example illustrates, it is important to the SEP holder's tying strategy that it can prevent rivals from gaining reasonably-priced exhaustive licenses for those SEPs embodied in the input. If implementers can get fully-licensed inputs from rival suppliers—and if rivals can afford to price them competitively—then the SEP holder will find it difficult to prevent implementers from diverting their input demands to competing suppliers.<sup>109</sup> However, loyalty discounting, discussed below, may provide a means of avoiding that result.

### *B. Refusals to License Rivals*

Ordinarily, a firm carries no obligation to sell anything to its rivals, let alone at the same price it charges its other customers.<sup>110</sup>

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108. See *infra* note 115, and accompanying text.

109. For essentially the same reasons, tying to evade the FRAND price control probably will not be viable if *none* of the SEPs are embodied in the chips.

110. *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004) (“[A]s a general matter, the Sherman Act ‘does not restrict

But a FRAND pledge includes some language requiring the SEP holder to license on nondiscriminatory terms.<sup>111</sup> This may very well suggest that the SEP holder cannot refuse to license competing producers of the collateral input.<sup>112</sup> This will ultimately depend on the operative language of the FRAND pledge in question. For example, one recent article posits that FRAND commitments may treat input manufacturers differently from end-product manufacturers, at least in the telecommunications sector.<sup>113</sup> But, depending on the SSO's particular FRAND policy, the nondiscrimination requirement may compel vertically integrated SEP owners to license rival input makers. In what follows, this is assumed to be the case.

In this case, FRAND agreements seems to present a major obstacle to the SEP holder. How can it prevent rivals from getting reasonably priced licenses if its FRAND commitments are interpreted to compel licensing of rivals? A first step might be to offer the rivals only non-exhaustive licenses that permit them to make inputs, but which do not pass licensing rights through to the implementers who purchase them.<sup>114</sup> This may amount to little more than a promise not to sue rivals for infringement.<sup>115</sup> With this in place, the SEP holder may then attempt to make it prohibitively expensive for implementers to use rivals' chips. This

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the long recognized right of [a] trader or manufacturer engaged in an entirely private business, freely to exercise his own independent discretion as to parties with whom he will deal.” (quoting *United States v. Colgate & Co.*, 250 U.S. 300, 307 (1919))).

111. One recent article suggests that, depending on the language used, a FRAND pledge may not compel licensing at the component level, but rather only at the end-device level. Wong-Ervin & Padilla, *supra* note 5, at 2.

112. This interpretational question is discussed in Part V.A.2, *infra*.

113. Wong-Ervin and Padilla argue that FRAND may require licensing all end-product manufacturers without necessarily compelling licensing of all *component* makers (which would include rival input sellers). Wong-Ervin & Padilla, *supra* note 5, at 26 (“Whether the ‘ND’ in FRAND requires licensing at the component level is a fact-specific inquiry that depends upon the specific [SSO FRAND policy] at issue.”). The authors also assert that, at least in cellular telecommunications, SEP owners frequently decline to license component makers and instead assert their patents only against final product manufacturers. *Id.* at 4 (“[W]hile most SEP holders, at least in the mobile industry, license at the end-user device level, they do not assert their patents at the component level.”).

114. For a discussion of this practice, see Wong-Ervin & Padilla, *supra* note 5.

115. A patent owner can choose to assert its patent against the end-users of an infringing product rather than the infringing manufacturer. See, e.g., Gaia Bernstein, *The Rise of the End User in Patent Litigation*, 55 BOSTON. COL. L. REV. 1443 (2014).

might be accomplished through loyalty discounting, with implementers being forced to pay significantly larger licensing fees unless they buy inputs exclusively from the SEP holder. This may “dry up” most or all of the potential demand for rivals’ inputs, even if implementers might otherwise be inclined to buy from them.

Importantly, however, the viability of this strategy will generally require that the SEP holder initially be the monopolist provider of the collateral input, with competing alternatives emerging only later.<sup>116</sup> Otherwise the SEP holder will be unable to induce implementers to agree to its exclusivity demands without offering a below-FRAND royalty rate. And, of course, that would betray its purpose of evading the FRAND price control.

What if the FRAND commitments likely require the SEP holder to sell rivals *exhaustive* licenses on reasonable and nondiscriminatory terms? In this case, the SEP holder may take advantage of the way courts often remediate patent suits in practice: by looking at established licensing terms for the patent in suit. It may then attempt to use a rebate pricing system to create an artificially high “established royalty” by obscuring the true, net payments made by implementers. By skewing the “shadow of litigation,” the SEP holder can prevent input market rivals from getting affordable access to exhaustive licenses. This strategy, and the abovementioned loyalty discounting program, are discussed below.

### 1. Loyalty Discounting

Loyalty discounting refers to a pricing strategy in which a buyer gets a better price if she promises to purchase most or all of her demand for the relevant product from the seller in question. That is, the discount is not available unless the buyer promises not to buy a substantial number of units (or perhaps none at all) from the seller’s rivals. The practice is similar to exclusive dealing and may in fact be equivalent to cases where the discount is so substantial as to prevent any customers from turning it down.<sup>117</sup>

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116. See Part IV.C, *infra*.

117. Exclusive dealing involves a contract that promises one party from transacting with rivals of the other party, typically in exchange for a discount. See, e.g., Joseph Farrell, *Deconstructing Chicago on Exclusive Dealing*, 50 ANTITRUST BULL. 465 (2005); Herbert Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 COLUM. BUS. L. REV. 257 (2001). Loyalty discounting is equivalent to exclusive dealing when the undiscounted price is sufficiently high to deter buyers from taking any units from competing suppliers.

Like exclusive dealing, it is often benign or procompetitive but can be anticompetitive in some cases.<sup>118</sup>

In some cases, loyalty discounts are implemented in a way that effectively creates a bundling or tying arrangement, with one good (the tying good) being sold at a lower price if the buyer satisfies a loyalty requirement for the second good (the tied good).<sup>119</sup> If the undiscounted price is significantly higher than the discounted one, then most or all buyers will agree to the loyalty condition on the tied good. In such cases, the loyalty discounting program is only nominally distinct from exclusive dealing. Therefore, exclusive dealing is essentially a special case of loyalty discounting where the discount is significant. Consistent with this, the Clayton Antitrust Act's provisions on tying and exclusive dealing expressly apply to situations in which a "discount" or "rebate" is offered as a condition for exclusivity (*i.e.*, loyalty) on any good or service.<sup>120</sup> For such a practice to be illegal, the seller must possess market power, and as a general rule it is difficult for a plaintiff to prevail unless the practice is likely to elicit foreclosure or exclusion of rivals.<sup>121</sup>

An SEP holder could attempt to use loyalty discounting to facilitate its desired tying arrangement without expressly refusing to license rivals. This strategy might operate as follows: the SEP holder announces a default upfront royalty rate that is universally available—even to input market rivals. This royalty is quite high—significantly above the FRAND level. But it also offers

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118. See, e.g., Daniel A. Crane, *Bargaining Over Loyalty*, 92 TEX. L. REV. 253 (2013); Einer Elhauge, *How Loyalty Discounts Can Perversely Discourage Discounting*, 5 J. COMPETITION L. & ECON. 189 (2009); Richard A. Duncan & Brian S. McCormac, *Loyalty and Fidelity Discounts & Rebates in the U.S. & E.U.: Will Divergence Occur Over Cost-Based Standards of Liability?*, 9 SEDONA CONF. J. 133 (2008).

119. Here too there can be both procompetitive and anticompetitive potential effects. See, e.g., Patrick Greenlee, David Reitman & David S. Sibley, *An Antitrust Analysis of Bundled Loyalty Discounts*, 26 INT. J. OF INDUSTRIAL ORG. 1132, 1132 (noting that "[b]undled loyalty discounts have ambiguous welfare effects").

120. 15 U.S.C. § 14 (2012) (prohibiting application of a "discount . . . or rebate . . . on the condition . . . that the lessee or purchaser [of the discounted good] shall not use or deal in the goods . . . of a competitor of the lessor or seller," but only where the result of such practice "may be to substantially lessen competition or tend to create a monopoly"). Note however that this Clayton Act provision applies only to "goods"—not licenses. But the Act is cited only as an illustration; the point is that the antitrust laws regard certain conditional discounting arrangements (such as loyalty discounting) as being substantially similar (or even equivalent) to orthodox exclusive dealing.

121. See, e.g., Herbert Hovenkamp (2001), *supra* note 117, at 318-22.

implementers a discount that is conditioned on implementers' agreement to buy inputs exclusively from the SEP holder. This discount may take the form of loyalty-contingent rebates that offset the implementer's upfront royalty payments. The result of this conditional discount is that loyal implementers get a FRAND-level royalty. An obvious question is how the SEP holder could convince implementers to agree that the FRAND royalty rate will be conditioned on input loyalty. This is discussed in Part IV.C.

With this loyalty discounting arrangement in place, implementers know their net licensing fees will be much larger if they buy inputs from the SEP holder's rivals. This gives them a strong incentive to stick with the SEP holder's input exclusively; indeed, this is only nominally different from pure exclusive dealing. Then, even though rival input makers have been offered exhaustive licenses, they may not be able to make any sales—even if the upfront royalty is not prohibitively high.

## 2. Rebates on Large “Established Royalties”

Why might an SEP holder give rebate payments that offset its own royalty receipts? In principle, this effectively operates as a system of liquidated damages, with the rebate being contingent on the licensee's promise to do one thing or another. This could make it easier for the patentee to compel performance by the other party, which is ostensibly efficient, assuming there is nothing concerning about the performance being compelled.

But there is a separate potential benefit to using a rebate system which has nothing to do with enforcement of a licensee's promises: it establishes an apparently high price for a license. This is likely to influence how a court would remediate future litigation on the patents in question, even though the true royalty (that which nets out the rebate) may be significantly lower. That is, the SEP holder may attempt to skew the shadow of litigation by creating a pretextual, above-FRAND “established royalty” that courts might then use as the basis for damages in subsequent litigation.

This strategy takes advantage of the courts' reliance on comparable licenses as a basis for infringement damages. When a court is tasked with computing damages for patent infringement, it will often inquire if the patent has been licensed in the past and, if so, on what terms.<sup>122</sup> If the patent had been licensed before, the court will usually base damages on the royalty rate from the prior

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122. It may also inquire as to the rates at which some other similar patents have been licensed.

deal.<sup>123</sup> Although convenient, the standard creates a number of serious problems.<sup>124</sup> Among these problems are its propensity to skew prices and output in patent licensing markets.<sup>125</sup> This occurs because private parties know in advance that a royalty set in one agreement will color the expected relief the patentee would obtain in future litigation with third parties, and this creates a number of incentive problems.<sup>126</sup>

One embodiment of this problem is what has been referred to as “royalty gamesmanship.”<sup>127</sup> This involves strategic efforts to make the royalty rate appear higher than it really is, or taking advantage of some context-specific idiosyncrasies to establish a larger royalty than a representative licensee would ordinarily pay.<sup>128</sup> For example, a patentee might agree to forgive an infringer’s past sales if the infringer agrees to pay a higher royalty rate moving forward. Alternatively, it might offer to provide some other ancillary goods or services for free if the licensee agrees to pay a higher royalty rate.

A form of royalty gamesmanship might enable the SEP holder to prevent input rivals from getting exhaustive licenses, even if its

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123. Damages are usually fashioned in reliance on the so-called *Georgia-Pacific* factors—a set of 15 factors for computing infringement damages. *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *mod. and aff’d*, 446 F.2d 295 (2d Cir. 1971). The first factor is the existence of an established royalty for the patent in question. *Id.* (listing “the royalties received by [the plaintiff] for the licensing of the patent in suit, proving or tending to prove an established royalty” as the first of 15 factors for computing reasonable royalties). See also *Tektronix, Inc. v. United States*, 552 F.2d 343, 347 (Ct. Cl. 1977) (“Where an established royalty for the patented invention is shown to exist, that rate will usually be adopted as the best measure of reasonable and entire compensation.”); see Jonathan S. Masur, *The Use and Misuse of Patent Licenses*, 110 NW. U. L. REV., 115, 120 (2015) (“Courts have relied upon existing licenses in calculating damages for decades, and the practice has grown even more prominent in recent years.”).

124. *Id.* at 121 (“Licensing agreements are based upon expected damages awards at trial. But if damages awarded at trial are in turn based upon licensing agreements, it creates an unconquerable chicken-and-egg problem.”); Timothy S. Simcoe, *Private and Public Approaches to Patent Hold-Up in Industry Standard Setting*, 57 ANTITRUST BULL. 59, 73 (2012) (arguing that FRAND damages calculations should not rely on comparable licenses whose terms were set at the *ex ante* stage “where the essentiality and validity of the patent are unknown”).

125. Erik Hovenkamp & Jonathan Masur, *How Patent Damages Skew Licensing Markets*, REV. OF LIT. (forthcoming, 2017), available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2825236](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2825236).

126. *Id.* at 23.

127. *Id.* at 24-27.

128. *Id.*

FRAND commitments ostensibly prohibit this result. Consider the following strategy: as in the last section, the SEP holder offers a high upfront royalty rate that is significantly above the FRAND level. But the SEP holder also offers implementers large rebate payments such that, when the rebate is netted out, the resulting *effective* royalty is at the FRAND level. However, the SEP holder wants the upfront royalty alone to operate as the established royalty created by this deal. As such, in the parties' contract, the SEP holder may frame the rebate's purpose and function so as to make it appear ancillary or unrelated to the parties' licensing agreement. For example, it may relegate the rebate terms to a separate contract and represent it as reflecting some other aspects of the parties' dealings.

Using this strategy, the SEP holder may be able to influence the damages that are likely to be assigned in any subsequent litigation. This requires it to successfully persuade the court that the large upfront royalty is indeed an established royalty for remedial purposes. Of course, if the rebate terms are put before the court, this strategy could be difficult or impossible to accomplish, as an astute judge will appreciate the rebate's mitigating effect on the effective royalty rate actually paid by implementers. As such, it will be difficult to obscure the rebate and its purpose in FRAND litigation initiated by implementers who necessarily know about the rebate.

But the rebate system could nevertheless succeed in hindering rivals in the collateral input market, at least if they are not apprised of it. Suppose a rival input maker threatens to initiate FRAND litigation if the SEP holder does not offer an exhaustive license on reasonable terms. The SEP holder may then reference its royalty agreement with implementers, citing the high upfront royalty rate as what the rival must pay in exchange for an exhaustive license. Even if the input rival deems this royalty to be unreasonably high, it may have little confidence that litigation could improve matters, as the courts are likely to determine this to be an established royalty for remedial purposes. Whether that is in fact the case depends on if the SEP holder could reasonably withhold the rebate deal in response to a discovery request seeking its licensing agreements.

By creating an artificially high established royalty, the SEP holders may leave their rivals unable to secure an affordable license. If that royalty is sufficiently large, the resulting cost disadvantage may leave the rivals unable to make profitable sales

of exhaustively-licensed inputs.<sup>129</sup> And if the rebate is conditioned on input loyalty, rivals must offer implementers an especially good deal in order to persuade them to forego the loyalty rebate. The result may be significant foreclosure of rivals' input sales.

A second potential use of a rebate is to conceal a loyalty discounting arrangement under which implementers pay larger royalties unless they buy inputs exclusively from the SEP holder.<sup>130</sup> Such a discounting program is inherently discriminatory, as it imposes higher royalties on implementers who buy the input from rival suppliers. But if the rebates are represented as reflecting some unrelated dealings, then the SEP holder may proclaim that in fact it charges the same royalties to everyone.

### C. *Dynamic Competition and Entry Deterrence*

All else being equal, implementers want the option to buy the collateral input from alternative providers. Even if they end up not buying rival inputs, they still benefit from greater competition in the input market, since this results in systematically lower prices. How can the SEP holder persuade implementers to give up their option to buy the input from rival suppliers? The answer is likely a discounted royalty rate for SEP licenses. The SEP holder offers a lower royalty rate to those implementers who agree to exclusivity in input purchases.

The foregoing discussion considered a pricing arrangement in which the discounted price for licensing rights was not actually lower than the FRAND level. Rather, the arrangement assigns an above-FRAND price to implementers who do not agree to input exclusivity, while loyal implementers get the ordinary FRAND rate. But how could the SEP holder accomplish this? The FRAND commitment already stipulates that implementers are entitled to a reasonable royalty rate. Why would implementers agree to input exclusivity in order to secure a royalty rate to which they are already entitled?

Indeed, depending on market conditions at the adoption stage, this may be impossible. In particular, if viable competing versions of the collateral input are already available at the time of the standard's inception (as opposed to emerging only later), then it is unlikely that the SEP holder could accomplish the kind of loyalty discounting program discussed above because it would lack the requisite bargaining power. After all, it cannot threaten to choke

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129. See discussion *infra* Part V.B.2.

130. See discussion *infra* Part V.A.2.

off the supply of the collateral input in order to induce agreement to its preferred loyalty discounting arrangement. Implementers can just buy the input from someone else, and then sue if the SEP holder refuses to offer a FRAND royalty rate for the necessary patents. Under these circumstances, a loyalty discounting program would have to involve a below-FRAND discounted price, with the undiscounted royalty at the ordinary FRAND level. As a result, the case for FRAND-noncompliance is somewhat harder to make.<sup>131</sup>

To facilitate the more problematic case—where the undiscounted royalty is above-FRAND—the SEP holder must have some additional bargaining power at the time the licensing agreements are signed. There is a clear dynamic explanation for why this might occur: it may be that the SEP holder was initially the only firm capable of offering a viable version of the collateral input and that alternative options emerged only later.<sup>132</sup> To the extent that the collateral input reads on some of the SEPs—or at least relates closely to some of the SEP technologies—it is hardly surprising that the vertically-integrated SEP holder might have a head start.

But these nascent competitors will catch up before too long. The SEP holder thus has an interest in proactively restraining potential dealings between implementers and prospective rivals in the input market. Importantly, it now has substantial bargaining power with which it might accomplish this. Relying on its initial monopoly position in the input market, the SEP holder can threaten to withhold the input supply—leaving implementers with no alternative source—unless its conditional discounting terms are accepted.<sup>133</sup> There is no FRAND agreement compelling

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131. Note that in this hypothetical case, the loyalty discount is not well equipped to prevent rival input makers from getting licensing rights on reasonable terms. Here the undiscounted price is still at the FRAND level. Hence, to the extent that the FRAND pledge is interpreted to compel licensing rivals, this suggests that rivals can sue to obtain licenses on FRAND terms.

132. There is by now a robust economic literature on strategic efforts by monopolists to forestall entry. See, e.g., Steven C. Salop, *Strategic Entry Deterrence*, 69 AM. ECON. REV.: PAPERS AND PROC. 335 (1979).

133. This assumes that the parties have not already signed any contracts that would prevent the SEP holder from unilaterally disrupting the input supply on short notice. Apple alleges that Qualcomm refused to enter into such an agreement. Apple Complaint, *supra* note 20, at 32 (“While Apple generally negotiates firm supply commitments with its component vendors, Qualcomm refused to provide Apple such a commitment, instead arbitrarily capping its liability for failure to supply, and reserving for itself the ability to terminate its obligation to supply chipsets to Apple’s CMs.”).

nondiscriminatory input sales, after all. And, to ensure that the resulting agreement is stable, the SEP holder may further require implementers to agree not to sue for FRAND breach.<sup>134</sup> This is an important linchpin, for the SEP holder's ability to charge above-FRAND royalties to non-loyal licensees would be precarious if such licensees could immediately sue to have the rate reduced.

This strategy allows the SEP holder to prevent rivals from gaining a foothold in the input market. It may also be sustainable for much or all of the standard's life cycle as the threat of choking off the input supply may be sufficiently strong to induce implementers' agreement to long-term exclusivity contracts. By soaking up most or all of the input demand for several years, this strategy discourages potential input rivals from entering during the contract term.

There are some possible variations on this pricing arrangement that can achieve similar results. For example, if the SEP holder has induced implementers to promise not to initiate FRAND litigation, then it may prefer to divert some of the monopoly markup back to its SEP licenses (ostensibly leaving the royalty above-FRAND), since it is now much less vulnerable to FRAND litigation. Note that this results in a commensurately lower markup on the collateral input, and thus implementers may be largely indifferent to this tradeoff between markups. But there are at least two potential benefits this approach offers to the SEP holder. First, it leaves even the discounted royalty rate above FRAND level, thereby effecting an artificially high "established royalty," the benefits of which were addressed in the last section. Second, by keeping the input price at a more competitive level, the SEP holder may further diminish potential competitors' motivation to enter the input market, for it places downward pressure on the prices they could viably charge upon entry.

The foregoing discussion illustrates the importance of dynamic considerations to the viability of exclusionary practices by the SEP holder. If input market rivals are fully capable of selling viable (albeit unlicensed) versions of the input from the standard's outset, then it will be difficult or impossible for the SEP holder to persuade implementers to agree to a loyalty discounting arrangement in which non-loyal implementers must pay an above-

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134. Apple alleges that Qualcomm insisted on this kind of restraint on FRAND litigation. See Apple Complaint, *supra* note 20, at 55-56 ("Qualcomm conditioned royalty relief on a provision that restricted Apple from initiating or inducing certain legal actions [including] . . . claims that Qualcomm failed to offer a license to its SEPs on FRAND terms.").

FRAND royalty rate. Without initial monopoly power over the collateral input, the SEP holder could still implement a loyalty discounting strategy, but it would have to offer a below-FRAND royalty to loyal implementers, which is arguably not a FRAND breach.<sup>135</sup>

## V. LEGAL ANALYSIS

Having addressed the salient economic issues, presented here is the viability of legal claims attacking the practices in question. There are two distinct claims that could plausibly succeed. The first is the claim that the SEP holder has violated its FRAND commitment. The second is an antitrust claim of monopolization based on a theory of anticompetitive tying or exclusive dealing. Also explained is the importance of distinguishing between FRAND-violating conduct from the kinds of anticompetitive practices that trigger the antitrust laws.

### A. FRAND Breach

Implementers (or other parties with standing) may challenge the SEP holder's tying or exclusive dealing practices as violating the latter's FRAND commitment. This should be viewed as essentially a breach of contract claim—not as a claim arising under the patent or antitrust laws.<sup>136</sup> In what follows are the three most viable theories of FRAND-noncompliance, based on the tying and

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135. Note that, in this case, all prospective licensees (including input market rivals) will never be made to pay an above-FRAND royalty.

136. See *Microsoft Corp. v. Motorola, Inc.*, 854 F. Supp. 2d 993, 999 (W.D. Wash. 2012) (holding that the SEP holder's FRAND agreement created "binding contractual commitments"); *Nokia Corp. v. Qualcomm, Inc.*, No. 06-509, 2006 U.S. Dist. LEXIS 61383, at \*3 (D. Del. Aug. 29, 2006) (finding that the plaintiff's complaint for noncompliance of the FRAND term is "based on an alleged breach of contractual agreements surrounding Defendant's licensing of essential patents," and that it raises "no substantial question of patent law"); Cotter, *supra* note 1, at 315 ("From a normative perspective, one might argue that many of the issues surrounding FRAND-encumbered SEPs could be resolved by contract law alone, and that if so perhaps this private-law approach would be preferable—more efficient—than one that relies on the machinery of public law (whether patent or antitrust)."); Roger G. Brooks & Damien Garadin, *Interpreting and Enforcing the Voluntary FRAND Commitment*, 9 INT'L J. IT STANDARDS & STANDARDIZATION RES. 1, 6 (2011) ("A FRAND obligation is *solely* the result of a *voluntary* contract entered into by the patent owner on an identifiable date.") (emphasis original).

exclusive dealing practices considered in the last section, are discussed.

### 1. Unfair or Unreasonable Royalty Rates

The FRAND commitment is usually read as comprising two parts, a “fair and reasonable” prong and a “nondiscriminatory” prong. These do not have precise agreed-upon meanings, and specific contractual language varies among different iterations of the FRAND pledge. However, many scholars and jurists contend that the fair and reasonable part of the commitment should be interpreted as preventing the SEP holder from charging excessive royalties—the FRAND price control—by taking advantage of holdup, or by failing to account for *ex ante* competition.<sup>137</sup> This is consistent with Judge Robart’s decision in Microsoft’s FRAND action against Motorola.<sup>138</sup>

Based on this interpretation, it is quite natural to suggest that an SEP holder violates its FRAND commitment when it demands large royalties from implementers who do not agree to its exclusivity requirement (even if the discounted rate for exclusive implementers is indeed FRAND-compliant). The same is true when such demands are made of rival input sellers. As this illustrates, when the SEP holder engages in loyalty discounting with an above-FRAND royalty for non-exclusive input buyers, there are two potential violations. The first is simply that licensees not complying with the exclusivity condition cannot be made to pay an above-FRAND royalty. The second is that such conditioning is

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137. See, e.g., Farrell et al., *supra* note 1, at 637 (arguing that “FRAND rules should be interpreted as a mechanism by which SSO participants address the problem of patent hold-up when *ex ante* negotiation was absent or inconclusive,” and that it should produce royalties “that would have been voluntarily been negotiated before users became committed to using the patented technology”); Swanson & Baumol, *supra* note 1, at 15 (“[W]e would deem a royalty to be ‘reasonable’ . . . when the royalty is the outcome of an auction-like process appropriately designed to take lawful advantage of the state of competition existing *ex ante*”); Simcoe, *supra* note 124, at 71 (emphasizing that a FRAND royalty should replicate the outcome of a hypothetical *ex ante* bargain, and that this would “compensate licensors for the benefits created by selecting their technology as the standard, but not for the switching and coordination costs caused by implementers’ sunk investments”).

138. Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 U.S. Dist. LEXIS 60233, at \*37-42 (W.D. Wash. Apr. 25, 2013) (finding that FRAND is intended to replicate a hypothetical *ex ante* negotiation, and to prevent the SEP holder from exploiting holdup to extract excessive royalties).

inherently discriminatory, and it is therefore challengeable in its own right.

An important related point is that, in administering the “fair and reasonable” prong, the court should be very cautious in its reliance on comparable licenses.<sup>139</sup> In particular, it must take care to include the influence of rebates on the effective royalty rates paid by implementers. Ignoring such rebates will lead the court to overstate the license fees actually paid by existing licensees. Furthermore, if the SEP holder initially maintained monopoly power over the collateral input, then the court should be sensitive to the possibility that such power was used to demand an excessive royalty rate, perhaps in conjunction with a contractual restraint on FRAND litigation by the implementer.

## 2. Discrimination through Loyalty Discounting

The practices discussed in this Article are vulnerable to two potential theories of FRAND-violating discrimination. The first involves discrimination among implementers based on whether they agree to take inputs exclusively from the SEP holder. The second involves discrimination between implementers and rival input sellers who may wish to obtain exhaustive licenses that pass through to implementers. The present section addresses the former possibility.

As noted earlier, different iterations of the FRAND commitment rely on different language and thus may give rise to different interpretations of what “nondiscriminatory” means. This variability may actually understate the interpretational challenges, since many SSOs make little effort to clarify the meaning of the nondiscrimination prong.<sup>140</sup> Many scholars suggest that the nondiscrimination prong should not be interpreted as categorically prohibiting price discrimination<sup>141</sup> among implementers, since price discrimination often serves procompetitive ends and some measure of it may therefore be appropriate or even desirable.<sup>142</sup>

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139. See *infra* note 124 and accompanying text.

140. See, e.g., Farrell et al., *supra* note 1, at 638 (“SSOs seldom clarify what licensing structures would be non-discriminatory.”).

141. Price discrimination refers to any pricing strategy in which a firm charges different prices to different customers for the same good or service, and where such differences are not explained by variability in the costs of serving different customers.

142. See, e.g., Farrell et al., *supra* note 1, at 638-39 (“Price discrimination can, in general, be a legitimate way for an inventor to extract value from its patent, and . . . price discrimination is known, in general, to have ambiguous

For example, it could expand the total “output” of licenses by offering a lower royalty to implementers who derive materially less value from the patented technology (and who might be unwilling to pay the higher rate charged to higher-valuation implementers).

Thus, a reasonable interpretation might be to suggest that a price discrimination arrangement is FRAND-compliant if it serves a likely procompetitive purpose—for example, because it is likely to expand the total volume of licenses granted.<sup>143</sup> Under this interpretation, implementers have a strong argument that a loyalty discounting program violates FRAND’s nondiscrimination requirement. Such an arrangement is inherently discriminatory, for the royalty paid by an implementer is greater if it does not agree to buy the collateral input exclusively from the SEP holder. The issue should turn on whether there are any procompetitive justifications for the loyalty discounting system.<sup>144</sup> If there are not, then a court could reasonably conclude that this manner of price discrimination is impermissible under the FRAND agreement.

There are also two ancillary issues to address here. The first concerns the use of a rebate system to facilitate loyalty discounting—with rebates being conditioned on exclusivity in input purchases. Such a rebate may be designed to obscure the fact that the SEP holder’s pricing practices inherently discriminate among implementers, depending on whether they buy inputs from rival suppliers. In particular, the rebate may be stylized as reflecting some other aspect of the parties’ dealings, obscuring the fact that it is just a conditional discount. To that end, it is important that courts recognize such rebates for what they are and identify the discriminatory nature of the SEP holder’s pricing practices.

The second issue is whether loyalty discounting is a FRAND violation when the *undiscounted* price is at the FRAND level, so that licensees accepting the exclusivity condition get a below-FRAND royalty rate. In this case, no implementer is made to pay an excessive royalty—ostensibly ensuring compliance with the “fair and reasonable” prong of the FRAND commitment. And yet, this practice does indeed involve price discrimination. Here, there are

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welfare effects.”); Carlton & Shampine, *supra* note 13 (advocating for a FRAND interpretation under which some price discrimination is allowed, but with limitations that prevent it from being used to exploit holdup).

143. See, e.g., Lichtman, *supra* note 3, at 1031 (“Does ‘nondiscriminatory’ mean that prices must be the same across the board, or does it mean that some degree of price differentiation is fine but differences keyed to certain distasteful characteristics . . . are verboten? I suspect the latter . . .”).

144. For example, the SEP holder might argue that the arrangement serves to avoid a “double markup” problem.

countervailing considerations that must be compared. On one hand, loyalty discounting lowers the marginal costs of exclusive implementers by enabling them to pay a below-FRAND royalty rate. On the other hand, this practice can have anticompetitive effects. Consequently, the court will inevitably confront a balancing problem; it must attempt to assess the potential negative consequences of de facto exclusive dealing and compare them to the efficiencies created by offering implementers a lower royalty rate.

### 3. Discrimination in the Licensing of Rivals

The second potential claim of impermissible discrimination involves pricing arrangements in which rival input sellers receive less favorable licensing terms than implementers or are denied licenses altogether. To that end, one common suggestion for interpreting the nondiscrimination prong centers on vertically-integrated SEP holders and recommends that FRAND commitments should prohibit such licensors from discriminating against their rivals in downstream markets (such as the collateral input market, or potentially the final product market).<sup>145</sup> This would prevent an integrated SEP holder from attempting to raise its rivals' costs—a well-known foreclosure strategy<sup>146</sup>—by charging them higher royalties than are imposed on non-competing licensees. This is a sensible way to interpret the nondiscrimination provision as it relates to licensure of rivals—at least when there is no express language suggesting that SEP holders reserve the right to refuse rivals (which is assumed to be the case in what follows).<sup>147</sup>

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145. See, e.g., Swanson & Baumol, *supra* note 1, at 27 (arguing that preventing integrated SEP licensors from putting rivals at a disadvantage is “the principal justification for [FRAND’s nondiscrimination provision]”); Farrell et al., *supra* note 1, at 640 (“A non-discrimination requirement might be interpreted as preventing a vertically integrated patent holder from favoring its own downstream operations over its downstream rivals.”).

146. Steven C. Salop & David T. Scheffman, *Raising Rivals’ Costs*, 73 AM. ECON. REV. 267 (1983).

147. If the language in a given FRAND commitment expressly reserves SEP holders’ right to deny licenses to competitors, then there is no basis for compelling such licensure, since the Patent Act does not create a duty to license rivals. That is not to say that the SEP holder would necessarily be entitled to an injunction, however. The latter determination is made according to the *eBay* factors for injunctive relief—and, if not met, the patentee is entitled only to ongoing royalties for prospective infringing sales. See *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006) (promulgating four factors for

This discrimination could take different forms. It could be a non-exhaustive license or covenant not to sue—not even an outright refusal to provide any limitations on potential infringement liability. This is equivalent to offering rivals a prohibitively high price for licensing privileges. Alternatively, the SEP holder might provide a non-exhaustive license that does not pass through to implementers, while refusing to offer an exhaustive license. This ensures that rivals can still make the input, but their customers will have to obtain licensing rights separately from the SEP holder. A third possibility is that the SEP holder might offer exhaustive licenses to input rivals—eliminating the need for implementers to pay royalties to the SEP owner—but at a larger royalty rate than is afforded to implementers.

If the nondiscrimination prong is interpreted to prevent the integrated SEP holder from deliberately offering less favorable terms to rivals, then these alternative possibilities are arguably FRAND violations. They all expressly disadvantage the SEP holder's rivals, after all; the differences are just a matter of degree. However, as in the last section, there is a caveat relating to a potential rebate system. In particular, in the case where the undiscounted royalty rate is above FRAND level, the SEP holder may rely on a rebate system to represent this excessive rate as the “established royalty” paid by everyone, including implementers. It may then offer this potentially prohibitive price to input rivals while simultaneously claiming that no one else pays a lesser amount. As before, this strategy involves stylizing the nature of the rebates so as to disguise their role in decreasing the effective royalty rate paid by implementers. Thus, here too it is imperative that the courts recognize the royalty-mitigating role of the rebates when discerning whether collateral market rivals are indeed being offered less favorable licensing terms.

### *B. Antitrust Claims*

An implementer (or other plaintiff with standing) may bring an antitrust claim attacking the SEP holder's tying or exclusive dealing practices. This would presumably be a monopolization claim under Section 2 of the Sherman Act.<sup>148</sup> Ordinarily, the Clayton Act's provision on exclusive dealing would provide additional

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determining whether the owner of an infringed patent is entitled to injunctive relief).

148. 15 U.S.C. § 2 (2012) (prohibiting monopolization and attempts to monopolize “any part of the trade or commerce among the several States”).

statutory support, but it applies only to “goods”—not contractual entitlements like patent licenses.<sup>149</sup> But this limitation is unlikely to be a hindrance, provided that the SEP holder has market power; in fact, there are certain benefits to the Section 2 approach.<sup>150</sup>

Plaintiffs face certain evidentiary challenges in virtually all Section 2 monopolization claims. An important example is the obligation to prove that the defendant has market power in the relevant market,<sup>151</sup> which cannot be inferred merely from the fact that the defendant sells a patented product.<sup>152</sup> This is preceded by the often difficult task of defining the “relevant market.” Further, a plaintiff’s burden depends on whether the plaintiff is private or a public enforcement agency, like the FTC.<sup>153</sup> And, as with all claims evaluated under the rule of reason, it is necessary to consider whether the practice is justified by some procompetitive efficiencies.<sup>154</sup> These issues are ubiquitous and have been deeply explored in the literature and case law. This Article will focus

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149. See *supra* note 120.

150. See HERBERT HOVENKAMP, *FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE* 587-88 (5th ed. 2016) (noting that “while § 2 assesses a higher market power requirement it is less categorical about doctrine, asking only whether a practice is unreasonably exclusionary” and that it thereby avoids “fundamentally not very important questions about the treatment of practices that are technically not exclusive dealing, such as loyalty discounts”). The Section 2 approach also has the benefit of not formally requiring that the disputed conduct be an “agreement” (as distinguished from unilateral conduct), which is convenient because “the agreement requirement typically adds very little to the competitive analysis of exclusive dealing, which is an exclusionary practice *imposed* on dealers.” *Id.* (emphasis added).

151. See, e.g., *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966) (“The offense of [monopolization] under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.”).

152. *Illinois Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 31 (2006) (“The mere fact that a tying product is patented does not support . . . a presumption [of market power].”).

153. A public plaintiff need not prove the defendant’s conduct caused harm; it need only establish conduct in violation of the Sherman Act. By contrast, a private plaintiff must prove that the challenged conduct caused it to suffer an injury, and such injury must be quantified in order to obtain damages. See, e.g., Erik Hovenkamp, *Challenge Restraints and the Scope of the Patent*, 1 *ANTITRUST CHRON.* 46, 54 (2016) (discussing differences in private versus public enforcement of the Sherman Act).

154. For example, exclusive dealing can be efficient by allowing the producer to commit to a larger output scale (without fear that this investment will be wasted), and in return it can offer the exclusive buyer a discounted price.

instead on the more specific hurdles that plaintiffs will face in litigating the particular conduct explored earlier.

To that end, this section addresses three challenges that prospective antitrust plaintiffs will have to overcome. First, a plaintiff probably cannot rely on FRAND breach as a theory of anticompetitive conduct, because a breach of contract generally does not create an antitrust violation. Second, as a result of the first point, the plaintiff must show that the defendant's conduct violates the antitrust laws on its own terms, and *not only because* it happens to violate a FRAND pledge. This will make it virtually impossible to argue that the SEP holder's refusal to deal with rivals violates the antitrust laws, for such unilateral refusals are almost never violations.<sup>155</sup> Instead, the plaintiff will likely have to establish a causal relationship between the exclusion of rivals and the SEP holder's tying or exclusive dealing practices. Finally, the plaintiff's monopolization theory may rest on exclusion of *potential* competitors, which can be difficult, since it is inherently more speculative than exclusion of an established competitor.

#### 1. FRAND Breach Does Not Create an Antitrust Violation

A FRAND commitment obligates the SEP holder to give all prospective implementers licenses on fair, reasonable, and nondiscriminatory terms. There is nothing in the Patent Act that compels a patent holder to do these things; if there were, FRAND would be superfluous. Rather, the FRAND price control is purely contractual. Further, as discussed earlier, an SEP holder's FRAND commitment may be interpreted to create an obligation to deal with its rivals in the collateral input market. This too is a contractual obligation that does not exist by default.<sup>156</sup>

As a general principle, a breach of contract is not an antitrust violation; it is simply a breach of contract.<sup>157</sup> That is not to say that

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155. *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004).

156. 35 U.S.C. § 271(d) (2012) (“No patent owner . . . shall be . . . deemed guilty of misuse or illegal extension of the patent right by reason of his having . . . refused to license . . . the patent.”).

157. *See, e.g., Hon Hai Precision Indus. Co. v. Molex, Inc.*, No. 08 C 5582, 2009 U.S. Dist. LEXIS 9165, at \*7 (N.D. Ill. Feb. 9, 2009) (noting that “[w]hile [defendant’s] conduct may have been a breach of an agreement . . . it does not constitute predatory or anticompetitive conduct”); Wong-Ervin & Padilla, *supra* note 5, at 4-5 (noting that an SEP holder’s breach of a FRAND commitment “amounts to no more than pure ex-post contractual opportunism” and that U.S. antitrust law “does not condemn exploitative practices but only exclusionary or predatory conduct that harms competition and consumers”); Wong-Ervin et al.,

a breach may not *coincide* with an antitrust violation; but the point is that it does not *create* one. Rather, to find an antitrust violation, the conduct effecting the breach must offend the antitrust laws on their own terms. As a result, the plaintiff will have to show that the SEP holder's conduct unreasonably injures competition and not simply that it causes an economic harm by virtue of breaking a FRAND commitment.<sup>158</sup> Of course, the opposite is also true: a court could in principle find an antitrust violation even if the defendant's conduct is held to comply with its FRAND commitments.

This does not mean the FRAND commitment is irrelevant to the antitrust analysis. As noted earlier, the presence of such a commitment can create a novel impetus for tying and exclusive dealing. This could aid the antitrust analysis by countervailing some traditional arguments—namely the single monopoly profit theory—suggesting that tying cannot be used to extract additional profits and that the tie must instead be motivated by some ancillary efficiencies.<sup>159</sup> This is important since the court will want to know if input market rivals made few sales because (1) the SEP holder is genuinely a more capable or efficient provider; or (2) the foreclosure of rivals' sales was a necessary element of the SEP holder's pricing strategy.

## 2. Unilateral Refusals to Deal Versus Exclusionary Practices

Antitrust law distinguishes between (1) actions that exclude rivals who are capable of profitably operating in the market; and

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*supra* note 100, at 7 (“the evasion of a pricing constraint alone does not constitute an unlawful acquisition or exercise of monopoly power”).

158. Judge Richard Posner articulated this distinction in *Roland Machinery*, writing that “[t]he welfare of a particular competitor who may be hurt as the result of some trade practice is the concern not of the federal antitrust laws,” and that “[t]he exclusion of competitors is cause for antitrust concern only if it impairs the health of the competitive process itself.” *Roland Machinery Co. v. Dresser Industries*, 749 F.2d 380, 394 (7th Cir. 1984).

159. The courts have noted that findings relating to a firm's intent or motivation with respect to the disputed practice can be helpful in interpreting or understanding important facts relevant to the antitrust claim, although such findings cannot themselves support a determination that competition has been restrained. *See, e.g., Graphic Prods. Distribs., Inc. v. ITEK Corp.*, 717 F.2d 1560, 1573 (11th Cir. 1983) (“Evidence of intent is highly probative ‘not because a good intention will save an otherwise objectionable regulation or the reverse; but because knowledge of intent may help the court to interpret facts and to predict consequences.’” (quoting *Bd. of Trade v. United States*, 246 U.S. 231, 238 (1918))).

(2) unilateral refusals to sell rivals something they need in order to profitably operate in the market. The latter practice—known as a unilateral refusal to deal—is virtually never found to violate the antitrust laws, even though such refusals may prevent prospective competitors from establishing a profitable enterprise.<sup>160</sup>

The very narrow exception to this rule is quite exacting, and, under typical circumstances, it would be very difficult to argue that it is triggered by a patent holder's refusal to license rivals.<sup>161</sup> In fact, some circuit courts have held that a refusal to license a patent can never be an antitrust violation, because such refusals are authorized by the patent laws.<sup>162</sup> This seems to be a sensible reading of the Patent Act's provisions on misuse.<sup>163</sup> Moreover, the

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160. See *Trinko*, 540 U.S. at 408 (“[A]s a general matter, the Sherman Act ‘does not restrict the long recognized right of [a] trader or manufacturer engaged in an entirely private business, freely to exercise his own independent discretion as to parties with whom he will deal.’” (quoting *United States v. Colgate & Co.*, 250 U.S. 300, 307 (1919))); *E. States Retail Lumber Dealers’ Ass’n v. United States*, 234 U.S. 600, 614 (1914) (“A retail dealer has the unquestioned right to stop dealing with a wholesaler for reasons sufficient to himself . . .”).

161. The exception to this rule is that a unilateral refusal may violate the antitrust laws if there is a clear showing that the refused dealings would have been profitable for the defendant in the short run (*i.e.*, taking the competitor's market position as given). This might require a showing that such dealings had already been undertaken voluntarily, suggesting the refusal was motivated by future exclusion of the plaintiff-rival. *Trinko*, 540 U.S. at 409 (“The unilateral termination of a voluntary (*and thus presumably profitable*) course of dealing suggested a willingness to forsake short-term profits to achieve an anticompetitive end.” (emphasis original) (citing *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 608 (1985))). The very premise of the patent system is that an inventor can generally make more money if prospective competitors are excluded. This will make it hard to argue that licensing rivals would be profitable for the patent holder. A potential qualification is that, if the SEP holder had previously licensed rival input makers voluntarily, then in principle this could support the contention that its subsequent refusal to license them is motivated by the desire to exclude and not the short run unprofitability of licensing.

162. *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195, 1204 (2d Cir. 1981) (“Where a patent holder . . . exercises his ‘right to exclude others . . .,’ by refusing unilaterally to license his patent . . . such conduct is expressly permitted by the patent laws.”). However, at least one article argues that there is no *prima facie* reason why refusals to license should be immunized from antitrust while other unilateral refusals retain some limited viability. A. Douglas Melamed & Ali M. Stoepplwerth, *The CSU Case: Facts, Formalism and the Intersection of Antitrust and Intellectual Property Law*, 10 GEO. MASON L. REV. 407 (2002).

163. 35 U.S.C. § 271(d) (2012) (“[N]o patent owner . . . shall be . . . deemed guilty of misuse or illegal extension of the patent right by reason of his having . . . refused to license . . . the patent.”).

antitrust agencies have stated that they do not view unilateral refusals to license as a meaningful antitrust concern.<sup>164</sup>

Of course, the FRAND commitment may create a contractual obligation to license rivals. But, as discussed in the last section, a breach of this contract does not create an antitrust violation. To find a violation based on the SEP holder's refusal to license rivals, the antitrust plaintiff must show that the refusal was anticompetitive on its own terms. But this approach is very unlikely to succeed, since unilateral refusals to license are virtually always regarded as lawful.<sup>165</sup> The result is that an SEP holder's refusal to license rivals is unlikely to support a viable antitrust claim.<sup>166</sup>

The more plausible option is a claim of anticompetitive tying or exclusive dealing, with loyalty discounting being a special case of the latter. Such a claim requires the plaintiff to show that rival input sellers suffered anticompetitive foreclosure not because they were denied licenses, but rather because the SEP holder's tying or exclusivity requirements discouraged implementers from buying competing versions of the input. As such, an exclusive dealing claim assumes that input rivals were capable of supplying viable versions of the input (or that they would be in the foreseeable future), but that the SEP holder's exclusivity requirements artificially extinguished demand for these offerings. In this way, the exclusive dealing claim does not hinge on the SEP holder's refusal to license rival input makers, but rather targets the exclusivity requirements imposed by the SEP holder on implementer-licensees.

Consider the case where rival input sellers get non-exhaustive licenses, while the SEP holder engages in loyalty discounting whose undiscounted price is above-FRAND. Under what conditions would this loyalty discounting arrangement prevent input rivals from being able to make profitable sales? For simplicity, suppose the input rival is equally efficient, meaning it and the SEP holder have identical (constant) marginal production costs and their inputs are of equal quality. Then, for loyalty

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164. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION 30 (2007), <https://www.ftc.gov/sites/default/files/documents/reports/antitrust-enforcement-and-intellectual-property-rights-promoting-innovation-and-competition-report.s.department-justice-and-federal-trade-commission/p040101promotinginnovationandcompetitionrpt0704.pdf> (“[U]nilateral refusals to license will not play a meaningful part in the interface between patent rights and antitrust protections.”).

165. *SCM Corp.*, 645 F.2d at 1204.

166. *Accord* Wong-Ervin & Padilla, *supra* note 5, at 10.

discounting to prevent input rivals from making profitable sales, the all-in price (royalty plus input price) charged by the SEP holder must be strictly lower than the sum of (1) the input rival's marginal production cost and (2) the loyalty discount an implementer receives for buying inputs exclusively from the SEP holder.<sup>167</sup> Under these simple conditions, the input rival cannot make positive sales without pricing below marginal cost.

This hypothetical example includes various simplifying assumptions that may not occur in practice. Deviations from these assumptions could cut in favor of either the SEP holder or its input market rivals. For example, it may be that the input rival is a less efficient producer or that it sells an inferior input. In this case, courts cannot necessarily attribute its inability to make profitable sales to exclusionary behavior by the SEP holder. And in general it is inappropriate to rely on antitrust intervention to protect less efficient firms from the ordinary forces of competition.

On the other hand, it may be that input production is subject to economies of scale—perhaps because there are large fixed costs associated with such production—and this could prevent input market rivals from turning a profit even if they can make sales at a price that exceeds marginal cost.<sup>168</sup> Similarly, the input rival's marginal costs may be a diminishing function of output, in which case loyalty discounting may leave it with prohibitively high marginal costs (*i.e.*, in excess of any price implementers would pay) by depriving the rival of adequate demand. Finally, all of these potentially detrimental effects must be weighed against any potential efficiencies created by the SEP holder's exclusivity requirement. The takeaway from these points is that the court must ultimately engage in a careful analysis of market structure in order to reasonably appraise the merit of a plaintiff's monopolization claim.

### 3. Exclusion of Potential Versus Established Competitors

Loyalty discounting could in principle create an antitrust concern even if the underlying royalty rates (discounted and undiscounted) do not exceed the FRAND level. This Article has focused on the case where loyalty discounting is used to circumvent FRAND's role as a price control by diverting much of

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167. *Accord id.* at 24.

168. *Id.*

the monopoly markup to the collateral input.<sup>169</sup> As an earlier section explained, successful diversion of the monopoly markup is unlikely unless the SEP holder was initially a monopoly provider of the input, with competing outlets becoming a viable option only later. In this case, the excluded rivals may actually be prospective entrants who do not yet have any market share. This poses a challenge to the antitrust plaintiff, since it is generally more difficult and speculative to evaluate claims of competitive harm resulting from restraints on market entry, as opposed to the exclusion of established rivals.

In a typical exclusive dealing case, it is not enough that the defendant has a large market share. The courts look to the share of total output that is foreclosed to competitors due to the defendant's exclusive dealing.<sup>170</sup> So, if the defendant has an outright market share of 50%, and if only half of those sales arose under an exclusive dealing arrangement, then the share of the market that is foreclosed by the defendant's exclusive dealing is 25%. Contemporary courts do not usually condemn exclusive dealing when they are satisfied that the foreclosure share is less than 30% or 40%.<sup>171</sup> However, this measure is just one factor the courts will consider, and the failure to prove a large foreclosure share (or to reliably estimate any share at all) is not necessarily a death knell for plaintiffs. As the Eleventh Circuit remarked in *McWane*:

[F]oreclosure is usually no longer sufficient by itself; rather, it serves . . . as a proxy for anticompetitive harm. Thus, foreclosure is one of several factors we now examine . . . . We will also look for direct evidence that the challenged conduct has affected price or output, along with other indirect evidence, such as . . . the duration of the exclusive deals, and the existence of alternative channels for

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169. Recall, however, that there are variations on this strategy in which the markup is left principally on the licenses (resulting in an above-FRAND royalty), but implementers are induced to agree not to initiate FRAND litigation. See *infra* Part V.A.2 and accompanying text.

170. See HOVENKAMP, *supra* note 150, § 10.9(e).

171. *Id.*; see also U.S. DEP'T OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT: CHAPTER 8 EXCLUSIVE DEALING 141 (2008), <https://www.justice.gov/sites/default/files/atr/legacy/2009/05/11/236681.pdf> (stating that, in the view of the Justice Department, exclusive dealing that creates a foreclosure share of less than 30% "should not be illegal," and that those foreclosing more than 30% "should be neither automatically nor presumptively illegal").

distribution . . . . The ultimate question remains whether the defendant's conduct harmed competition.<sup>172</sup>

Other courts have reached substantially the same conclusions.<sup>173</sup> It is not lost on the courts that, in some cases, it may be quite difficult to estimate the foreclosure rate. It may not be possible to discern (with precision) how many sales competitors would have made but for the exclusive dealing arrangement. All else being equal, this uncertainty will tend to make the analysis more speculative, which is generally not good for plaintiffs' prospects. But the courts have also emphasized that it would be unreasonable to make the calculation of foreclosure shares an absolute necessity, particularly in cases where there is other probative evidence that the defendant's conduct is likely to injure competition.<sup>174</sup>

Naturally, it is difficult or impossible to compute foreclosure shares when the allegedly excluded competitors are potential competitors rather than established rivals. After all, who is to say how many sales they would have made in lieu of the exclusive dealing arrangement? How do we know they would have materially threatened the defendant's market position at all? The courts occasionally confront these questions in cases alleging unlawful exclusion of nascent competition. Although they emphasize that such cases present greater uncertainty (and, by implication, that the courts should be more cautious), they have made it clear that strategic efforts to forestall entry by nascent competitors can indeed support a monopolization claim. As the *Microsoft* court stated:

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172. *McWane, Inc. v. F.T.C.*, 783 F.3d 814, 835 (11th Cir. 2015), *cert. denied*, 136 S. Ct. 1452 (2016).

173. *See, e.g., Chuck's Feed & Seed Co. v. Ralston Purina Co.*, 810 F.2d 1289, 1294 (4th Cir. 1987) ("In the context of exclusive dealing arrangements, the application of the 'rule of reason' analysis would seem to mean that a court should not look only at the numerical percentage of market foreclosure in order to decide whether or not a particular arrangement is illegal. Rather, after determining that market foreclosure is substantial, the court should consider whether an otherwise unacceptable level of market foreclosure is justified by procompetitive efficiencies.").

174. *United States v. Microsoft Corp.*, 253 F.3d 34, 79 (D.C. Cir. 2001) (noting that courts may infer an injury to competition from conduct which appears reasonably capable of maintaining monopoly power, and moreover that "[t]o require that § 2 liability turn on a plaintiff's ability or inability to reconstruct the hypothetical marketplace absent a defendant's anticompetitive conduct would only encourage monopolists to take more and earlier anticompetitive action").

Nothing in Section 2 of the Sherman Act limits its prohibition to actions taken against threats that are already well-developed enough to serve as present substitutes . . . . We may infer causation [of an injury to competition] when exclusionary conduct is aimed at producers of nascent competitive technologies as well as when it is aimed at producers of established substitutes. Admittedly, in the former case there is added uncertainty, inasmuch as nascent threats are merely *potential* substitutes.<sup>175</sup>

As to what showing is required for a plaintiff to prevail on such a claim, the case law tends to be nonspecific, but it always boils down to proving that the defendant's conduct is likely to perpetuate its monopoly by undermining the competitive process.<sup>176</sup> A few opinions have offered more fleshed-out standards. For example, Judge Posner has suggested that the plaintiff must show that the defendant's conduct is likely to keep at least one significant competitor from operating in the market.<sup>177</sup> This is similar in spirit to what the *Microsoft* court proposed. It posited that a plaintiff must show that both (1) the defendant could plausibly perpetuate its monopoly by excluding potential competitors and (2) the potential competitors identified by the plaintiff were legitimately nascent threats to the defendant's monopoly at the time the challenged conduct took place.<sup>178</sup>

This test has promise, as it highlights important considerations that must be addressed. But the *Microsoft* court's treatment of the first factor is not ideal. It concluded that this factor is inherently satisfied as a general matter.<sup>179</sup> Instead, the first factor should be interpreted as a case-specific question of market structure—namely,

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175. *Id.*

176. See, e.g., *ZF Meritor, LLC v. Eaton Corp.*, 696 F.3d 254, 268 (3d Cir. 2012) (“Under the rule of reason, an exclusive dealing arrangement will be unlawful only if its ‘probable effect’ is to substantially lessen competition in the relevant market.” (citing *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 327–29 (1961))); *United States v. Dentsply Intern., Inc.*, 399 F.3d 181, 187 (3d Cir. 2005) (“Unlawful maintenance of a monopoly is demonstrated by proof that a defendant has engaged in anti-competitive conduct that reasonably appears to be a significant contribution to maintaining monopoly power.”).

177. *Roland Mach. Co. v. Dresser Indus., Inc.*, 749 F.2d 380, 394 (7th Cir. 1984) (asserting that the plaintiff “must prove that it is likely to keep at least one significant competitor of the defendant from doing business in a relevant market” because “if there is no exclusion of a significant competitor, the agreement cannot possibly harm competition”).

178. *Microsoft*, 253 F.3d at 79.

179. *Id.*

whether the defendant could have reasonably anticipated a sustained absence of competition after having successfully excluded the potential entrants in question. This is somewhat similar to the recoupment requirement<sup>180</sup> applied in predatory pricing claims, one aspect of which is whether (and for how long) the exclusion would enable the defendant to capture monopoly rents after such exclusion occurs.<sup>181</sup> Interpreted properly, this first factor would be principally concerned with the magnitude of any salient entry barriers (not including the exclusive dealing arrangement) that exist in the relevant market.

If the first factor is not satisfied—if the court finds it unlikely that the alleged exclusion would produce a sustained absence of competition—then there is reason to believe the defendant’s conduct is not part of an exclusion strategy, and that it is unlikely to effect a sustainable injury to competition. If the first factor is satisfied, this adds some credibility to the plaintiff’s claim, although this finding alone should probably not be dispositive. Because foreclosure shares generally cannot be calculated in these cases, the court is necessarily more reliant on other forms of evidence, and this structural inquiry can shed light on the plausibility of the plaintiff’s monopolization claim.

The second *Microsoft* factor is a firm-specific inquiry into the nascent competitors who have allegedly been excluded. This highlights the important distinction between known potential competitors and “potential competition” in the abstract. In principle, one could claim that certain conduct strategically forestalls entry as a general matter, without naming any particular firms that have been excluded. It would be very difficult for this to support a viable antitrust claim, however. If the defendant’s

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180. The recoupment requirement requires a showing that, if the defendant succeeds in excluding its rival through predatory pricing (setting its price below cost so that a weaker rival cannot profitably compete), it will be able to charge supra-competitive prices for a sufficiently long period to offset the money lost in the course of its predation. See, e.g., C. Scott Hemphill, *The Role of Recoupment in Predatory Pricing Analyses*, 53 STAN. L. REV. 1581 (2001); Christopher R. Leslie, *Predatory Pricing and Recoupment*, 113 COLUM. L. REV. 1695 (2013); Louis Kaplow, *Recoupment and Predatory Pricing Analysis* (Apr. 27, 2017) (unpublished manuscript).

181. This Article does not propose literally applying the recoupment test in its established form, since the analysis should not presume that the defendant’s conduct caused it to incur a loss in the short run. My proposal is purely forward-looking, asking only whether the market structure is such that prospective entrants are likely to emerge at a somewhat slow rate over time, so that exclusion of one or two could indeed effect a material continuation of monopoly.

conduct has indeed caused the exclusion of some nascent competitors, the plaintiff should at least be able to identify some specific firm or individual that had a strong (and realistic) interest in entering the market. Of course, concerns about this showing arise only in cases where the plaintiff does not represent itself as an excluded potential competitor.

What if a nascent competitor can enter the market successfully notwithstanding the challenged exclusive dealing arrangement? In such cases, the courts will not necessarily conclude that the disputed practice was not anticompetitive. For example, in *McWane*, the defendant's rival managed to enter and obtain a ten percent market share, despite the defendant's engagement in widespread exclusive dealing.<sup>182</sup> The defendant argued that this precluded a finding of anticompetitive foreclosure as a matter of law.<sup>183</sup> But the court rejected this argument, noting that a large share of customers still refused to transact with the defendant's rival due to the exclusive dealing conditions.<sup>184</sup> Further, the court remarked that "exclusive dealing measures that slow a rival's expansion can still produce consumer injury" if evidence suggests the rival's expansion was "less than it . . . would have [been] absent the conduct."<sup>185</sup>

## VI. POTENTIAL POLICY RESPONSES: SSOs AND COURTS

The practices discussed in this Article are ultimately facilitated by the SEP owner's vertical integration into a downstream input market. There are a number of things courts and SSOs could do to address the potential concerns that can arise in these situations. This section discusses a few possibilities.

One important issue involves the potential threat by an SEP holder to cut off the input supply and how this relates to potential FRAND litigation. To illustrate, suppose that the only reason implementers need certain SEP licenses is that the collateral input embodies the technologies covered by those patents. That is, aside from the collateral input, no features of the implementer's products would require them to license these particular SEPs. And suppose further that, as examined earlier, the SEP owner is initially a monopolist in the collateral input market. Then, during this initial monopoly period, cutting off an implementer's input supply is

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182. *McWane, Inc. v. F.T.C.*, 783 F.3d 814, 822 (11th Cir. 2015).

183. *Id.* at 838.

184. *Id.* at 837.

185. *Id.* at 838.

functionally no different from refusing to give it SEP licenses. The operative SEP rights are useless without the physical input, just as the input alone is not useful unless implementers have the rights to use it in their products.

This illustrates a dilemma for the SSO members. What good is a FRAND agreement if the integrated SEP holder can just threaten to withhold a monopoly-controlled input instead of withholding its essential patent rights? In fact, the courts have confronted analogous concerns in other patent-related contexts. In *Quanta Computer*,<sup>186</sup> the patents at issue covered methods for processing information, and the patentee's manufacturer-licensee sold physical computer processors that utilized these methods. The question put before the court was whether these chip sales exhausted the method patents.<sup>187</sup> The court held that exhaustion does indeed apply to method patents upon sales of physical components that "substantially embody the patents."<sup>188</sup> Similarly, in *Univis*, the Supreme Court held that a method patent for grinding blank lenses into prescription lenses was exhausted by sales of unpatented lens blanks that have no valuable use other than to be ground into prescription lenses using the patented method.<sup>189</sup>

In both cases, the Court refused to distinguish between (1) sales of a good covered by a *product* patent and (2) sales of a good whose only reasonable intended use is to practice a *method* patent. If the patent rights, for a method, and the physical input are each useless without the other—just as a patented good would be worthless without the right to use it—then it makes sense to treat input sales as equivalent to sales of a patented good. Further, the court in *Quanta Computer* observed that distinguishing between these things would undermine the exhaustion doctrine, because "[p]atentees seeking to avoid patent exhaustion could simply draft their patent claims to describe a method rather than an apparatus."<sup>190</sup>

Proceeding by analogy, if the only valuable use of an SEP license is to permit use of a physical input (which is sold exclusively by the SEP holder), then an integrated SEP owner may be able to circumvent its FRAND commitment by threatening to withhold inputs. In this case, the SEP holder can still exploit

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186. *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617 (2008).

187. *Id.* at 621.

188. *Id.*

189. *United States v. Univis Lens Co.*, 316 U.S. 241, 249 (1942).

190. *See Quanta Computer*, 553 U.S. at 629.

patent holdup, albeit indirectly: it just extracts the holdup rents using its input rather than its patent.

There are two potential arguments for applying this analogy to FRAND commitments. The stronger argument is that perhaps FRAND pledges should be interpreted to prohibit an SEP holder's refusal to supply a physical input if: (1) some of the licensed SEP licenses are valuable solely because they convey the right to use the input; (2) a refusal to supply the input would produce the same result as a refusal to license, because there are not currently any viable competing versions of the input; and (3) there is no apparent explanation for the refusal, aside from its propensity to undermine the FRAND commitment.

However, this potential standard would be a fairly drastic expansion of interpreting FRAND terms. Such commitments are private contracts, after all. Although they may comprise very general language, it seems clear enough that they apply to patent licensing and do not purport to regulate other aspects of the parties' dealings. Moreover, it is unclear what remedies would support this standard. It is one thing to say a refusal to supply inputs violates FRAND terms; it is another thing to stipulate what input price would be reasonable.

There is an alternative option that does not require such a far-reaching interpretation of FRAND terms. In particular, SSOs may benefit from expanding their FRAND agreements to address the possibility that an integrated SEP holder may exploit its control of a collateral input to evade the FRAND price control. One way to help accomplish this is to make stronger and clearer requirements for licensing rivals in any downstream markets—including all inputs as well as the final product—and then rely on the ensuing competition to prevent the SEP holder from protracting its monopoly in a collateral input market. As noted earlier, there are perfectly natural reasons why the integrated SEP holder might be the first to sell a viable version of the input. But the SSO's policies can help to expedite the emergence of competition by ensuring that FRAND-encumbered SEPs will not act as barriers to entry.

Additionally, the SSO might require that a collateral input be subject to the FRAND pledge itself in situations where certain SEPs are valuable only by virtue of permitting implementers to use the input. In this case, the applicable SEPs and the input are not valuable independently of one another, and so it might be reasonable for the FRAND agreement to cover them both. The parties need not figure out whether these conditions are met *ex ante*. They can just state that, if such conditions are met in a

particular case, then both the licenses and the input must be supplied on FRAND terms.

Also important is courts' treatment of established royalties when adjudicating FRAND disputes. Judges should be cautious when using prior licenses as a basis for damages, given that this practice is vulnerable to exploitation. If the agreed-upon royalty were reached under a threat by the SEP holder to choke off the input supply (at a point when rival options were not available), then that royalty should not be used as a benchmark for computing damages. The courts already acknowledge that licensing terms reached in infringement settlements are generally inapt for use in damages calculations, given that settlements are usually not arm's length agreements.<sup>191</sup> The same logic suggests that, if certain licensing terms were reached based on the SEP holder's threat to withhold the collateral input, then those terms do not reflect an arm's length transaction, making them generally poor tools for remediation of subsequent lawsuits. The courts should also be sure to look at the entire financial structure of the parties' dealings. That means they should be sensitive to how a rebate would influence the effective royalty rate actually paid in an established licensing agreement.

## VII. CONCLUSION

SEP owners are commonly vertically integrated, selling not only licenses but also some other important "collateral input"—a device or service that is not subject to the SEP holder's FRAND commitments, but upon which implementers nevertheless rely. An important emerging concern involves the integrated SEP holder's attempts to engage in tying or exclusive dealing, potentially foreclosing sales by rival input makers.

A critical point, missed in previous scholarship on SEP licensing, is that using FRAND pledges as a price control creates a unique incentive for tying: to evade the price control by assigning the desired overcharge to the tied input. Without a price control, this motivation to tie would not arise, as it would be just as effective to apply the full markup to the primary tying good (in this case SEP licenses). This point is closely analogous to one that several scholars have already identified in regulated markets: a price-regulated firm may attempt to evade a regulatory price

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191. See Masur, *supra* note 123, at 124-25 ("[C]ourts and commentators generally disfavor licenses that parties negotiated as settlements to ongoing litigation.").

control by vertically integrating into an unregulated complementary market.

A strong argument can be made that exclusive dealing or loyalty discounting violates the FRAND pledge, particularly if the undiscounted price is above FRAND level. It inherently discriminates among implementers depending on where they obtain the collateral input. A refusal to give rivals exhaustive licenses at a reasonable rate may similarly fail the nondiscrimination prong. The problematic cases arise when the undiscounted price is above FRAND level, while loyal implementers get the regular FRAND rate. However, this is unlikely to be possible unless the SEP holder was initially a monopolist in the collateral input market, with competing alternatives emerging only later. The case for antitrust intervention is generally harder to make. However, as with more ordinary cases of exclusive dealing, a showing of substantial foreclosure is generally sufficient for the antitrust plaintiff to prevail.