

## TYING AND BUNDLING INVOLVING STANDARD-ESSENTIAL PATENTS

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### INTRODUCTION

Competition agencies around the world have taken the unwarranted position that antitrust enforcement involving standard-essential patents (“SEP”)<sup>1</sup> upon which a patent holder has made an assurance to license on fair, reasonable, and nondiscriminatory (“FRAND”)<sup>2</sup> terms should be subject to special rules or unique presumptions and burdens of proof.<sup>3</sup> For example,

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<sup>1</sup> Standards enable virtually all the products we rely upon in modern society. For example, standards reside at the heart of the mobile industry, allowing users to experience worldwide interoperability and interconnectivity across mobile devices. SEPs are patents that are essential to practice a given standard.

<sup>2</sup> Standard-development organizations (“SDOs”) are private organizations that develop technical and other standards through a collaborative and consensus-driven process that balances the varied interests of industry participants, which include both producers and potential users of technology. Because standards may include technology that is the subject of intellectual property rights (“IPRs”) such as patents, SDOs historically have promoted widespread dissemination of standardized technologies through IPR Policies, which balance the rights of IPR holders with rights to access essential technology. Although SDO IPR Policies vary widely, many policies achieve this balance by seeking to have their members publicly declare any potential SEPs and to license them on FRAND terms. Most SDOs clearly state that the purpose of the FRAND assurance is to both ensure access to the standardized technology and fairly compensate the contributors to the standard. *See generally* Koren W. Wong-Ervin & Joshua D. Wright, *Intellectual Property and Standard Setting*, 17 *FEDERALIST SOC’Y REV.* 52 (2016).

<sup>3</sup> *See, e.g.*, COMPETITION BUREAU OF CAN., ENFORCEMENT GUIDELINES: INTELLECTUAL PROPERTY § 7.4 (Mar. 31, 2016); STATE COUNCIL ANTI-MONOPOLY COMM’N, ANTI-MONOPOLY GUIDELINE ON INTELLECTUAL PROPERTY ABUSE (DRAFT FOR COMMENTS) ARTS. 13, 26 (Dec. 31, 2015) (explaining China’s approach to market power and injunctive relief, respectively); KOREN W. WONG-ERVIN, DOUGLAS H. GINSBURG, BRUCE H. KOBAYASHI & JOSHUA D. WRIGHT, *FRAND IN INDIA, IN COMPLICATIONS AND QUANDARIES IN THE ICT SECTOR: STANDARD ESSENTIAL PATENTS & Competition Issues* 165, 166–67 (Ashish Bharadwaj, Vishwas Devaiah, Indranath Gupta eds. 2018); *see also* *Micro-max Informatics Ltd. v. Telefonaktiebolaget LM Ericsson*, Case No. 50/2013, ¶ 2 (Competition Comm’n of India Nov. 12, 2013); *Intex Tech. Ltd., v. Telfonaktiebolaget LM Ericsson*, Case No. 76/2013, ¶ 6

in December 2016, the Korea Fair Trade Commission (“KFTC”) levied a fine of KRW 1.03 trillion (approximately US \$853 million) against Qualcomm Incorporated based on findings that the company employed an “unfair business model” with respect to the licensing of its 2G (CDMA), 3G (WCDMA), and 4G (LTE) SEPs, and the sale of its baseband processors.<sup>4</sup> In so doing, it relied upon the faulty premise that, “[a]s SEPs cannot be replaced by other technologies, a SEP holder gains complete monopolistic power by holding even a single SEP.”<sup>5</sup> Under this assumption, the KFTC concluded that Qualcomm possessed dominance in 2G, 3G, and 4G technologies without conducting a fact-specific inquiry into whether a single SEP, or portfolio of SEPs, constitutes a well-defined relevant market, potential substitutes exist, or the degree to which any market power is mitigated by complementarities among technologies used for the same product or countervailing market power from potential licensees.<sup>6</sup>

The following logic seems to be the basis for such special rules or heightened intervention: Standard setting involves allowing competitors to get together to pick winners, an act of collusion generally prohibited under most antitrust laws. However, because of the significant procompetitive benefits from standard setting (e.g., allowing users to experience worldwide interoperability and interconnectivity across devices), competition agencies permit this collusion. They instead justify special rules or heightened intervention for SEP holders based on the SEP holders’ *ex post unilateral* conduct, i.e., conduct following the alleged conferral of market power flowing from the standardization process.

There are two fundamental flaws in this logic. First, empirical research suggests that standardization does not automatically confer market power. Rather, standardization frequently “crowns winners,” i.e., more important technologies are natural candidates for inclusion in standards.<sup>7</sup> “This is particularly important in jurisdictions such as the United States, in which anti-

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(Competition Comm’n of India Jan. 16, 2014); Japan Fair Trade Comm’n, Guidelines for the Use of Intellectual Property under the Antimonopoly Act (2007, revised 2016), at 10–11; Negotiated Data Sols. LLC, 2008 WL 4407246 (F.T.C. Sept. 22, 2008); Robert Bosch GmbH, 121-0081, Docket No. C-4377 (F.T.C. Apr. 24, 2013); Motorola Mobility LLC, & Google Inc., 121-0120, Docket No. C-4410 (July 23, 2013).

<sup>4</sup> Information on the KFTC Decision is based upon its press release detailing the decision. Press Release, Korea Fair Trade Comm’n, at 1, 6 (Dec. 28, 2016) (Unofficial Translation), <https://www.qualcomm.com/documents/KFTC-issued-press-release-dated-december-28-2016-unofficial-english-translation> [hereinafter KFTC Press Release].

<sup>5</sup> *Id.* at 3 (emphasis omitted).

<sup>6</sup> *See id.*

<sup>7</sup> *See, e.g.,* Anne Layne-Farrar & A. Jorge Padilla, *Assessing the Link Between Standards and Patents*, 9 INT’L J. IT STANDARDS & STANDARDIZATION RES. 19, 43 (2011).

trust laws do not punish extraction of monopoly profits, but reach only exclusionary or predatory conduct.”<sup>8</sup> Second, if competition agencies care—as they should—about consumer welfare, then the issue of whether particular conduct involving SEPs, including evasion of a FRAND assurance, has net anticompetitive effects should still require the same case-by-case, fact-specific analysis as is required for non-SEPs.

A recent manifestation of this flawed logic is the contention in the case of the KFTC’s Qualcomm investigation, an administrative decision, that it is somehow “unfair,” and therefore unlawful, for an SEP holder to license its patents, including both SEPs and non-SEPs, on a portfolio basis. As the contention goes, the SEP holder is either (1) unfairly forcing implementers to license more than they desire or (2) evading its FRAND assurance through package licensing. This Article explains that neither of these are economically sound theories of harm, particularly in jurisdictions like the United States that do not punish the mere extraction of monopoly profits.

Indeed, with respect to alleged “forcing,” the U.S. Supreme Court has explained that the fact that “a purchaser is ‘forced’ to buy a product he would not have otherwise bought even from another seller” does not imply an “adverse impact on competition.”<sup>9</sup> Instead, for tying or bundling to harm competition there would have to be an exclusionary effect on other sellers. Bundling would cause this effect by thwarting buyers’ desire to purchase substitutes for one or more of the goods in the bundle from other sellers to an extent that harms competition in the markets for those products.<sup>10</sup> Moreover, if, as some complainants allege, they are being “forced” to accept non-SEPs that are not valuable, then tying or bundling SEPs and non-SEPs: (1) cannot reasonably be said to result in anticompetitive foreclosure in the tied product market (the non-SEPs) because the licensee is not obliged to make use of them; and (2) if the non-SEPs are truly not valuable, then the licensor will not be able to extract additional rents by bundling them with SEPs.

With respect to alleged evasions of FRAND assurances, absent *ex ante* deception in the standard-setting process, i.e., deception resulting in the unlawful acquisition of market power, such a theory boils down to a complaint about excessive pricing or breach of contract. An excessive pricing claim is not cognizable under U.S. antitrust law, although it is in many foreign jurisdictions, including Europe, China, Korea, and India. Indeed, the United States is somewhat of an outlier when it comes to prohibitions on excessive or unfairly high pricing, although some enforcement agencies, such as the Directorate-General for Competition of the European Commission ( “DG

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<sup>8</sup> Anne Layne-Farrar & Koren W. Wong-Ervin, *Standard-Essential Patents and Market Power*, in *WORLD COMPETITION DAY, 2016: INTERFACE BETWEEN COMPETITION AND INTELLECTUAL PROPERTY RIGHTS, SELECT ARTICLES 7, 7* (2016).

<sup>9</sup> *Jefferson Par. Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 16 (1984).

<sup>10</sup> See Alden F. Abbott & Joshua D. Wright, *Antitrust Analysis of Tying Arrangements and Exclusive Dealing* 7 (Geo. Mason U. L. & Econ. Res. Paper Series, Paper No. 08-37, 2008).

Comp”) have “been extremely reluctant to make use” of the provision.”<sup>11</sup> Such “extraordinary” circumstances have yet to include decisions by DG Comp involving intellectual property rights (“IPR”) where it is particularly difficult to assess a “fair” price.<sup>12</sup> This difficulty arises because there is no marginal cost to which the price may be compared and IPRs are highly differentiated products making price comparison difficult, if not impossible.<sup>13</sup>

In addition, it is important to keep in mind that tying and bundling are ubiquitous and widely used by a variety of firms for myriad reasons.<sup>14</sup> In the vast majority of cases, package sales are “easily explained by economies of scope in production or by reductions in transaction and information costs, with an obvious benefit to the seller, the buyer or both.”<sup>15</sup> Those benefits can include lower prices for consumers, facilitating entry into new markets, reducing conflicting incentives between manufacturers and their distributors, and mitigating retailer free-riding and other types of agency problems.<sup>16</sup> Indeed, “bundling can serve the same efficiency-enhancing vertical control functions as have been identified in the economic literature on tying, exclusive dealing, and other forms of vertical restraints.”<sup>17</sup>

There is widespread use of tying and bundling by firms with and without market power in procompetitive ways.<sup>18</sup> Making these activities per se or presumptively unlawful will likely give rise to a high number of Type I errors. The U.S. Supreme Court has explained that Type I “errors are especially

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<sup>11</sup> Opinion of Advocate General Wahl, Case C-177/16, *Biedrība ‘Autortiesību un komunikācijas konsultāciju aģentūra – Latvijas Autoru apvienība’ v. Konkurences padome*, ECLI:EU:C:2017:286, ¶ 3 (Apr. 6 2017) (“Rightly so, in my view. In particular, there is simply no need to apply that provision in a free and competitive market: with no barriers to entry, high prices should normally attract new entrants. The market would accordingly self-correct.”).

<sup>12</sup> *Id.* ¶¶ 4–6.

<sup>13</sup> Douglas H. Ginsburg, Bruce H. Kobayashi, Koren W. Wong-Edvin, & Joshua D. Wright, “*Excessive Royalty*” *Prohibitions and the Dangers of Punishing Vigorous Competition and Harming Incentives to Innovate*, CPI ANTITRUST CHRON., Mar. 2016, at 1.

<sup>14</sup> See, e.g., Bruce H. Kobayashi, *Does Economics Provide a Reliable Guide to Regulating Commodity Bundling By Firms? A Survey of the Economic Literature*, 1 J. COMP. L. & ECON. 707, 707–08 (2005); see also David S. Evans & Michael Salinger, *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, 22 YALE J. ON REG. 37, 40 (2005); Stefan Stremersch & Gerard J. Tellis, *Strategic Bundling of Products and Prices: A New Synthesis for Marketing*, 66 J. MKT’G 55, 55 (2002).

<sup>15</sup> Kobayashi *supra* note 14, at 708; see also Stremersch & Tellis, *supra* note 14, at 70.

<sup>16</sup> Kobayashi, *supra* note 14, at 708; see also Bruce H. Kobayashi, *Two Tales of Bundling: Implications for the Application of Antitrust Law to Bundled Discounts 2* (Geo. Mason U. L. & Econ. Working Paper Series, Paper No. 05-27, Sep. 7, 2005).

<sup>17</sup> Kobayashi, *supra* note 14, at 708.

<sup>18</sup> See Kobayashi, *supra* note 14, at 708 n.2 (providing examples of bundling in consumer markets including fast food restaurants bundling burgers with drinks and fries, discount travel websites bundling round trip airfare with hotel rooms and/or rental cars, cars sold with upgraded features including leather seats, GPS, and hi-end stereo systems, and computers bundled with memory, screens, modems, and wi-fi capability).

costly, because they chill the very conduct the antitrust laws are designed to protect.”<sup>19</sup>

Caution is warranted even when a viable economic theory of harm has been identified. In a seminal survey of the tying and bundling economic literature, Dr. Bruce Kobayashi warns that “while the literature has demonstrated that use of bundling can generate anticompetitive harm, it does not provide a reliable way to gauge whether the potential for harm would outweigh any demonstrable benefits from the practice.”<sup>20</sup> Agencies would be wise to keep this difficulty in mind when evaluating tying and bundling claims. When tying is common industry practice or firms without or prior to obtaining market power have employed tying, this calls into question any anticompetitive motives for tying and suggests that efficiency reasons may be motivating the practice.

This Article sets forth the mainstream theories of harm for tying and bundling—namely leveraging and monopoly maintenance—and applies them to common portfolio licensing practices of SEP holders, particularly those in the SEP-intensive telecommunications sector. This Article also addresses allegations that a vertically-integrated SEP holder’s decision to license at the end-user device level amounts to de facto bundling. In a recent paper, Dr. Jorge Padilla and Koren W. Wong-Ervin show through a simple model that a vertically integrated firm’s de facto bundling of a component and its SEP portfolio will not result in foreclosure of the component market if two conditions are met. These conditions are: “(1) the vertically integrated SEP holder does not assert its patents at the component level, and (2) it licenses its SEP portfolio to downstream (finished device) manufacturers on FRAND terms irrespective of whether they source components from its own subsidiary or from the nonintegrated rival.”<sup>21</sup>

The remainder of this Article is organized as follows: Part I rebuts the notion that there should be special rules for antitrust matters involving SEPs, explaining the need for a traditional effects-based analysis in such cases. Part II covers SEPs and the market power analysis. Part III covers background information on U.S. and foreign law, explaining why U.S. antitrust law permits extraction of surplus created by lawfully acquired monopolists and seeks to intervene only against exclusionary or predatory conduct that results in the unlawful acquisition or maintenance of market or monopoly power. Part IV sets forth common efficiencies and legitimate business justifications for tying and bundling and the main economically sound theories of harm for tying

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<sup>19</sup> Koren W. Wong-Ervin, Joshua D. Wright, Bruce H. Kobayashi, & Douglas H. Ginsburg, *Comment of the Global Antitrust Institute, Antonin Scalia Law School, George Mason University, on the Proposed Revisions to the People’s Republic of China Anti-Unfair Competition Law 3* (Geo. Mason U. L. & Econ. Res. Paper Series, Paper No. 17-11, 2017) (quoting *Verizon Comms. Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 414 (2004) (internal quotations omitted)).

<sup>20</sup> Kobayashi, *supra* note 14, at 707.

<sup>21</sup> Jorge Padilla & Koren W. Wong-Ervin, *Portfolio Licensing to Makers of Downstream End-User Devices: Analyzing Refusals to License FRAND-Assured Standard-Essential Patents at the Component Level*, 62 ANTITRUST BULL. 494, 505 (2017).

and bundling claims. It then applies the analysis to the common industry practice of portfolio end-user device licensing by SEP holders in the telecommunications industry (i.e., to allegations of tying or bundling SEPs and non-SEPs and allegations of de facto bundling of SEPs and component parts).

## I. NO SPECIAL RULES FOR SEPS

In the United States, the approach taken by the antitrust agencies, the Department of Justice Antitrust Division (“DOJ”) and the Federal Trade Commission (“FTC”), to antitrust matters involving IPRs is set forth in the agencies’ joint *Antitrust Guidelines for the Licensing of Intellectual Property*.<sup>22</sup> These guidelines explain that the “[a]gencies apply the same general principles to conduct involving intellectual property that they apply to conduct involving any other form of [tangible or intangible] property.”<sup>23</sup> The U.S. antitrust agencies have stated that the same “flexible effects-based enforcement framework” set forth in their IP Guidelines applies to “all IP areas,” including conduct involving SEPs.<sup>24</sup> They also point to the “wide body of DOJ and FTC guidance . . . —in the form of reports, statements, speeches, and enforcement decisions—which . . . further illuminate” the agencies’ analysis of standards-setting activities and the assertion of SEPs.<sup>25</sup> This “wide body” of guidance presumably includes negotiated consents in matters such as *Negotiated Data Solutions*,<sup>26</sup> *Bosch*,<sup>27</sup> and *Motorola Mobility & Google*.<sup>28</sup> These consents seem to apply special rules for conduct involving SEPs under the FTC Act Section 5 standalone unfair methods of competition authority.<sup>29</sup> Indeed, the premise of all three consents was alleged ex post breach of FRAND assurance theories or, in other words, ex post contractual opportunism that did not amount to the unlawful acquisition or maintenance of market

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<sup>22</sup> DEP’T OF JUSTICE & FTC, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY (2017), (originally released in 1995, updated in 2017) [hereinafter IP GUIDELINES].

<sup>23</sup> *Id.* § 2.1.

<sup>24</sup> Press Release, FTC, FTC and DOJ Issue Updated Antitrust Guidelines for the Licensing of Intellectual Property (Jan. 13, 2017) [hereinafter Updated Antitrust Guidelines Press Release]; *see also* Edith Ramirez, Chairwoman, FTC, Standard-Essential Patents and Licensing: An Antitrust Enforcement Perspective at 4, 11, Address at the 8<sup>th</sup> Annual Global Antitrust Enforcement Symposium (Sept. 10, 2014) (Former FTC Chairwoman Ramirez stating that “the same key enforcement principles [found in the 1995 IP Guidelines] also guide [FTC’s] analysis when standard essential patents are involved,” and that “it is important to recognize that a contractual dispute over royalty terms, whether the rate or the base used, does not in itself raise antitrust concerns.”).

<sup>25</sup> Updated Antitrust Guidelines Press Release, *supra* note 24.

<sup>26</sup> *Negotiated Data Sols. LLC.*, File No. 51-0094, Docket No. C-4234 (F.T.C. Sept. 22, 2008).

<sup>27</sup> *Robert Bosch GmbH*, 155 F.T.C. 713 (Apr. 24, 2013).

<sup>28</sup> *Motorola Mobility LLC & Google Inc.*, File No. 121-0120, Docket No. C-4410 (F.T.C. July 23, 2013).

<sup>29</sup> *Negotiated Data Sols.*, 51-0094; *Robert Bosch*, 155 F.T.C. 713; *Motorola Mobility & Google*, 121-0120.

power, the latter of which are the essential inquiries at least under U.S. anti-trust law.<sup>30</sup>

Perhaps more explicitly, implementers and academics have contended that there should be special rules or heightened antitrust intervention (under either the Sherman Act or Clayton Act, and for unfair methods of competition, under Section 5 of the Federal Trade Commission Act) for conduct involving FRAND-assured SEPs.<sup>31</sup> Such special rules or heightened intervention seems to be based on the belief that standard setting involves allowing competitors to get together to pick winners, an act of collusion generally prohibited under most antitrust laws. But empirical research suggests that standardization does not automatically confer market power, but rather frequently “crowns winners,” i.e., more important technologies are natural candidates for inclusion in standards.<sup>32</sup> Moreover, if competition agencies care—as they should—about consumer welfare, then the issue of whether particular conduct involving SEPs, including evasion of a FRAND assurance, has net anticompetitive effects should still require the same case-by-case, fact-specific analysis as is required for non-SEPs.

## II. MARKET POWER

A threshold issue for any tying or bundling claim is whether the owner of the tying or bundling product has market power.<sup>33</sup> Indeed, “[m]arket power is a necessary but not sufficient condition for harm competition.”<sup>34</sup> A seller must have market power in at least one of the bundled goods in order to force the buyer to purchase the bundle, otherwise the buyer would buy the each good separately from other sellers, if at all.<sup>35</sup>

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<sup>30</sup> Negotiated Data Sols., 51-0094, at 4–6 ¶¶ 25–35, 38; Robert Bosch, 155 F.T.C. at 3–5 ¶¶ 11–20, 23; Motorola Mobility & Google., 121-0120, at 4 ¶¶ 25–26.

<sup>31</sup> See e.g., Letter from Joseph Farrell, Professor of Economics, Richard Gilbert, Professor of Economics, Emeritus, and Carl Shapiro, Transamerica Professor of Business Strategy and Professor of Economics, to the FTC (Sept. 7, 2016), <https://www.justice.gov/atr/file/890491/download>, (“Both the DOJ and the FTC have provided guidance on critical issues such as ex ante agreements regarding FRAND obligations, the pursuit of injunctions for alleged infringement of SEPs, the basis for calculating infringement damages for SEPs, and whether FRAND commitments travel with patent assignments. Updating and unifying DOJ and FTC guidance relating to SEPs is vital and long overdue.”); Letter from Greg S. Slater, VP and Associate General Counsel, Intel Corporation, to the FTC and Dept. of Justice (Sept. 26, 2016), <https://www.justice.gov/atr/file/898596/download> (“[W]e note that the proposed update to the IP Guidelines does not contain any discussion of the specific issues that arise in the context of standard-essential patents that are subject to commitments to license on RAND or FRAND terms . . . . Intel respectfully requests that, in the event that the Agencies are inclined to address this topic broadly in the revised Guidelines, interested parties be given an opportunity to submit comments.”).

<sup>32</sup> See, e.g., Layne-Farrar & Padilla, *supra* note 7, at 43.

<sup>33</sup> See Verizon Comms., 540 U.S. at 407–08; IP GUIDELINES, *supra* note 22, § 2.2.

<sup>34</sup> Wong-Ervin et al., *supra* note 19, at 5.

<sup>35</sup> *Id.*

The U.S. antitrust agencies have long recognized that IPRs do not necessarily confer market power upon their owner. The agencies have explained that “[a]lthough the intellectual property right confers the power to exclude with respect to the specific product, process, or work in question, there will often be sufficient actual or potential close substitutes for such product, process, or work to prevent the exercise of market power.”<sup>36</sup> In 2006, the U.S. Supreme Court adopted this approach stating that:

Congress, the antitrust enforcement agencies, and most economists have all reached the conclusion that a patent does not necessarily confer market power upon the patentee. Today, we reach the same conclusion, and therefore hold that, in all cases involving a tying arrangement, the plaintiff must prove that the defendant has market power in the tying product.<sup>37</sup>

At least one U.S. district court has held that the same case-by-case, fact-specific analysis applies to SEPs.<sup>38</sup>

As Dr. Anne Layne-Farrar and Professor Wong-Ervin explain:

[T]here remains much confusion over how to determine the proper relevant market and the issue of whether a particular SEP owner has market power. For example, some agency officials have contended that, while not always the case, SEPs will “generally” or “typically” confer market power absent the existence of substitutes such as competing standards. . . . [T]he issue of whether a particular SEP holder has market power requires a case-by-case fact-specific inquiry into whether a single SEP (or portfolio of SEPs) constitutes a well-defined relevant market, whether there are potential substitutes, and the degree to which any market power is mitigated by complementarities among technologies used for the same product.<sup>39</sup>

The FRAND-assurance also serves to mitigate any market power.

With respect to essentiality, it is important to remember that “SEPs are self-declared to SDOs, yet no SDO evaluates essentiality, which may . . . change as the standard continues through development.”<sup>40</sup> Therefore, until an independent legal and technical review concludes that a particular SEP has market power due to a lack of substitutes or constraint from complementarities, there should be no presumption of market power.

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<sup>36</sup> IP Guidelines, *supra* note 22, § 2.2.

<sup>37</sup> See *Ill. Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 45–46 (2006), *rev'g* 396 F.3d 1342 (Fed. Cir. 2005).

<sup>38</sup> *ChriMar Sys. v. Cisco Sys.*, 72 F. Supp. 3d 1012, 1019 (N.D. Cal. 2014) (“In order to allege market power, the *Samsung* court required the plaintiff to allege that ‘there was an alternative technology that the SSO was considering during the standard setting process and that the SSO would have adopted an alternative standard had it known of the patent holder’s intellectual property rights.’” (quoting *Apple Inc. v. Samsung Elecs. Co.*, No. 11–CV–01846–LHK, 2011 WL 4948567, at \*5 (N.D. Cal. Oct. 18, 2011))).

<sup>39</sup> Layne-Farrar & Wong-Ervin, *supra* note 8, at 7.

<sup>40</sup> *Id.* at 2.



“[E]ven restricting the analysis to truly essential patents, one cannot perfunctorily conclude that an individual SEP or a portfolio of SEPs constitutes a well-defined relevant market or that the owner possesses market power.”<sup>41</sup>

### III. RELEVANT BACKGROUND ON U.S. AND FOREIGN ANTITRUST LAW

This Part discusses antitrust law of both the United States and foreign governments. It does so by reviewing guidance on tying and bundling and then discussing the critical difference between the mere extraction of monopoly profits and the unlawful acquisition of monopoly power.

#### A. *U.S. Law and International Guidance on Tying and Bundling*

As an initial matter, it is important to distinguish between tying, pure bundling, and mixed bundling. Pure bundling occurs when a firm offers only the package and not the stand-alone goods. This is distinguishable from tying in that pure bundling occurs when there are no alternative sellers of the component goods so only the bundle is available. Mixed bundling occurs when both the package and the individual goods are available from the bundling firm. Thus, if a patent holder offers its SEPs separately from its non-SEPs then the conduct at issue constitutes mixed bundling as opposed to tying, and there is no coercion.

In the United States, tying can be challenged as an act of exclusion under Section 2 of the Sherman Act, as well as under Section 1 of the Sherman Act and Section 3 of the Clayton Act.<sup>42</sup> While early Supreme Court decisions held tying arrangements to be per se illegal,<sup>43</sup> more recent Supreme Court decisions, such as *Illinois Tools Works v. Independent Ink, Inc.*,<sup>44</sup> recognize that tying arrangements are not always or almost always anticompetitive.<sup>45</sup> Tying by a monopolist is still technically per se unlawful under the Supreme Court’s decision in *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*.<sup>46</sup> However,

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<sup>41</sup> Layne-Farrar & Wong-Ervin, *supra* note 8, at 8.

<sup>42</sup> DEP’T OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT: CHAPTER 5 at 78 (2008).

<sup>43</sup> See, e.g., *Int’l Salt Co. v. United States*, 332 U.S. 392, 396 (1947) (“[I]t is unreasonable, per se, to foreclose competitors from any substantial market.”); *Standard Oil Co. v. United States*, 337 U.S. 293, 305, (1949) (“Tying agreements serve hardly any purpose beyond the suppression of competition.”).

<sup>44</sup> 547 U.S. 28 (2006).

<sup>45</sup> *Id.* at 45 (“Many tying arrangements . . . are fully consistent with a free, competitive market.”).

<sup>46</sup> 466 U.S. 2, 25 (1984) (confirming the continued role of a per se analysis, yet emphasizing that market power in the tying product was a requirement for per se illegality). Later that same year, the Supreme Court explained that the application of the per se rule to tying had evolved to incorporate a market analysis:

several lower courts have applied an effects-based approach that requires proof that the tie has anticompetitive effects.<sup>47</sup> These courts also demonstrate a willingness to consider legitimate business justifications for the alleged tie.<sup>48</sup> A recent example of an attempt by lower courts to reconcile the economic evidence on tying and bundling, which suggests the need for an effects-based approach, with Supreme Court precedent can be found in a 2017 decision from the U.S. Court of Appeals for the Tenth Circuit.<sup>49</sup> In that case, the court stated that “[b]ecause the Supreme Court has continued to add more real-market analysis to the requirements of a *per se* tying claim . . . the rule of reason seems to be mainly different in degree, not necessarily in kind.”<sup>50</sup>

With respect to IPRs in particular, the U.S. antitrust agencies have long stated that, “[i]n the exercise of their prosecutorial discretion, the Agencies will consider both the anticompetitive effects and the efficiencies attributable to a tie-in.”<sup>51</sup> According to the IP Guidelines, the agencies are likely to challenge a tying arrangement when: “(1) the seller has market power in the tying product, (2) the arrangement has an adverse effect on competition in the relevant market for the tying product or the tied product, and (3) efficiency justifications for the arrangement do not outweigh the anticompetitive effects.”<sup>52</sup>

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[T]here is often no bright line separating *per se* from Rule of Reason analysis. *Per se* rules may require considerable inquiry into market conditions before the evidence justifies a presumption of anticompetitive conduct. For example, while the Court has spoken of a ‘*per se*’ rule against tying arrangements, it has also recognized that tying may have procompetitive justifications that make it inappropriate to condemn without considerable market analysis.

Nat’l Collegiate Athletic Ass’n v. Bd. of Regents of the Univ. of Okla., 468 U.S. 85, 104–05 n.26 (1984).

<sup>47</sup> Wells Real Estate, Inc. v. Greater Lowell Bd. of Realtors, 850 F.2d 803, 815 (1st Cir. 1988) (“The tying claim must fail absent any proof of anti-competitive effects in the market for the tied product.”); Fox Motors, Inc. v. Mazda Distribs. (Gulf), Inc., 806 F.2d 953, 958 (10th Cir. 1986) (declining to apply the *per se* rule to a tie that “simply does not imply a sufficiently great likelihood of anticompetitive effect.”).

<sup>48</sup> United States v. Jerrold Elecs. Corp., 187 F. Supp. 545, 557–58 (E.D. Pa. 1960) (concluding that a tie was justified for a limited time in a new industry to assure effective functioning of complex equipment), *aff’d per curiam*, 365 U.S. 567 (1961); Mozart Co. v. Mercedes-Benz of N. Am., Inc., 833 F.2d 1342, 1348–51 (9th Cir. 1987) (upholding verdict for the defendant because the tie may have been found to be the least expensive and most effective means of policing quality); Dehydrating Process Co. v. A. O. Smith Corp., 292 F.2d 653, 655–57 (1st Cir. 1961) (affirming a judgment of a district court that directed a verdict in favor of the defendant because a tie was necessary to assure utility of two products when separate sales led to malfunctions and widespread customer dissatisfaction); *see also* Brantley v. NBC Universal, Inc., 675 F.3d 1192, 1200 (9th Cir. 2012) (“Like other vertical restraints, tying arrangements may promote rather than injure competition.”).

<sup>49</sup> *See* Suture Express, Inc. v. Owens & Minor Distrib., 851 F.3d 1029 (10th Cir. 2017).

<sup>50</sup> *Id.* at 1038.

<sup>51</sup> IP GUIDELINES, *supra* note 22, § 5.3 (This statement was originally included in the 1995 *Antitrust Guidelines for the Licensing of Intellectual Property* and remained after the 2017 update).

<sup>52</sup> *Id.*

The IP Guidelines apply the same analysis to pure bundling,<sup>53</sup> stating that:

[Package licensing] may be a form of tying arrangement if the licensing of one intellectual property right is conditioned upon the acceptance of a license of another, separate intellectual property right. Package licensing can be efficiency enhancing under some circumstances. When multiple licenses are needed to use any single item of intellectual property, for example, a package license may promote such efficiencies. If a package license constitutes a tying arrangement, the Agencies will evaluate its competitive effects under the same principles they apply to other tying arrangements.<sup>54</sup>

With respect to theories of harm based on alleged “forcing,” the U.S. Supreme Court has explained that “there is nothing inherently anticompetitive about packaged sales.”<sup>55</sup> The Court has also commented that the fact that “a purchaser is ‘forced’ to buy a product he would not have otherwise bought even from another seller” does not imply an “adverse impact on competition.”<sup>56</sup> As Professors Alden Abbott and Joshua D. Wright explain:

This latter statement suggests that bundling would not constitute unlawful tying if the purchaser simply desires to purchase less than the entire bundle of products offered for package sale at a reduced price. Rather, to prevail on an unlawful tying or bundling claim, the plaintiff (or agency) would have to show an exclusionary effect on other sellers as a result of the plaintiff’s thwarted desire to purchase substitutes for one or more items in the bundle from other sources that harms competition in the market for the tied product.<sup>57</sup>

As applied to tying or bundling of SEPs and non-SEPs, if, as some complainants allege, they are being “forced” to accept non-SEPs that are not valuable, then tying or bundling SEPs and non-SEPs: (1) cannot reasonably be said to result in anticompetitive foreclosure in the tied product market (the non-SEPs) because the licensee is not obliged to make use of them; and (2) if the non-SEPs are truly not valuable, then the licensor will not be able to extract additional rents by bundling them with SEPs. To understand the second point, consider that the value attributed to a particular licensor’s SEPs is  $V$  and the value of the non-SEPs is  $0$ . Suppose the SEP holder has market power (or a dominant market position). Without the bundle, the licensor could charge  $V$ , which is also the maximum price that it can charge with the bundle of SEPs and non-SEPs.

With respect to foreign laws, while the exact approaches are too varied to cover in this article, the International Competition Network (“ICN”) pub-

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<sup>53</sup> The IP GUIDELINES refer to pure bundling as “package licensing.” *Id.*

<sup>54</sup> *Id.*

<sup>55</sup> Jefferson Parish, 466 U.S. at 25.

<sup>56</sup> *Id.* at 16.

<sup>57</sup> Abbott & Wright, *supra* note 10, at 7.

lished a workbook chapter on tying and bundling in 2015, identifying anti-competitive foreclosure as the “main anticompetitive concern with tying.”<sup>58</sup> The workbook chapter focuses on the “leveraging theory,” which relates to the possibility of extending a monopoly in one market into a related second market, describing it as “the origin of the antitrust concern about tying,” and a theory that “has great importance for the assessment of tying in many jurisdictions.”<sup>59</sup>

B. *Extraction of Surplus from Lawfully Created Market Power v. Unlawful Acquisition or Maintenance of Market Power*

Prior to discussing theories of harm for tying and bundling, it is important to explain the types of unilateral conduct covered by U.S. antitrust law. Namely, U.S. antitrust law does not prohibit the possession of monopoly or market power, nor does it regulate price; instead, with respect to unilateral conduct, the law (Section 2 of the Sherman Act) is limited to prohibiting exclusionary or predatory conduct that results in the unlawful acquisition or maintenance of market power that harms the competitive process.<sup>60</sup> Indeed, as the U.S. Supreme Court explained in *Verizon Communications*:

The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not only not unlawful; it is an important element of the free-market system. The opportunity to charge monopoly prices—at least for a short period—is what attracts “business acumen” in the first place; it induces risk taking that produces innovation and economic growth. To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive *conduct*.<sup>61</sup>

Similarly, as the U.S. Supreme Court explained in *NYNEX Corp. v. Disccon, Inc.*,<sup>62</sup> price increasing conduct by a lawful monopolist, even when that conduct includes deceit or fraud, is not exclusionary.<sup>63</sup> In *NYNEX*, the conduct at issue was “a deception worked upon the regulatory agency that prevented the agency from controlling New York Telephone’s exercise of its

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<sup>58</sup> The Unilateral Conduct Working Group, *Unilateral Conduct Workbook, Chapter 6: Tying and Bundling*, at 4 ¶ 7 (Apr. 2015) [hereinafter ICN Workbook Chapter 6], <http://www.internationalcompetitionnetwork.org/uploads/2014-15/icn%20unilateral%20conduct%20workbook%20-%20chapter%206%20tying%20and%20bundling.pdf>. This chapter was prepared by the ICN’s Unilateral Conduct Working Group. The drafters were competition enforcers (both attorneys and economist) from around the world, including from the U.S. antitrust agencies.

<sup>59</sup> *Id.* ¶ 6.

<sup>60</sup> DEP’T OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT: CHAPTER 1 at 5–6 (2008), [https://www.justice.gov/sites/default/files/atr/legacy/2008/09/12/236681\\_chapter1.pdf](https://www.justice.gov/sites/default/files/atr/legacy/2008/09/12/236681_chapter1.pdf).

<sup>61</sup> 540 U.S. at 407.

<sup>62</sup> 525 U.S. 128 (1998).

<sup>63</sup> *Id.* at 135–37.

monopoly power.”<sup>64</sup> The Court recognized that the evasion of the rate regulation “hurt consumers,” but determined that the conduct did not harm the competitive process, and therefore rejected the argument that the conduct violated Section 2 of the Sherman Act.<sup>65</sup> The Court distinguished the evasion of a pricing constraint from the unlawful acquisition or exercise of monopoly power by pointing out that “consumer injury naturally flowed . . . from the exercise of market power that is *lawfully* in the hands of a monopolist.”<sup>66</sup>

The D.C. Circuit stated in *Rambus Incorporated v. Federal Trade Commission*<sup>67</sup> that “an otherwise lawful monopolist’s use of deception simply to obtain higher prices normally has no particular tendency to exclude rivals and thus to diminish competition.”<sup>68</sup> The D.C. Circuit relied on *NYNEX* in its decision and compared Rambus’ alleged charging of increased royalties to the evasion of a rate constraint in *NYNEX*.<sup>69</sup> The court held that if the SDO at issue “lost only an opportunity to secure a [F]RAND commitment from Rambus,” the conduct did not constitute harm to competition.<sup>70</sup> In so holding, the court explained that the Federal Trade Commission was required to prove that but-for the alleged deception, the SDO would have adopted a different technology.<sup>71</sup>

Drs. Bruce Kobayashi and Joshua D. Wright explain that “*NYNEX* and *Trinko* make clear that the monopolist is entitled to engage in optimal pricing without fear of antitrust liability so long as its monopoly power has been obtained lawfully.”<sup>72</sup> Therefore, extraction of monopoly rents and using market power to set prices at supra-competitive levels is not unlawful, so long as the monopoly or market power was acquired lawfully.

*NYNEX* is particularly important given the contention by some implementers and academics that evasion of a FRAND-assurance alone can, or should, give rise to an antitrust or unfair methods of competition claim. As Kobayashi and Wright have explained, an SEP holder’s “attempts to renegotiate or deviate from the original FRAND commitment made in good faith . . . in favor [of] higher royalty rates” amounts to no more than “‘pure’ ex post contractual opportunism.”<sup>73</sup> That conduct, at least in the United States, is properly analyzed under contract, not antitrust, law.<sup>74</sup>

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<sup>64</sup> *Id.* at 136.

<sup>65</sup> *Nynex Corp.*, 525 U.S. at 136.

<sup>66</sup> *Id.* at 136.

<sup>67</sup> 522 F.3d 456 (2008).

<sup>68</sup> *Id.* at 464.

<sup>69</sup> *Id.* at 464–65.

<sup>70</sup> *Id.* at 466.

<sup>71</sup> *Id.* at 466–67.

<sup>72</sup> Bruce H. Kobayashi & Joshua D. Wright, *Federalism, Substantive Preemption, and Limits on Antitrust: An Application to Patent Holdup*, 5 J. COMPETITION L. & ECON. 469, 488 (2009).

<sup>73</sup> *Id.* at 493.

<sup>74</sup> *Id.* at 516.

This last point is critical to understanding that the alleged evasion of a FRAND assurance through tying or bundling (while perhaps a contractual issue) is not an antitrust issue, at least under U.S. law. Drs. Anne Layne-Farrar and Michael Salinger extended a simplified version of the Gilbert-Katz model of patent bundling to incorporate FRAND commitments.<sup>75</sup> They then use the model to consider whether a patent holder violates a FRAND commitment if it ties a license to its FRAND-assured patents to licenses for patents on which it has not made a FRAND commitment.<sup>76</sup> The authors conclude that such tying (but not mixed-bundling) creates a risk of renegeing on the FRAND-assurance.<sup>77</sup> They then explain that as long as the royalty rate for the bundle of patents would be considered FRAND for the FRAND-committed patent alone, and the non-royalty terms of the license are similarly FRAND, then the patent owner is honoring the commitment even though it is including other patents in the bundle.<sup>78</sup> However, even if the tie is a violation of a patent holder's FRAND assurance, as explained above, ex post contractual opportunism or evasion of a pricing constraint is not itself an antitrust violation, at least under U.S. antitrust law.<sup>79</sup>

Contrary to the U.S. approach and that taken by countries such as Australia, Canada, and Japan, many foreign jurisdictions, including the European Union, China, Korea, and India, have competition laws that prohibit "excessive" or "unfairly high" pricing. For example, the European Union prohibits dominant firms from "imposing unfair purchase or selling prices," although as noted in Part II above, DG Comp has "been extremely reluctant to make use" of the provision.<sup>80</sup> Article 17(1) of China's Anti-Monopoly Law prohibits dominant firms from "selling commodities at unfairly high prices."<sup>81</sup>

There are several problems with the use of excessive or unfairly high pricing prohibitions, particularly as applied to IPRs.

First, from a welfare perspective, permitting extraction is likely economically beneficial as it can incentivize firms to engage in risky and costly research and development that may lead to gains that result from entirely new ways of doing business. While static efficiency (such as lower prices today) may increase consumer welfare in the short run, economics teaches us that

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<sup>75</sup> See Anne Layne-Farrar & Michael A. Salinger, *Bundling of RAND-Committed Patents*, 45 RES. POL'Y 1155 (2016).

<sup>76</sup> *Id.* at 1155–56.

<sup>77</sup> *Id.* at 1156.

<sup>78</sup> *Id.* at 1163.

<sup>79</sup> See discussion, *supra* Section III.A. and B.

<sup>80</sup> Opinion of Advocate General Wahl, *supra* note 11, ¶ 3 ("Rightly so, in my view. In particular, there is simply no need to apply that provision in a free and competitive market: with no barriers to entry, high prices should normally attract new entrants. The market would accordingly self-correct.")

<sup>81</sup> See Zhonghua Renming Fanlongduanfa (中华人民共和国反垄断法) [Anti-Monopoly Law of the People's Republic of China], (promulgated by The Standing Comm. Nat'l People's Cong., Aug. 30, 2007, effective Aug. 1, 2008), Order of the President of the People's Republic of China No. 68, [http://www.fdi.gov.cn/1800000121\\_39\\_1899\\_0\\_7.html](http://www.fdi.gov.cn/1800000121_39_1899_0_7.html).

dynamic efficiency, including societal gains from innovation, are an even greater driver of consumer welfare.<sup>82</sup>

Without the prospect of earning monopoly profits, firms will be less likely to undertake the risks necessary for economic growth.<sup>83</sup> Although in the short run, prices may be lower, consumers will not benefit from new products or services that better meet their needs. Consider a policy of capping prices on new “blockbuster” drugs—the example given by Drs. Dennis Carlton and Ken Heyer in defense of permitting extraction.<sup>84</sup> In the short run, consumers will benefit from lower prices for this drug. However, had the pharmaceutical company known beforehand that it would be limited in its ability to recoup the significant research and development costs for the drug, the company would have been far less likely to invest in drug research.<sup>85</sup> Frequently, pharmaceutical corporations must also bear the costs from other failed drugs that the company attempted to develop before identifying the successful drug. When companies come to expect capping of their returns by pricing regulation, they will invest less. In the long run, this will likely result in fewer new drugs, harming consumers who suffer from ailments that are not curable or adequately treated by existing medicines.

The principle that incentivizes pharmaceutical companies to develop new life-saving medicines applies to all companies. Firms seek profit opportunities, and when pricing regulation limits profit opportunities, investment will be lower. Although many may consider the pharmaceutical example extreme, slowing investment in other industries harms economic growth, making all consumers worse off.

Second, high prices alone do not harm the competitive process. Indeed, absent barriers to entry, high prices attract new market entry by signaling to others that a market is profitable. In other words, as the D.C. Circuit explained in *Rambus*, “high prices and constrained output tend to attract competitors, not to repel them,” which is likely to reduce prices over time.<sup>86</sup>

Third, identifying extraction (such as whether a particular price is “excessive” or “unfair”) is incredibly difficult. Although the simple monopoly graphs that economists draw contain a clearly labeled competitive price, in many instances this price cannot readily be identified in practice. The true marginal cost of a product, including its opportunity cost, can be very difficult to identify.

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<sup>82</sup> Robert Solow won the Nobel Prize in economics for demonstrating that gains in wealth are due primarily to innovation—not to marginal improvements in the efficiency of what already exists. See Press Release, The Royal Swedish Academy of Sciences (Oct. 21, 1987), [http://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/1987/press.html](http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1987/press.html).

<sup>83</sup> See *Verizon Comms.*, 540 U.S. at 407.

<sup>84</sup> Dennis W. Carlton & Ken Heyer, *Extraction vs. Extension: The Basis For Formulating Antitrust Policy Towards Single-Firm Conduct*, 4 COMPETITION POL’Y INT’L 285, 288 (2008).

<sup>85</sup> See, e.g., Eric. Budish, Benjamin N. Roin, & Heidi Williams, *Do Firms Underinvest in Long-term Research? Evidence from Cancer Clinical Trials*, 105 AM. ECON. REV. 2044, 2045–46 (2015) (showing that investment in pharmaceutical drugs is lower for drugs with shorter effective patent terms).

<sup>86</sup> 522 F.3d at 466.

With respect to IPRs in particular, as Judge Douglas H. Ginsburg et al. explain:

[E]conomics teaches that, absent information about the prices of unconstrained market transactions, it can be particularly difficult to identify a “fair” price. Indeed, it is even more difficult to assess the “fairness” of prices associated with licensing IPRs both because the fixed costs of innovation require prices well above marginal cost in order to secure an adequate return on investments in innovation, and because IPRs themselves are highly differentiated products, which makes reliable price comparisons difficult, if not impossible. The risk of placing overly strict limitations upon IPR prices is that the return to innovative behavior is reduced, which means firms will reduce their investment in further innovations, to the detriment of consumers. Compounding the problem, with such limits in place, IPR holders will face significant uncertainty in determining whether their licensing practices violate competition laws, and legal uncertainty is the enemy of financial investment.

In addition, in order to determine whether a particular price is excessive, the competition agency would need to calculate a reasonable royalty range as a baseline against which to compare the allegedly excessive price. In our experience, competition agencies will not possess the requisite information necessary to determine market prices generally, and royalty rates for inventions in particular. This is a task that is best left to the market or, as a last resort, to the courts in those limited cases when the parties cannot reach agreement.<sup>87</sup>

#### IV. EFFICIENCIES, THEORIES OF HARM, AND APPLICATION TO COMMON PORTFOLIO LICENSING PRACTICES OF SEP HOLDERS

This Part begins with common efficiencies and legitimate business justification for tying and bundling, it then sets forth economically-sound theories of harm, applying them to common portfolio licensing practices of SEP holders, namely in the SEP-intensive telecommunications sector.

##### A. *Efficiencies and Legitimate Business Justifications*

Tying and bundling are not only widespread in practice, but also prevalent in markets in which no firm has significant market power.<sup>88</sup> This suggests much simpler alternatives to the leveraging and monopoly maintenance theories of harm, namely that in many instances tying and bundling generate substantial efficiencies.<sup>89</sup> Indeed, in competitive markets, “the presumptive explanation for bundling” is either economies of scope in production or reductions in transactions and information costs, which benefit the seller, the buyer, or both.<sup>90</sup> Offering consumers more choices can be costly for firms; if the costs of providing more choice exceed the benefits to consumers, more choice can make consumers worse off. For example, “[F]or a company with

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<sup>87</sup> Ginsburg et al., *supra* note 13, at 3.

<sup>88</sup> David S. Evans & A. Jorge Padilla, *Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach*, 72 U. CHI. L. REV. 73, 81 (2005).

<sup>89</sup> *See, e.g., id.* at 81–82.

<sup>90</sup> Kobayashi, *supra* note 14, at 708.



1,000 patents, the number of possible licensing combinations of patents is on the order of  $10^{301}$ .<sup>91</sup> As a result, patent licensors necessarily offer a small subset of the patent bundles that they could conceivably offer. It would be impractical, if not impossible, for portfolio owners to analyze each and every patent in a large portfolio to determine essentiality or desirability. By offering only a bundle of patents, rather than a la carte patents, patent holders are likely to reduce administrative and monitoring costs associated with identifying patent infringement. This is because the patent holders would not need to track the individual licenses for each licensee. In other words, there are significant costs of prohibiting tying or bundling, including the potentially prohibitive transaction costs to both patent owners and implementers if they were forced to analyze each and every patent in a large portfolio and negotiate a license on each.

As Drs. David Evans and Michael Salinger explain, one cannot understand the vast majority of instances of tying without recognizing the cost of product offering complexity.<sup>92</sup>

Before a firm decides on how much to produce (or try to sell) and how much to charge, it first has to decide exactly what it sells. Even after deciding on its general line of business, the products a firm offers are typically a small subset of the products and product combinations it could conceivably offer. Dell revolutionized the personal computer industry by putting in place systems to customize orders to consumer specifications to a degree that had previously been unimaginable. But even Dell's highly customized offerings did not include every conceivable configuration and, more importantly, Dell and the personal computer industry are the exception. In general, companies do not and indeed cannot customize their offerings to the precise desires of every (or, for that matter, any) customer.<sup>93</sup>

In addition to reducing transaction costs for the producer, bundling may also reduce consumer transaction and search costs. By combining products into a bundle, say a combined SEP and non-SEP portfolio, customers avoid the costs of having to sift through large patent portfolios to identify all relevant patents, determine the essentiality of each patent, and then individually purchase each patent necessary for selling their product. In fact, patent licensees may prefer inclusive bundling to avoid being sued for patent infringement, as identifying all relevant patents is time-consuming and costly. An inclusive bundle protects a licensee from the risk that they may infringe upon a patent that they overlooked in their individual patent purchases.

The main takeaway is that, because of the widespread procompetitive uses of tying and bundling, differentiating between procompetitive and anti-competitive uses of tying and bundling can be incredibly difficult. As such, any Type I error generated by application of per se or presumptively unlawful rules to condemn bundling is likely to be relatively large. Bundling can carry

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<sup>91</sup> See Layne-Farrar & Salinger, *supra* note 75, at 1157.

<sup>92</sup> *Id.*

<sup>93</sup> *Id.*

widespread procompetitive benefits, from firms with and without market power, therefore, making bundling per se or presumptively unlawful is likely to generate many Type I errors.<sup>94</sup> The antitrust laws are designed to protect competitive markets and behavior, so finding pro-competitive actions unlawful can be especially costly, given that these are the very actions antitrust laws should protect.<sup>95</sup>

## B. *Theory of Harm Number 1: Leveraging*

This Section discusses the leveraging theory of harm and then applies it to tying and bundling.

### 1. Leveraging (Explanation of Theory of Harm)

“The ‘leveraging theory,’ which relates to the possibility of extending a monopoly in one market into a related second market, is the origin of the antitrust concern about tying, and the theory has great importance for the assessment of tying in many jurisdictions.”<sup>96</sup> The primary concern with leveraging is that sales in the related market are “foreclosed,” or cut off, to other sellers as a result of unfairly gained market power.<sup>97</sup> However, whether firms can successfully use tying to leverage market power is uncertain, and the early leveraging theories have generally been subjected to two main critiques.<sup>98</sup> As Professors Alden Abbott and Joshua D. Wright explain:

The early economic literature on tying identified two reasons to question whether tying and bundling are likely, as a general matter, to be useful tools for leveraging monopoly power in one market into monopoly power in a second market. First, “tying rarely gives the producer of the tying product a monopoly position in the market for the tied product. . . . A new entrant would have no difficulty in procuring in the open market the requisite cards or ink or salt to supply together with its business machines, duplicating equipment, or salt machinery.” Second, a firm with a monopoly in the tying product may be unable to increase its profits by seeking to collect rents from a complementary product.<sup>99</sup>

The second reason refers to the “one-monopoly profit theory,” which “show[s] that under certain circumstances there is no gain to the tying firm from leveraging its dominance into the tied product market. Tying in such

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<sup>94</sup> Wong-Ervin et al., *supra* note 19, at 3.

<sup>95</sup> Verizon Comms., 540 U.S. at 414.

<sup>96</sup> ICN Workbook Chapter 6, *supra* note 58, at 4 ¶ 6.

<sup>97</sup> *Id.* § 7; see also Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 AM. ECON. REV. 837, 837 (1990).

<sup>98</sup> See Abbott & Wright, *supra* note 10, at 10.

<sup>99</sup> *Id.* (quoting RICHARD A. POSNER, ANTITRUST L. 202 (2d ed. 2001)).

instances is expected to be competitively neutral or, for instance if the tie lowers costs, even procompetitive.”<sup>100</sup>

Indeed, as Drs. Anne Layne-Farrar and Michael Salinger explain, the leveraging theory rests on the implicit assumption that the seller can attach B to A and charge a price increment above the marginal cost of B without lowering demand, an assumption that in general, is not warranted, particularly when B is available in a competitive market.<sup>101</sup>

In other words, when the same consumers are buying both products in fixed proportions, the total price determines consumer sales, and thereby the monopolist’s optimal (profit-maximizing) price.<sup>102</sup> When a monopolist has already set a profit-maximizing price, obtaining the second monopoly will not allow the monopolist to raise prices further to obtain higher profits.<sup>103</sup> If the monopolist attempted to increase the total price further, consumers would decrease their purchases, and the monopolist’s total profit would fall, prompting the monopolist to decrease prices back to the previous level to obtain higher profits.<sup>104</sup> “As such, the principal motives for the tie would not be exclusionary conduct aimed at monopolizing the market for the tied product in order to raise its price. Rather, the firm could be using the tie for some other purpose, such as price discrimination or reducing costs.”<sup>105</sup>

Subsequent economic work has demonstrated that the one-monopoly profit theorem relies on some restrictive assumptions, namely “that the same consumers are buying both products in fixed proportions, and that the tied good market has a competitive, constant returns-to-scale structure.”<sup>106</sup> “By relaxing those assumptions, some economists have identified exclusionary motives for tying, as well as strategic reasons for bundling and tying.”<sup>107</sup>

However, as the ICN Unilateral Conduct Workbook explains:

Even with scale economies and an oligopolistic market structure in the tied market, if the tied product is a complementary product used in fixed proportions with the tying product, and has no other uses beyond that as a complement to the tying product, the single monopoly profit result still holds. The key condition is that the dominant firm’s tying product is essential for all uses of the tied product, which implies that the dominant firm always benefits from greater sales of the tied product, even if it is a rival’s product.<sup>108</sup>

<sup>100</sup> ICN Workbook Chapter 6, *supra* note 58, ¶ 6.

<sup>101</sup> See Layne-Farrar & Salinger, *supra* note 75, at 1156–57.

<sup>102</sup> See, e.g., Abbott & Wright, *supra* note 10, at 10.

<sup>103</sup> *Id.*

<sup>104</sup> *Id.*

<sup>105</sup> *Id.*; see also Patrick DeGraba, *Why Lever into a Zero-Profit Industry: Tying, Foreclosure, and Exclusion*, 5 J. ECON. & MGMT. STRATEGY 433 (1996).

<sup>106</sup> Abbott & Wright, *supra* note 10, at 10–11.

<sup>107</sup> Abbott & Wright, *supra* note 10, at 11; see also Whinston, *supra* note 97, at 839; Dennis W. Carlton & Michael Waldman, *Tying, Upgrades, and Switching Costs in Durable-Goods Markets* (Nat’l Bureau of Econ. Research, Working Paper No. 11407, 2005), <http://www.nber.org/papers/w11407>.

<sup>108</sup> ICN Workbook Chapter 6, *supra* note 58, ¶ 70.

With respect to tying or bundling SEPs and components such as chipsets, at least in the SEP-intensive telecommunications industry, the one-monopoly-profit theory suggests that SEP holders would be unable to increase their profits by collecting rents on the tied product because buyers use the license and the chips in fixed proportions.<sup>109</sup> With respect to tying or bundling SEPs and non-SEPs, the result is not as clear given that buyers do not necessarily use SEPs and non-SEPs in fixed proportions. However, it is critical to keep in mind that the emphasis in the literature on the exceptions should not obscure the general rule. As such, to establish tying a form of leveraging, one needs to establish both market power and explain why the one-monopoly profit (or single-rent) principle does not apply.

Moreover, when, as some complainants allege, the value of the non-SEPs is zero, the one-monopoly profit theorem applies trivially, since, as illustrated in the numerical example above, if the non-SEPs are truly not valuable, then the licensor will not be able to extract additional rents by bundling them with SEPs.

That being said, the ICN workbook identifies two conditions under which leveraging can expand a firm's market power: (1) "if the tied product has uses unrelated to the tying product," and (2) "if the tying product is durable and upgrades are important."<sup>110</sup> Neither of these conditions appear likely to apply to the bundling of SEPs and components such as chipsets. This is because SEPs and the component are both required in fixed proportions for the end product and SEPs are not traditional durable goods for which upgrades are important. With regard to the bundling of SEPs and non-SEPs, the same point applies about a SEP not being a durable good. As for the separate usage of the non-SEP, this requires a case-by-case, or non-SEP by non-SEP, fact-specific inquiry. However, if the non-SEP has independent uses and is not available separately, then leveraging may be possible depending on conditions in the tied market. As the ICN explains,

Strong competition in the tied market tends to weaken the incentive to tie because it implies low prices in that market, which lead to high demand for the tying product if the products are complements. On the other hand, weak competition conditions in the tied product market can create an incentive for a dominant firm to engage in tying. The effect of tying under these circumstances would be lower tied-product prices for customers subjected to the tie. The dominant firm uses lower tied-market prices to increase its highly profitable sales in the tying product market.<sup>111</sup>

Lastly, as Abbott and Wright explain, when the tied market exhibits economies of scale, and the commitment to bundling forces the monopolist to commit to an implicitly low price for the tied good, a monopolist may use the lower implicit price to reduce demand for a competitor's product(s) and

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<sup>109</sup> Wong-Ervin et al., *supra* note 19, at 6.

<sup>110</sup> ICN Workbook Chapter 6, *supra* note 58, ¶ 71.

<sup>111</sup> *Id.* ¶ 80.

thereby drive them out of the market.<sup>112</sup> Under this theory, “[c]onsumer harm may occur because ‘when tied market rivals exit, prices may rise and the level of variety available in the market necessarily falls.’”<sup>113</sup> However, as Whinston, the author of this theory points out, “the impact of this exclusion on welfare is uncertain.”<sup>114</sup> In addition, this theory depends on barriers to entry preventing those who existed from re-entering the market. Without such barriers, the entity engaging in tying cannot recoup its losses from the low-price era.

## 2. Application to Tying or Bundling SEPs and Non-SEPs

To determine whether tying or bundling SEPs and non-SEPs is anticompetitive requires an application of the economic and legal principles discussed throughout this article. The threshold question is whether the portfolio license at issue constitutes tying, pure bundling, or mixed bundling. The next step is to answer three questions that are fundamental to determining the effect of the conduct at issue: (1) does the SEP holder possess market power, (2) what is the theory of harm, and (3) what are the procompetitive efficiencies associated with bundling?

As previously mentioned, U.S. courts do not assume that IPRs confer market power; rather market power requires a fact-specific inquiry into whether the SEP is, in fact, essential and constitutes a well-defined relevant market in which the SEP holder possesses market power. If the SEP holder does not possess market power, the conduct is not exclusionary.

As for the relevant theory of harm, complaints to date seem to focus on leveraging and possible foreclosure in the non-SEP market. Under the leveraging theory, antitrust liability would require at the very least evidence of substantial foreclosure in the tied market. Such an analysis would need to consider, among other things, the applicability of the one-monopoly profit theorem (namely, whether the goods are used in fixed proportions) and any evidence of new or expanded entry. When assessing the likelihood of anticompetitive foreclosure, “[a]gencies should consider whether a dominant firm’s tying arrangement covers a substantial proportion of tied product sales or covers customers that would be important for the entry or expansion of competitors.”<sup>115</sup>

Although this Article has focused on economically sound theories of harm, theories of harm are just the starting point, as they provide testable implications, which depend upon the specific theory of harm and anticompetitive effects alleged. Possible anticompetitive effects include increased

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<sup>112</sup> Abbott & Wright, *supra* note 10, at 11.

<sup>113</sup> Abbott & Wright, *supra* note 10, at 11 (quoting Whinston, *supra* note 97, at 839).

<sup>114</sup> *Id.* at 12 (quoting Whinston, *supra* note 97, at 855–56).

<sup>115</sup> ICN Workbook Chapter 6, *supra* note 58, ¶ 82.

prices or reduced output either through leveraging or monopoly-maintenance. Both of these require substantial foreclosure in either the tying or the tied product market depending on the theory of harm.

When considering evidence in support of a specific theory, both entry and exit evidence, as well as pricing evidence may be helpful, but is unlikely to be dispositive. Agencies should be cautious in determining that the exit or reduced market share is the result of tying, rather than a competitor's own shortcomings. Instead, "[e]vidence that new entrants emerged or expanded in the tying or the tied product market (and were able to compete effectively during the period of the alleged abuse) can be a strong indication that the tying arrangements did not foreclose competition or have an anticompetitive effect."<sup>116</sup> When considering pricing evidence, agencies should be careful to consider other factors that may lead to a more accurate understanding of the story told by the evidence. These factors may include product changes and demand factors that may explain higher prices.<sup>117</sup>

If the SEP holder has market power and there exists a viable theory of harm, the conduct may still be lawful if there are procompetitive efficiencies associated with the practice that are likely to outweigh any anticompetitive effects. Portfolio licensing is likely to reduce pricing and administrative costs for a firm by eliminating the need to price each patent separately, and by reducing the number of transactions with implementers. Customers may prefer the convenience of an inclusive bundle that reduces the need to identify all relevant patents and provides protection from patent infringement suits. Of course, one potential alternative that likely preserves these efficiencies is for SEP holders to offer mixed-bundling.

If, however, agencies prohibit tying or bundling SEPs and non-SEPs, the creation of the separate bundle necessitates additional pricing, transactions, and negotiations. Furthermore, monitoring and enforcement costs are likely to change as a result of offering different bundles. Enforcers must estimate these changes in cost in order to anticipate the likely effect of requiring an SEP-only bundle. Understanding the marginal impact of requiring the provision of an SEP-only bundle must involve an assessment of how licensing negotiations may change, including the cost of identifying SEPs.

As mentioned briefly in the introduction, one indication that efficiency reasons may motivate tying and bundling is whether the conduct is common industry practice. When market participants commonly employ tying, and do so without or prior to obtaining market power, this calls into question any anticompetitive motives for tying and instead suggests that there are legitimate business reasons such as transaction costs efficiencies, for engaging in such conduct. To the best of our knowledge, historically, it has been common industry practice for patent holders to license on a portfolio-wide basis, including both SEPs and non-SEPs. Other relevant factual issues include

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<sup>116</sup> *Id.* ¶ 105.

<sup>117</sup> *Id.* ¶¶ 107–108.

whether implementers have generally or historically requested portfolio licenses, for example, to allow them freedom to operate, and whether any complaints against package licensing comes from relatively few implementers and/or those who compete in the non-SEP tied product market.<sup>118</sup> Evidence such as this would aid in clarifying the motivations behind tying and bundling.

### C. *Theory of Harm Number 2: Monopoly Maintenance*

#### 1. Monopoly Maintenance (Explanation of Theory of Harm)

The second main economically-sound theory of harm is monopoly maintenance, which posits that a firm may use tying to preserve an insecure monopoly in the tying product by committing to the bundle and the implicitly low price.<sup>119</sup> Such conduct can deter a competing producer of the complementary product from obtaining enough sales to think that entering the tying (primary) market is worthwhile, thereby preserving an insecure monopoly.<sup>120</sup>

Perhaps one of the most well-known examples of this theory comes from the DOJ's antitrust case against Microsoft, which the U.S. Court of Appeals for the District of Columbia Circuit ultimately decided.<sup>121</sup> In that case, the DOJ and a group of states alleged that Microsoft's efforts to gain market share in the browser market served to meet the threat to Microsoft's monopoly in the operating systems market.<sup>122</sup> Microsoft's efforts "[kept] rival browsers from gaining the critical mass of users necessary to attract developer attention away from Windows as the platform for software development."<sup>123</sup> With respect to Microsoft's alleged contractual and technological

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<sup>118</sup> In a report for the European Commission, Pierre Régibeau, Raphaël De Coninck and Hans Zenger note:

Contrary to a number of recent or ongoing antitrust cases, notably in China and South Korea, where authorities have complained about the potential anticompetitive effects of 'bundling' SEPs and non-essential patents together, the feedback that we received from stakeholders does not indicate that this is a major issue. Not only have we failed to encounter a SEP-holder who does not claim to always be ready to make separate offers for licensing SEPs separately from non-SEPs, but implementers themselves seem to appreciate the efficiencies of portfolio licensing as long as they are satisfied that they have enough information about the content of the portfolio.

Pierre Régibeau, RAPHAËL DE CONINCK, & HANS ZENGER, TRANSPARENCY, PREDICTABILITY, AND EFFICIENCY OF SSO-BASED STANDARDIZATION AND SEP LICENSING: A REPORT FOR THE EUROPEAN COMMISSION at 72 (Charles River Associates 2016), [http://www.crai.com/sites/default/files/publications/Transparency\\_predictability\\_efficiency.pdf](http://www.crai.com/sites/default/files/publications/Transparency_predictability_efficiency.pdf).

<sup>119</sup> Abbott & Wright, *supra* note 10, at 12.

<sup>120</sup> *Id.* at 13.

<sup>121</sup> United States v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001).

<sup>122</sup> *Id.* at 60.

<sup>123</sup> *Id.*

bundling of the Internet Explorer web browser with its Windows operating system, the D.C. Circuit held that “the rule of reason, rather than the per se analysis, should govern the legality of tying arrangements involving platform software products.”<sup>124</sup> The court went on to state that: “Our judgment regarding the comparative merits of the per se rule and the rule of reason is confined to the tying arrangement before us, where the tying product is software whose major purpose is to serve as a platform for third-party application and the tied product is complementary software functionality.”<sup>125</sup> This application was appropriate because these products involved “novel” characteristics with “no close parallel in prior antitrust cases.”<sup>126</sup> As the court explained, the rule of reason “more freely permits consideration of the benefits of bundling in software markets, particularly those for OSs, and a balancing of these benefits against the costs to consumers whose ability to make direct price/quality tradeoffs in the tied market may have been impaired.”<sup>127</sup>

In so holding, the court explained that it could not “comfortably say that bundling in platform software markets has so little ‘redeeming virtue,’ and that there would be so ‘very little loss to society’ from its ban, that ‘an inquiry into its costs in the individual case [can be] considered [ ] unnecessary.”<sup>128</sup> The court reasoned that it did “not have enough empirical evidence regarding the effect of Microsoft’s practice on the amount of consumer surplus created or consumer choice foreclosed by the integration of added functionality into platform software to exercise sensible judgment regarding that entire class of behavior.”<sup>129</sup> Further, the court stated it needed to “know more . . . about the actual impact of these arrangements on competition to decide whether they . . . should be classified as *per se* violations of the Sherman Act.”<sup>130</sup>

## 2. Application to De Facto Tying or Bundling Components and SEPs

Some have characterized the practice of end-user device licensing by a vertically-integrated firm (one that both licenses SEPs and sells component parts) as de facto bundling of SEPs and components. While the theory of harm is unclear, it could perhaps be based on alleged monopoly maintenance. Here, the key questions are also (1) whether the SEP holder has market

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<sup>124</sup> *Id.* at 84.

<sup>125</sup> *Id.* at 95.

<sup>126</sup> *Id.* at 84.

<sup>127</sup> *Microsoft Corp.*, 253 F.3d at 94.

<sup>128</sup> *Id.* (quoting *N. Pac. Ry. v. United States*, 356 U.S. 1, 5 (1958); *Jefferson Parish*, 466 U.S. at 33–34 (O’Connor, J., concurring)).

<sup>129</sup> *Microsoft Corp.*, 253 F.3d at 94.

<sup>130</sup> *Id.* (quoting *White Motor Co. v. United States*, 372 U.S. 253, 263 (1963)). For an excellent analysis of the alleged tying arrangements in *Microsoft*, see Benjamin Klein, *The Microsoft Case: What Can a Dominant Firm Do to Defend Its Market Position?*, 15 J. ECON. PERSP. 45 (2001).



power, (2) what is the theory of harm, and (3) whether there are any procompetitive benefits that outweigh any anticompetitive harms.

Through a stylized model, Padilla and Wong-Ervin show that:

[the alleged de facto] bundling strategy cannot lead to the foreclosure of the component market if (1) the vertically integrated SEP holder does not assert its patents at the component level, and (2) it licenses its SEP portfolio to downstream (finished device) manufacturers on FRAND terms, irrespective of whether they source components from its own subsidiary or from the nonintegrated rival. Intuitively, when (1) and (2) hold, the bundle offered by the vertically integrated SEP holder can be replicated competitively by end-device manufacturers by mixing and matching the component sold by the nonintegrated component supplier and the patent portfolio of the integrated SEP holder. This is because the essential patents (the bundling products) are offered on a standalone basis (i.e., outside the bundle) on competitive terms and, therefore, the end product manufacturers can choose either the bundle of the vertically integrated SEP holder or create their own bespoke bundle by purchasing the component from a nonintegrated component manufacturer and still license the SEPs of the vertically integrated SEP holder on fair and reasonable terms. As a result, the bundle is effectively constrained by the unbundled products and vice versa and, hence, bundling causes no distortion of the competitive process.<sup>131</sup>

Lastly, with respect to potential efficiencies and legitimate business justifications, allegedly tying components such as chipsets to SEPs is likely necessary to protect the SEP holder's patent rights due to the patent exhaustion doctrine. Under this doctrine the first unrestricted sale by a patent owner of a patented product exhausts the patent owner's control over that particular item.<sup>132</sup> Specifically, "[t]he authorized sale of an article that *substantially embodies* a patent exhausts the patent holder's rights and prevents the patent holder from invoking patent law to control postsale use of the article."<sup>133</sup> The "substantially embodies" language is critical to understanding the possible optimal responses to this doctrine, particularly by SEP holders in the telecommunications sector.

By way of background, with respect to 2G, 3G, and 4G SEPs, empirical evidence indicates that licensed patents may read on the system or device level, rather than the component level. Indeed, "[m]any SEPs related to wireless cellular technologies incorporated in 2G, 3G, and 4G standards are designed to optimize the wireless system and network; their value therefore reaches well beyond a specific component in the device."<sup>134</sup> One recent study that examined a representative sample of patents in a large portfolio of SEPs owned by Ericsson found that more than 80% of the SEPs read on the cellular network or the end device, not on an individual component.<sup>135</sup> However, because of the "substantially embodies" language, SEP holders may decide to

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<sup>131</sup> Padilla & Wong-Ervin, *supra* note 21, at 505–06.

<sup>132</sup> *Id.* at 12.

<sup>133</sup> *Quanta Comput., Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 638 (2008) (emphasis added).

<sup>134</sup> Wong-Ervin et al., *supra* note 19, at 15.

<sup>135</sup> Jonathan D. Putnam & Tim A. Williams, The Smallest Salable Patent-Practicing Unit (SSPPU): Theory and Evidence 41, tbl. 3 (Sept. 6, 2016), <https://ssrn.com/abstract=2835617>.

condition sale of components that may be said to “substantially embody” certain patents on an agreement to license those patents in order to avoid unwarranted patent exhaustion. Such a response is likely to protect a SEP holder’s ability to recover its costly and risky investment in research and development by preserving a revenue stream from royalties that accurately values the SEPs at issue.

## CONCLUSION

Courts and competition enforcers should reject pleas to impose special rules or burdens of proof for conduct involving SEPs. This is because these pleas are based on the fundamentally flawed notion that standardization necessarily confers market power. Individuals making these pleas would have courts believe that market power must be constrained through imposing competition law sanctions for evasion of a FRAND assurance even in the absence of evidence of net harm to the competitive process.

Applying standard antitrust analysis to conduct such as tying and bundling involving SEPs would, at least under U.S. antitrust law, preclude theories of harm based on alleged “forcing” or evasion of a FRAND assurance. Economically sound theories of harm include leveraging and monopoly maintenance. These require a showing of exclusionary conduct that is not outweighed by any procompetitive benefits such as transaction cost efficiencies. In addition, when the tying and tied products are used in fixed-proportions, under the one-monopoly profit theorem the monopolist in the tying product would have no incentive to exclude rivals in the tied product market for two reasons. The firm would be unable to (1) raise the total package price, and (2) profit from a competitive tied product market due to increased demand for its tying product when prices are competitive in the tied product market.

Outside the United States, however, where a common feature of anti-trust laws is a provision that prohibits excessive or unfairly high pricing, competition authorities may be tempted to initiate investigations based on theories of harm such as evasion of a FRAND assurance. However, as explained above, there are a number of dangers associated with applying excessive or unfairly high pricing prohibitions to IPRs. These include substantial difficulties with determining a “fair” or “reasonable” price for IPRs and the likelihood that price regulation will harm incentives to innovate and deter participation in standard setting. Intervention for tying and bundling also warrants caution in general, given that the economic literature “does not provide a reliable way to gauge whether the potential for harm [from tying and bundling] would outweigh any demonstrable benefits from the practice.”<sup>136</sup>

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<sup>136</sup> Kobayashi, *supra* note 14, at 707.