# PROTECTING INNOVATION IN THE MOBILE WIRELESS ECOSYSTEM: UNDERSTANDING AND ADDRESSING "HOLD-OUT"

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**ABSTRACT**

Mobile device manufacturers can often utilize technology embodied in standard essential patents (SEPs) for many years before they are asked to take a license to use such SEPs. The non-excludable nature of SEPs and the ability to use before negotiating a license means that implementers or manufacturers can wield delay or the threat of delay as a weapon to extract inappropriately low "sub-FRAND" royalties. Such "hold-out" threatens the robustness of the licensing marketplace and with it the robustness of the innovation ecosystem built around cellular standards. Our article shows that the attraction of hold-out strategies will exist so long as the worst-case scenario for implementers is a FRAND royalty unadjusted for the economic costs of delay to the licensor. We discuss ways in which this situation can be addressed while not undermining the broader purposes of the FRAND commitment made by SEP holders. Solutions range from the minimal solution of ensuring that FRAND rates awarded by courts at least prevent hold-out implementers from receiving rates comparable to those received by more cooperative licensees, adjusting court-awarded rates to account for the economic cost of delay, and strengthening injunctive relief regimes for SEPs.

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## I. INTRODUCTION AND SUMMARY[1]: STANDARDS-RELATED HOLD-OUT

The European Telecommunications Standards Institute (ETSI) conducts stewardship—of cooperative research and standard setting in cellular mobile telephone technology—that constitutes one of the most significant endeavors in cooperative research and development at a global level. Ensuring the continued robustness and integrity of this global enterprise depends in significant measure on the "FRAND" (Fair, Reasonable and Non-Discriminatory) licensing regime for technologies developed in relation to ETSI standards. Individual implementers are third-party beneficiaries of the commitment entered into by holders of standards-essential patents (SEPs) to

1. This Article draws on our consulting and academic work dealing with standard essential patents (SEPs) and innovation, over a number of decades. A number of individuals have provided helpful insights and comments along the way, including Mike Akemann, Peter Grindley, Bowman Heiden, John Blair, Bertram Huber, Ed Sherry, Greg Sidak, Stuart Chemtob and numerous others. The views expressed here are our own, as is sole responsibility for errors and omissions.

make licenses to standards-essential patents available on FRAND terms.[2] But the integrity of this system also requires that technology adopters or implementers pay FRAND royalties for their use of the standards-essential technologies.[3]

The interpretation of the FRAND commitment contained in ETSI's Intellectual Property Rights (IPR) policy is now at the heart of litigation between holders of standards-essential patents ("SEP holders" or "upstream innovators" or "licensors" in this Article) and firms that sell products that implement cellular mobile technology ("implementers" or "licensees").[4] The FRAND commitment (on the face of it) requires nothing more of the SEP holder than to be prepared to make licenses available to all willing licensees on FRAND terms. Further, this commitment sits within an overarching policy objective of ETSI's IPR policy to secure a "balance" between the interests of implementers and the interests of SEP holders. As we explain in this Article, an interpretation of FRAND as requiring the SEP holder to always license on FRAND terms with all implementers[5] arguably goes beyond the letter of ETSI's IPR policy as well as the spirit of "balance" that ETSI's broader IPR policy seeks. The practical effect of such an interpretation is that FRAND royalty rates, paid with considerable delay, will actually form an upper bound to what an implementer might pay for the use of SEPs. This appreciably increases the likelihood that SEP holders end up accepting licenses on what

2. SEPs are patents that relate to technologies that are essential or potentially essential to implementing technology standards. For example, there are thousands of patents that are declared essential to implementing third or fourth generation mobile cellular standards. These standards specify how precisely devices might interact with each other and with network infrastructure such as cell towers, or how devices might be identified. Not all patents declared essential to standards are actually essential or are actually infringed by devices that implementer the standard.

3. *See* David Teece, *Technological Leadership and 5G Patent Portfolios: Guiding Strategic Policy and Licensing Decisions*, 63 CAL. MGMT. REV. 5 (2021) (discussing SEP in the context of 5G licensing now underway).

4. The historic focus of licensing has been on handset and smartphone manufacturers, but there is an increasing range of products, from Internet of Things (IoT) modules to wearables and laptops, that are also now cellular-enabled. Our discussion applies to the licensing of all such cellular-enabled products. However, as much of the available evidence and theoretical discussion around the licensing of cellular SEPs pertains to smartphones, we use that term in the rest of the Article, for ease of expression.

5. For example, a news report describing the change in stance towards SEPs of the Biden Administration relative to the Trump Administration stated that: "Companies that are part of developing industry standards commit to license patents that are essential for those standards on terms that are 'fair, reasonable and non-discriminatory.'" *See* Matthew Bultman, *Biden Signals Shift Toward Tech on Standard Essential Patents*, BLOOMBERG L. (July 26, 2021), https://news.bloomberglaw.com/ip-law/biden-signals-shift-toward-tech-on-standard-essential-patents.

are effectively sub-FRAND terms, thus depressing their incentives to participate in developing technologies for standards and resulting in an imbalance between the interests of implementers and SEP holders.

These issues around the meaning and intent of the FRAND commitment are of great practical interest given the increasing attention to the problem of "hold-out" behavior by implementers. When SEP-related disputes in cellular telephony first burst into prominence in the mid-2000s, the prevalent focus among academics and among antitrust agencies was on the theoretical problem of "hold-up"—i.e., the SEP holder's potential ability to extract supra-FRAND rates arising by virtue of the threat of excluding the implementer from practicing not just the SEP holders' particular portfolio but from practicing any part of the standard itself. This theory of hold-up[6] always overlooked the non-self-enforcing nature of patents, and this oversight is particularly important given that injunctive relief is harder to obtain in today's policy and legal environment (perhaps particularly in the United States). In this context, hold-out—the ability of implementers to resist taking a license for a prolonged period of time, or only take a license on terms that might well constitute sub-FRAND terms—may be a significantly more likely problem than hold-up.

The problem is perhaps particularly acute when licensing "new" geographies (e.g., China) and new market segments (e.g., Internet of Things implementers).[7] Many SEP holders must spend years and devote extensive resources to negotiation before they are able to achieve a license with implementers, or else resort to litigation before they are able to obtain any value from the implementer for its use of the SEP holder's patents. In the meantime, implementers can make full use of the SEPs, given the open nature of the standards.

The situation of real-world SEP licensing negotiations contrasts markedly with the standard economic paradigm of bargaining over how to split a pie. The typical assumption is that the parties must come to an agreement over how to split the pie before splitting the pie, i.e., splitting the "gains from trade." In this case, both parties have incentives to agree because both are eager to enjoy their slice of the pie and the split of the pie is determined by the relative

6. As we explain, the term "hold-up" has been misapplied in the context of SEP licensing.

7. China's role in future standardization is now a subject of significant policy debate in Europe and the United States. *See, e.g.*, SORINA TELEANU, THE GEOPOLITICS OF DIGITAL STANDARDS: CHINA'S ROLE IN STANDARD SETTING ORGANIZATIONS (2021) (recommending greater national and international attention to maintaining the overall integrity of the standardization framework).

impatience (captured in "discount rates") of the two parties.[8] In real-world SEP licensing, things are quite different—here, the implementer has already started eating the pie and the SEP holder must negotiate to get its "fair" slice of the pie. The implementer has no obvious incentive to agree and the threat of potentially infinite delay may result in the SEP holder ending up with nothing.[9] Even if the SEP holder could turn to courts or arbitrators to award a FRAND license, unless the FRAND license terms are adjusted for the economic cost of delay (such delay can involve a decade or more), the logic of discounting future payoffs means that the SEP holder may be better off accepting a sub-FRAND license today rather than accept a FRAND license awarded after many years of delay.

Delay in taking a license can also improve the implementer's bargaining position in other ways. Implementers may be able to extract significantly lower rates for past use, benefit from statutes of limitations on past damages, and benefit from potential expiry of patents that they have infringed for many years. Most SEP licensors operate licensing programs aimed at licensing multiple implementers; delays in obtaining licenses (especially if the licensing program is relatively young) can damage the credibility of the entire licensing effort.[10] Thus, the worst outcome for a licensor might be that it pays, after considerable delay, FRAND royalties on only a portion of infringing sales. This has the potential to further depress negotiated royalties.

Even if one can imagine other factors (discussed later) that may mitigate against license negotiations being invariably decided in the implementer's favor, the "after the bird has flown" nature of the negotiations, the credible threat of many implementers to be able to delay agreement, and the much-less-than-instantaneous nature of remedies available to the SEP holder all suggest

8. For example, Rubinstein's bargaining game involves two parties—the proposer and the counter-proposer—making alternating offers and counteroffers to each other about how to split a dollar between them. The eventual split depends on the parties' relative (real or perceived) discount rates. A party that is infinitely patient will be able to keep the entire dollar for itself.

9. The implementer maximises the present value of its profits by paying as little as late as possible. While the implementer in a hypothetical negotiation that occurs on the eve of infringement—a situation to which the Rubinstein analysis applies—would also like to pay as little as possible, she knows that an agreement is necessary in order for her to use the technology in the first place.

10. The English Court in *Interdigital v. Lenovo* correctly recognized that FRAND principles mean that all past use should be paid for, without limitation. Interdigital Technology Corporation & Ors v. Lenovo Group Ltd. [2023] EWHC 1578 (Pat), ¶ 529. The Court, however, assumed (or imposed the assumption) that parties negotiating licenses with Interdigital in the past understood this principle. This assumption seems too strong, not least because in many cases one of the main options for redress for the licensor would have been to pursue damages in U.S. courts, which are usually subject to limitations periods.

that hold-out leading to potentially sub-FRAND compensation for the SEP holder is a strong possibility.

Maintaining the robustness of the global "open innovation" licensing model for SEPs requires urgently addressing the problem of "balance" in the context of real-world industry realities. One potential step involves making injunctive relief more easily available, perhaps accompanied by limitations on the FRAND commitment's scope. For at least the limiting case of a licensee that has expressly indicated a disinclination to accept FRAND terms—as was the case in the proceedings between Apple and Optis in the United Kingdom—immediate injunctive relief may be warranted.[11] There may also be a case that a manifestly "unwilling"[12] licensee should not have an unlimited entitlement to a FRAND license. These steps can—by removing the "FRAND cap" on the licensee's worst-case scenario—alter the licensee's calculus and reduce the profitability of hold-out.

If these steps seem too radical a departure from today's received wisdom,[13] there might be other mechanisms by which the profitability of hold-out can be reduced, especially the manner in which courts use the licensor's "comparable licenses" in making damages and FRAND license awards.

First, many licenses are relatively complex and multi-dimensional, and may feature significant absolute lump sum amounts. In such cases, Courts should pay careful attention to the commercial context of these licenses and recognize that royalty rates may not fully embody the value of such licenses. Second, Courts should recognise the existence of a "FRAND range." In any given licensing situation between a given licensor and a given licensee, a range of rates[14] may be consistent with meeting the "balance" envisioned in FRAND.

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11. We understand that this is effectively the case in jurisdictions such as Germany or the Netherlands, where once it is established by the Court and to the Court's satisfaction that a licensee has not demonstrated a willingness to engage on FRAND terms, injunctive relief is granted. The *Optis v. Apple* case brings the U.K. practice into line with the German and Dutch practices. *See* Optis Cellular Tech. v. Apple Retail UK Ltd. [2021] EWHC 2564 (Pat).

12. As discussed, the "after the bird has flown" nature of SEP licensing negotiations itself weakens the incentives for licensees to negotiate licenses on FRAND terms and limits their "willingness" to agree. In this context, the term "unwilling licensee" refers to one that has expressly indicated its unwillingness.

13. The English Court has not been willing to go as far as to circumscribe the availability of FRAND terms, even in the case of a manifestly unwilling licensee. This is consistent with the interpretation that the SEP holder must make FRAND licenses available without limitation or qualification.

14. The idea of the FRAND range is related to the idea of a bargaining range, which is widely used in determining reasonable royalties in patent litigation. In a typical license negotiation, the bargaining range is between the implementer's maximum willingness-to-pay and the SEP holder's minimum willingness-to-accept. The maximum willingness to pay is typically the value contribution (typically expressed in terms of incremental profit gain relative

The theoretical upper bound for this FRAND range is, as we explain later, based on the value contribution[15] that the technology makes to the product, which we refer to as a "FRAND benchmark rate." In practice, many implementers will obtain rates that are well below the top end of this FRAND range (or even below it), often because the SEP holder will be prepared to accept rates well within the FRAND range to avoid delay and litigation. In fact, as discussed later, the SEP holder could even accept rates outside the FRAND range, if the alternative is severe delay in receiving a FRAND payment.[16]

We argue that court-awarded rates (whether applied to licenses or past use damages) should at a minimum be based on the FRAND benchmark rate.

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to making an otherwise identical product that does not use the technology) that the licensed technology makes to the product. The minimal willingness to accept would normally be the (very low) short-run incremental costs associated with making the license available (although SEP holders would typically also factor in the impact on their broader licensing program and might therefore resist accepting very low royalty rates). This bargaining range indicates the gains from trade or the "size of the pie" that is available to be split between SEP holder and implementer. In the case of ETSI SEPs with an attendant FRAND commitment, however, there is also the issue of "balance." There may be some divisions of the pie that—while they might be acceptable in the short-run—might be inconsistent with providing long-run "balanced" incentives to both sides.

15. As discussed later in this Article, this value contribution should be allowed to reflect the value that the technology offers as part of a standard. Thus, our view of the value contribution should be distinguished from the concept of ex ante incremental value, as offered in, for example, Daniel G. Swanson & William J. Baumol, *Reasonable and Nondiscriminatory (Rand) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1 (2005). This ex-ante approach risks transferring all the value created relative to older generation or public domain technologies to implementers. For a discussion, see Luke Froeb & Mikhael Shor, *Innovators, Implementers and Two-Sided Hold Up*, ANTITRUST SOURCE (2015), https://www.mikeshor.com/research/antitrustsource.pdf, among others. The ex-ante proposition is closely related to critiques of the "winner take all" approach in the patent system at large, i.e., that such an approach over-rewards patent holders and generates wasteful patent races. Stephen Maurer and Suzanne Scotchmer suggest, however, that proposals to rein in the winner-take-all nature of the patent system could inefficiently retard innovation rather than simply eliminating wasteful duplication. *See generally* Stephen Maurer & Suzanne Scotchmer, *The Independent Invention Defence in Intellectual Property*, 69 ECONOMICA 535 (2002).

16. It is possible too that license agreements can be concluded at rates above the FRAND range. For example, a small-scale implementer may lack the resources and sophistication to challenge an opportunistic licensing demand. The unsophisticated implementer may perceive a credible threat that a court will buy the SEP holder's case (especially if the SEP holder has superior resources with which to influence the court's reasoning) and go as far as to grant an injunction or award a license on supra-FRAND terms. However, there are limits on how likely such a scenario is. An SEP holder can ultimately only extract a supra-FRAND rate if a court can be persuaded of it. Given this and also (i) the small potential payoff and (ii) the fact that litigation costs will not at all scale down in line with the payoff, litigation may produce a lower expected value for the SEP holder than it can get from negotiating a FRAND royalty.

However, one will in practice have to proxy this FRAND benchmark rate from licenses negotiated in the marketplace. In practical terms, then, this will mean a rate that is based on the top end of the range of rates that a SEP holder has negotiated with other implementers (provided these are FRAND). This is, of course, a minimalist corrective action for the problem of hold-out, particularly given the increased likelihood these days that negotiated licenses themselves reflect pervasive hold-out.

Further, we stress that the non-discrimination ("ND") prong of FRAND should not be invoked as a reason to base awards either on "best prices" or even averages across licensees—the ND prong cannot be interpreted in such a way that non-discrimination trumps the fundamental idea of balance. The comparison of royalty rates achieved by different licensees is relevant for an ND analysis to the extent that differences in royalty rates results in a "distortion of competition."[17] Royalty rates paid to individual SEP holders are a small sliver of the implementer's overall cost stack, and so differences in these rates paid are unlikely to distort competition. The fact that licenses are so often agreed in the form of lump sums that do not impact marginal pricing and output decisions provides even more reason not to give weight to arguments about levelling the playing field.

Other remedies such as the application of interest factors or delay corrections in the determination of FRAND awards by courts may also be

17. We view the "ND" prong of FRAND through the lens of ETSI's IPR policy, and its underlying economic goals, rather than through the lens of antitrust law. However, we think that the "distortion of competition" concept referenced by the U.K. Court in *Unwired Planet*, which draws from (European) competition law, is broadly consistent with our thinking. *See* Unwired Planet Int'l Ltd. v. Huawei Techs. (UK) Co. [2017] EWHC 711 (Pat). The Court in *Unwired Planet* referred to an effects-based framework and stated at ¶ 501: "In my judgment, the ETSI FRAND undertaking should not be interpreted so as to introduce the kind of hard-edged non-discrimination obligation . . . without also including consideration of the distortion of competition." *See also* ¶¶ 502–10. The first step in this framework requires establishing that differences in royalty rates across different implementers actually have an impact on competition between these implementers, and that this impact translates into an adverse impact on competition in the downstream market, i.e., it reduces output in the downstream market. What we would add, however, is that the relevant analysis needs to focus on long-run output and welfare, consistent with what we see as ETSI's focus on the health of the ecosystem built around its standards. By contrast, hard-edged interpretations of non-discrimination preclude examination of economic effects. In the effects-based paradigm, differences in royalty rates (that are within the FRAND range) across different implementers or groups of implementers would only matter if these differences harmed competition and the competitive process (which, at least taking a long-run perspective, is synonymous with harm to the ecosystem built around the standard). In the context of the "ND" prong of FRAND (but less so the "FR" prong), an analysis of which implementers are the closest competitors to the implementer in question may be germane to evaluating the effect on competition.

warranted (and appear to be under consideration by the High Court in England).

The remainder of this Article elaborates on the discussion above. In particular, we note three things: (1) the concept of "balance" (which inherently takes an ecosystemic perspective) that is an over-arching goal of ETSI's IPR policy; (2) how this concept should inform the understanding of the scope of the FRAND commitment; and (3) the problem of hold-out, which is driven by a combination of weakened injunctive relief and the inherently non-self-enforcing nature of patent rights. We find that the historical policy focus on "hold-up" of implementers by SEP holders rather than "hold-out" against SEP holders has been significantly misplaced. Whereas the actual royalties paid by implementers are a small share of their total revenues, they are the principal way in which vertically unintegrated upstream innovators can monetize their innovation. Providing adequate incentives for such upstream innovation is a problem that has been recognized by some scholars of innovation for decades, but it has been underappreciated in the practice of economic policy towards SEPs.[18]

## II. SCOPE OF THE FRAND COMMITMENT

In this Section, we discuss: (1) the wording of the FRAND commitment and its implication; and (2) the economic and policy context that must inform the interpretation of the wording. In particular, we focus on the issue of whether the FRAND commitment is intended to serve only as protection for implementers and whether this protection for implementers is circumscribed in any way. Exactly such issues were aired in the *Optis v. Apple* proceedings in the United Kingdom, where Mr. Justice Meade had to consider the issue of whether the FRAND obligation confers a benefit without a corresponding burden, which he identified as the burden of taking a license.[19] Our goal here is to provide economic context that illuminates this issue.

The ETSI IPR policy at 6.1 states:

18. We note that under U.S. patent law, enhanced damages may be available as a remedy for willful infringement, and that the SEP status of infringed patents does not rule out enhanced damages. However, our Article addresses a much broader and more (globally) policy-relevant issue that is distinct from whether or not the licensee willfully infringed patents in a SEP holder's portfolio. The issue we address deals not with a willful infringer of patents as such, but with a putative licensee that is not willing to accept FRAND terms for a license. A licensee may accept the need to take a license but still seek to redefine FRAND royalties in de minimis terms as many do.

19. *See* ¶ 279 of the judgment of Meade, J. in Optis Celllar Tech. LLC v Apple Retail UK Ltd. [2021] EWCJC 2564 (Pat) [hereinafter *Apple v. Optis*].

> When an ESSENTIAL IPR . . . is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give . . . an irrevocable undertaking . . . that it is prepared to grant irrevocable licenses on . . . ("FRAND") terms and conditions[.]

The ETSI IPR policy further states:

> The above undertaking may be made subject to the condition that those who seek licenses agree to reciprocate.

The SEP holder who makes this commitment must be prepared to grant licenses on FRAND terms—no more than this. There is certainly no express requirement to conclude licenses on FRAND terms with all comers. Further, this preparedness to grant licenses on FRAND terms can be made conditional on reciprocity by those who seek licenses, although the reference to reciprocity may primarily refer to situations of cross-licensing—in the early days of cellular standards, such cross-licensing between vertically integrated firms would have been the standard mode of licensing.

A more important issue (which can also be seen as a type of reciprocity) concerns the obligation or "burden" (in the word used by the English court in *Optis v. Apple*) on any license seeker—regardless of whether cross-licenses are involved—to accept a license on FRAND terms. In our view, regardless of the wording of Section 6.1, for the FRAND requirement to sensibly co-exist with ETSI's broader goals, there clearly is some reciprocity or burden on the licensee too. This is supported by ETSI's statements in relation to what a potential licensee should do prior to licensing or implementing SEPs.[20]

That the licensee also bears a burden ought not to be a controversial or unexpected proposition. After all, the European Union's framework for assessing injunctive relief in SEP cases, the so-called *Huawei v. ZTE* framework,[21] places the licensee's willingness to accept FRAND terms at the

20. In fact, one could argue that ETSI not only envisages reciprocity as outlined above, but a pro-active duty on implementers to seek licenses before they implement SEPs. For example, ETSI says that "[p]rior to making a patent licensing decision and implementing any SEP contained in the ETSI IPR Database, potential implementers shall always contact the declarant." *See Intellectual Property Rights (IPRs)*, ETSI, https://www.etsi.org/intellectual-property-rights [hereinafter *IPRs*, ETSI].

21. The *Huawei v. ZTE* judgment of 2015 was a judgment of the Court of Justice of the European Union (CJEU), based on a referral of a dispute between Huawei and ZTE that had arisen in the German court. In this judgment, the CJEU clarified that an SEP holder, which was deemed to be dominant in the relevant market defined around the technology described in the SEP, could obtain an injunction based on the SEP against an unwilling licensee, i.e., a licensee that had demonstrated an unwillingness to accept a license on FRAND terms. The decision also described the steps (such as making detailed written offers and counteroffers) that a licensee or licensor must take to demonstrate their willingness to deal on FRAND terms.

heart of the framework—it would be considered an abuse of dominant position under European Union competition law for the SEP holder to seek an injunction against a willing licensee, but if the licensee was unwilling, then injunctive relief can be an appropriate remedy against an infringer.[22]

What has been much less discussed is whether the unwilling licensee should be able to obtain a license on FRAND terms at all. In *Optis v. Apple*, the Court declined to go so far as to say that Apple—whose unwillingness had been established because it had declined to commit to accepting court-determined FRAND terms—had forfeited its right to a subsequent FRAND license. As we show, as long as the option to avail of FRAND terms (uncorrected for delay) continues to be on the table, bargaining power will still be tilted towards implementers—especially those implementers who can credibly threaten to delay the agreement of a license—and the "balance" envisaged by ETSI is less likely to be struck.

In the next Section, we discuss this very idea of "balance" and explain that it is not merely an institutional goal of ETSI's IPR policy but has a sound economic basis too. Once we have established the salience of "balance," we explain why hold-out rather than hold-up is the much likelier threat to achieving this balance. This enables us to explain why strong measures are required to address hold-up and restore balance—and thus why strengthening the cudgel of injunctive relief and/or addressing the basis on which courts make license and damage awards is crucial.

## III. "BALANCE," OPEN STANDARDS, AND THE PROBLEM OF INCENTIVES FOR UPSTREAM INNOVATION

The economics of the FRAND commitment—what constitutes "reasonable" and "non- discriminatory" terms and conditions—are necessarily understood with reference to the objectives of ETSI's IPR policy and the objectives of standardization.

A foremost consideration reflected in ETSI's IPR policy is the need for FRAND royalty rates to foster and sustain the development of a robust "innovation ecosystem" for development and implementation of improved

*See* Huawei Technologies Co. v ZTE Corp. & ZTE Deutschland GmbH, Case C-170/13 (2015).

22. The English Court's ruling in *Optis v. Apple* actually brings it into line with E.U. practice, as seen in countries such as Germany and the Netherlands. Under this ruling, an injunction can take effect before the Court determines FRAND terms, as long as the implementer's unwillingness to accept a FRAND license is apparent. Under the Unwired Planet framework, an injunction was only available as an alternative to a FRAND license.

mobile communications. A robust innovation ecosystem requires that all categories of participants are incentivized to work together to create robust and durable commercial outcomes. In particular, we note that if royalty rates are too low or patent enforcement is weakened significantly, the "open innovation" model will suffer. Instead, innovation will be done "in house" by vertically integrated firms such as Huawei, Apple, or Samsung. This could potentially take the market back to the days of GSM technology when vertically integrated firms could use SEPs to impede entry.[23] Another consequence might be that vertically integrated firms are likely to focus on innovations which are of the greatest private benefit to their downstream arms, and thus the focus of their innovation activities will be on tailored proprietary technologies and not on open standards. The successful standardization seen to date might well suffer as a result because a great deal of valuable innovation in ETSI standards is provided by vertically unintegrated firms.[24]

ETSI standards provide the benefits of compatibility and interoperability that are associated with standardization. These conventional standardization-related benefits are, of course, substantial: interoperability between handsets and IoT devices and cellular networks enables mobile network operators, manufacturers of mobile devices and developers of applications and software on those devices to benefit from global economies of scale. Further, it is well recognized in economics that standardization facilitates network effects—the phenomenon by which the value of a technology increases as the installed base of users of that technology increases. This enables diffusion of technology at a faster rate than would be achieved in a world without standards.

However, ETSI standards also greatly facilitate the improvement of mobile and IoT devices and networks in critical dimensions such as upload and download speeds, power management, network capacity, and latency. Most

23. GSM refers to Global System for Mobile Communications, which was a standard for so-called 2nd generation or 2G mobile technology, developed in Europe, which quickly became the largest global 2G standard in the 1990s and early 2000s. During the 2G era, vertically integrated firms that held the majority of IPRs, could cross-licence each other and thus pay very little net royalty, while others who lacked their own IPRs, suffered from a substantial cost asymmetry. *See* Rudi Bekkers, Bart Verspagen & Jan Smits, *Intellectual Property Rights and Standardization: the case of GSM*, 26 TELECOMMS. POL'Y 171, 182 (2002).

24. For a discussion of the open innovation model in SEPs, see David J. Teece, *Enabling Technology, Social Returns to Innovation, and Antitrust: The Tragedy of Depressed Royalties*, CPI ANTITRUST CHRONICLE 40 (2018) [hereinafter Teece, *Enabling Technology*]; David J. Teece, *Profiting from Innovation in the Digital Economy: Enabling Technologies, Standards and Licensing Models in the Wireless World*, 47 RSCH. POL'Y 1367 (2018) [hereinafter Teece, *Profiting from Innovation*]; *see also* David J. Teece, *Technological Leadership and 5G Patent Portfolios: Guiding Strategic Policy and Licensing Decisions*, 63 CAL. MGMT. REV. 5 (2021) (discussing "open innovation" in the context of the emerging 5G ecosystem).

significantly, standardization provides the focal point for coordinating the development and introduction of new communications technologies, as it defines and selects the technological solutions that need to be included in a robust standard. In turn, ever-improving devices and networks fueled by underlying standardized technologies create new opportunities for applications and uses. The growing use of cellular connectivity to support new IoT use cases provides a particularly good example of this. For instance, the high-speed data capabilities of LTE have progressively facilitated use cases ranging from advanced telematics, to video billboards, to connected cameras, with augmented reality and virtual reality applications on the anvil. But cellular connectivity also supports efficient low-speed data communications, giving rise to a range of applications from telematics, remote maintenance and control, with additional use cases such as logistics, wearables, smart infrastructure and emergency assistance applications emerging over time. All these use cases are set to grow substantially in importance with the advent of 5G.

In short, ETSI standards provide a platform for complementary innovations to occur. ETSI is not merely ratifying interoperability standards. It is selecting and combining the best new technologies advanced by a myriad of parties into an agreed upon constellation of technologies ("the standard") which will enable the enhanced performance of mobile devices and services.

For the system to generate rapid innovation and maximum value for consumers, it must provide technology developers, standards implementers, and vertically integrated firms engaged in developing and implementing standards with appropriate incentives to invest in fundamental technology, while enabling implementers to succeed too. The focus must be on both the generation and adoption of technology; the one without the other will cause the ecosystem to diminish and ultimately fail.[25] ETSI has expressly recognized as much in describing its IP policy objectives:

> It is ETSI's objective to create STANDARDS and TECHNICAL SPECIFICATIONS that are based on solutions which best meet the technical objectives of the European telecommunications sector. … In achieving this objective, the ETSI IPR POLICY seeks a balance between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPRs.[26]

25. David J. Teece, *Next-Generation Competition: New Concepts for Understanding How Innovation Shapes Competition and Policy in the Digital Economy*, 9 J. L., ECON. & POL'Y 116, 116–18 (2012).

26. *IPRs*, ETSI, *supra* note 20.

In summary, "balance" is a key idea at the core of ETSI's IPR policy. It is an operationalization of a systemic perspective on innovation. The FRAND commitment does provide protection to the licensee, but it cannot be interpreted or implemented in such a way that the incentives of the upstream technology developers—i.e., SEP holders—to participate in future standardization efforts are ignored. Moreover, economic theory provides good reason to think that providing incentives for the upstream technology developers is quite challenging, which means that it might be relatively easy to overturn the required balance.

The Nobel Laureate Kenneth Arrow was puzzled back in 1962 by the impression he had gained that "the firm that has developed the knowledge cannot demand a greater share of the resulting profits."[27] [28] A recent study by Jorge Padilla, Bowman Heiden, and Ruud Peters puts this into context. The authors showed that SEP licensing revenue amounted to 0.17% of the estimated value of the mobile economy.[29] These observations suggest that the impact of changes in royalty rates is likely to be of second-order importance for downstream implementers, as they are but a small share of revenues and costs. Thus, even a 20% or 30% reduction or increase in royalty costs will have a relatively small effect on final prices, revenues and profits for downstream implementers (e.g., if royalty revenues as a share of the overall value of the mobile economy were 20% higher than it actually is, royalty revenues would still only constitute just 0.20% of the value of the mobile economy). But this same 20% differential in aggregate royalty earnings would be very substantial and impactful from the perspective of SEP holders.

The economic literature on sequential innovation is also consistent with this observation that upstream firms might extract too little of the ultimate

27. Kenneth Arrow, *Comment on Willard F. Mueller "The Origins of the Basic Inventions Underlying Du Pont's Major Product and Process Innovations, 1920 to 1950"*, *in* THE RATE AND THE DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 355 (1962). Arrow revisited the subject of licensing 50 years later, and noted again in 2012: "I have the impression that licensing is a minor source of revenues." Kenneth Arrow, *The Economics of Inventive Activity Over Fifty Years*, *in* THE RATE AND THE DIRECTION OF INVENTIVE ACTIVITY REVISITED 47 (Josh Lerner & Scott Stern eds., 2012). *See* Teece, *Enabling Technology*, *supra* note 24.

28. The social value includes the benefits to consumers as a result of being provided value that exceeds the prices that they pay ("consumer surplus"), as well as profits earned by other economic actors in the ecosystem. In the longer-term or "dynamic" context, the social value includes the benefits of new products and follow-on innovations that mobile standards enable.

29. These calculations are based on adding estimated consumer surplus from mobile to an estimate of the value of the mobile economy. Bowman Heiden, Jorge Padilla & Ruud Peters, *The Value of Standard Essential Patents and the Level of Licensing*, 49 AM. INTELL. PROP. L. ASS'N Q.J. 1, 4 (2020).

economic value that their product generates relative to what is required to align social and private incentives to invest. The sequential innovation literature recognizes that, if anything, it is especially difficult to provide appropriate incentives for the "first-stage" innovator: the pioneer who develops the fundamental (enabling) technology. The fundamental technology may in itself have few direct economic applications, but it may be the building block for a follow-on innovation that has tremendous economic benefit. If the developer of the fundamental pioneering technology faced the choice of making sunk investments in fundamental technology knowing that it would be prevented from sharing in the value generated by the follow-on innovation, it may choose to simply forego the development of the fundamental technology in the first place. The literature suggests that in situations of sequential innovation, such as in the mobile telecommunications sector, there may be a need for particularly strong mechanisms to aid the first-stage innovator's ability to capture a share of the total value.[30]

Evidence from the experience of the IEEE (Institute of Electrical and Electronics Engineers), which develops standards for Wi-Fi and which had instituted a much more prescriptive version of FRAND than ETSI has chosen to do, aimed at addressing the "hold-up" problem, demonstrates that participation in standards is sensitive to changes in the rule of the game that would impede SEP holders' ability to monetize the contributions they make to the standard. IEEE revised its IPR policy in 2015, in order to give a more specific meaning to FRAND (under that particular IPR policy). In particular, it revised the meaning of "reasonable rate" to (i) exclude the possibility of patent holders receiving any compensation linked to the inclusion of their technology in the standard (an issue discussed below in Section IV), (ii) exclude the possibility that reasonable rates could be derived from existing licenses if those licenses were obtained under the implicit or explicit threat of an injunction, and (iii) stipulate that the reasonable rate should reflect the value contributed by the SEPs to the smallest saleable patent practicing unit (SSPPU), e.g., potentially a baseband chipset rather than an entire handset.

30. *See* Jerry R. Green & Suzanne Scotchmer, *On the Division of Profit in Sequential Innovation*, 26 RAND J. ECON. 20 (1995). In their paper, Scotchmer and Green suggest stronger patent protection (e.g., increased patent term length) as one means by which to provide greater incentives for first-stage innovation, but the general point they are making is that the "appropriability" problem—the innovator's inability to capture a substantial share of value—is particularly pronounced where innovation is of a multi-stage nature. Scotchmer and Green conclude that "in order to give sufficient incentive for basic research, patents must last longer when cumulative research is undertaken by different firms than when both generations of research are concentrated in the same firm." *See id.* at 31.

At the time that this policy was put into place, Teece and Sherry (2016) authored an article questioned whether the IEEE had perhaps "shot itself in the foot."[31] Kirti Gupta and Georgios Effraimidis, in an empirical analysis conducted shortly after the new policy was put into place, answered Teece and Sherry's question. They found a significant and swift impact on the incentives of firms to participate in IEEE standards under the new FRAND rules.[32] In September 2022, IEEE rescinded important parts of its 2015 patent policy, especially those relating to the role of injunctive relief, which suggests that Gupta and Effraimidis' initial findings and predictions of diminished participation in the standard were on the mark.[33] IEEE's experience certainly suggests to us that the "balance" between innovator interests and implementer interests can be relatively swiftly perturbed.

In summary, then, the FRAND commitment cannot be divorced from the larger objective of balance that is sought in the ETSI IPR policy. Economic literature also highlights the problem of incentivizing upstream technology innovation. Available evidence from standards setting also suggests that the incentives to develop the fundamental upstream technology for standards are likely to be much more sensitive to changes in royalty rates paid to SEP holders than are the incentives of downstream implementers to add their own innovations. These innate characteristics of sequential innovation are compounded by the ease with which hold-out can occur in the real world. We discuss this next.

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31. David J. Teece & Edward F. Sherry, *The IEEE's New IPR Policy: Did the IEEE Shoot Itself in the Foot and Harm Innovation?* (Tusher Ctr., Working Paper No. 13, 2014), http://businessinnovation.berkeley.edu/wp-content/uploads/2014/07/14-The-IEEEs-New-Policy_Teece_Sherry_8-3-16_2_Clean.pdf.

32. Gupta and Effraimidis conclude in regard to positive and negative Letters of Assurance ("LoAs") for the 802.11 standards—wherein a technology developer either agrees to license its SEPs under reasonable terms as defined by the SDO (positive), or explicitly declines to provide such an assurance (negative): "We find that the number of *new* positive LoA submissions has (significantly dropped) by 90%. Interestingly, we also find that (1) the number of submitted negative LoAs reached an all-time high in 2016; and (2) during 2015-18, the number of submitted negative LoAs is larger than the number of submitted *new* positive LoAs. The results suggest that many SEP owners are reluctant to license their patent portfolio on the new FRAND terms." Kirti Gupta & Georgios Effraimidis, *An Empirical Examination of Impact*, 64 ANTITRUST BULL. 151, 156 (2019). They add that this has increased uncertainty for implementers too as new standards are being developed against the backdrop of a number of technology owners declining to provide assurances regarding their portfolios, i.e., a "mixed bag" of positive and negative LoAs. *Id.*

33. *IEEE ANNOUNCES DECISION ON ITS STANDARDS-RELATED PATENT POLICY*, IEEE STANDARDS ASS'N, https://standards.ieee.org/news/ieee-announces-decision-on-its-standards-related-patent-policy/ (last visited Sept. 25, 2023).

## IV. HOLD-UP, REVERSE HOLD-UP, AND HOLD-OUT

### A. THE FRAND BALANCE

Given the emphasis on "balance" in the previous Section, we think it useful to consider the issues of FRAND royalties, hold-up, and hold-out in terms of their consistency with the objective of "balance" between the interests of SEP holders and implementers, which maximizes the health of the ecosystem built around ETSI standards.

A useful way to think about FRAND royalty rates is to consider the "surplus" or value-add from the technology as a starting point for a FRAND rate. This surplus reflects the value that the technology adds to the product, e.g., in terms of increased sales, profits, cost savings, and the like. In our view, it is entirely appropriate for this surplus to reflect the value that the technology adds as part of a constellation of complementary technologies, i.e., as a standard. We note that in *Unwired Planet*, the idea that some portion of this excess value of standardization should go to the SEP holder was not contested by either side's economist or by the court.[34] The court in *In re Innovatio* also accepted that "[p]art of the intrinsic value of a technology may precisely be the ease with which it can be adopted into a standard."[35]

Thus, the value added by the technology (possibly including some component of value related to the fact that the technology is part of a standard) is the surplus to be split between the SEP holder and the implementer. A range of ways of splitting the surplus may be acceptably consistent with the idea of "balance" (which is itself not precisely formulated) and thus FRAND in any given licensing situation may consist of a range of royalty rates. Non-FRAND

34. *See* Unwired Planet Int'l Ltd. v. Huawei Techs. (UK) Co. [2020] UKSC 37 [97]. The decision in *Unwired Planet* was a 2017 decision in the U.K. High Court, which determined that a U.K. court could set the FRAND rate for a worldwide licence.

35. *See In re* Innovatio IP Ventures, LLC Pat. Litig. No. 11 C 9308, 2013 WL 5593609, at *9 (N.D. Ill. Oct. 3, 2013) ("At the same time, the court finds Dr. Teece's testimony regarding the difficulty of distinguishing between the intrinsic value of the technology and the value of standardization to be persuasive. Part of the intrinsic value of a technology may precisely be the ease with which it can be adopted into a standard. For example, a technology may more easily interface with other extant technologies by making more efficient use of an existing infrastructure or requiring less modification to other technologies."). *See also* Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 WL 2111217, at *13 (W.D. Wash. Apr. 25, 2013) ("Calculating incremental value for multi-patent standards 'gets very complicated, because when you take one patent out of a standard and put another one in you may make other changes, the performance of the standard is multidimensional, different people value different aspects.'") (citing Motorola's expert's testimony).

outcomes are defined by situations in which royalty rates are above or below this range.[36]

We note that some have advocated that the very size of the pie—i.e., the incremental value contributed by the technology—should be measured relative to the next-best technology that could have been included in the standard. For example, under the "ex ante" approach, if two technologies A and B are in a "race" to be adopted as the new standard and A is only very slightly superior to B but both are much superior to the old standard, the correct royalty for A should reflect only the extent that it is superior to B. So, if A contributes a value of 6.01 cents relative to the old standard, and B contributes a value of 6.00 cents relative to the old standard, the royalty rate for A should not exceed 0.01 cents. We do not think that this almost complete transfer to the implementers of the value created in the course of the race between A and B is consistent with the idea of "balance" or indeed with any realistic account of how competition between rival standards actually occurs.[37]

### B. HOLD-UP: A REAL PROBLEM OR A FLAWED THEORY?

The historic focus of many economists and competition authorities was on the problem of hold-up. In this theory, implementers make sunk investments in standards-related products. They then negotiate for royalties after these investments are made. The SEP holder can use the threat of an injunction to extract not only the full surplus contributed by the technology but also to extract value related to the benefits of participating in the marketplace. This is because an injunction will exclude the implementer from implementing the entire standard unless the implementer is able to "work around" the specific SEPs that it has been found to infringe (on which basis it was enjoined). Thus, the SEP holder can extract from the implementer not just the value that its technology contributes but potentially the entire value of participating in the standards-driven market.

Of course, this theory ignores the possibility that implementers can negotiate for royalties before making standard-specific investments. Indeed, ETSI states that implementers should seek to contact SEP holders *before*

37. The view that competition between competing technologies would drive down royalty rates to zero is based on a model of "Bertrand competition" that does not apply to technology industries where firms must make large sunk investments up-front. *See In re* Innovatio IP Ventures, 2013 WL 5593609, at *20 ("The Court agrees [with Dr. Teece] that it is implausible that in the real world, patent holders would accept effectively nothing to license their technology.…In other words, the existence of patented alternatives does not provide as much reason to discount the value of Innovatio's patents as does the existence of alternatives in the public domain.").

implementing SEPs.[38] Moreover, the SEP holders have already sunk their R&D dollars much earlier still. So they are vulnerable even if their technology does make it into the standard. Put differently, if there is an irreversible investment problem, it may be more severe for the upstream innovators than the downstream implementers because the investment is made much earlier.

While we agree that FRAND rates should not reflect hold-up value (i.e., be substantially based on what the implementer would pay to avoid being excluded from the standard), the existence of an actual hold-up problem has never been systematically established with respect to the licensing of telecom standards-essential technology.[39] Also, the use of the term "hold-up" is inapt in these circumstances. Hold-up, properly defined, would require that implementers make their investment under certain expectations about the availability of licenses on FRAND terms (and what those terms are) and then find that, ex post, licenses are available on very different and more adverse terms. Even setting this aside, it is not credible to think that sophisticated implementers in today's licensing market—with decades of SEP licensing and negotiating experience—are naïve with respect to what SEP holders might demand by way of royalties and non-price terms. Thus, what is being termed hold-up is really just an assertion—which we will show is not well-founded—that when implementers plunge into making standards-compliant products before licensing the relevant SEPs, the SEP holder's threat to enjoin the implementer confers bargaining power on the SEP holder.[40] Nonetheless, for convenience, we continue to use the term "hold-up."

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38. *See supra* note 20.

39. Damien Geradin points to the fact that, in the *Microsoft v. Motorola* litigation, economists for Microsoft—all of whom advanced a hold-up-based theory of the case—were unable to identify any actual cases of hold-up. For instance, Microsoft's expert, Timothy Simcoe, was unable to point to a single license from any company that reflected hold-up. Damien Geradin, *The Meaning of 'Fair and Reasonable' in the Context of Third-Party Determination of FRAND Terms*, 21 GEO. MASON L. REV. 919, 941 n.93 (2014). Likewise, another expert for Microsoft was unable to conclude "from economic evidence" that patent hold-up was a real problem. *Id.*

40. "Opportunism" (or "self-interest seeking with guile") is central to the idea of hold-up as defined by Nobel Laureate Oliver Williamson. Alexander Galetovic & Stephen Haber, *The Fallacies of Patent-Holdup Theory*, 13 J. COMP. L. & ECON. 1, 23 (2017). Galetovic and Haber point out that absent an element of opportunistic surprise, hold-up theory could be applied to any circumstance in which there are sunk investments, and an incomplete contract: "The elision of opportunistic surprise in standard-setting patent holdup matters because, if it is not necessary for one party to opportunistically surprise the other, then holdup could be claimed to be taking place any time that that there is a relationship-specific investment and an incomplete contract." The implication of their argument is that practically any disagreement over contractual terms and conditions could be labelled "hold-up." For true hold-up to occur what must be demonstrated is that the SEP owner has taken advantage of the implementer's

Alexander Galetovic, Stephen Haber, and Ross Levine provided the most sophisticated empirical analysis that we are aware of in regard to the hold-up issue in a 2015 paper. They found that "products that are SEP-reliant have experienced rapid and sustained price declines over the past 16 years" and observed that the "prices of SEP-reliant products have fallen at rates that are not only fast relative to a classic hold-up industry, they are fast relative to the patent-intensive products that are not SEP reliant."[41] Using a quasi-natural experiment to study the effect of the *eBay Inc. v. MercExchange, L.L.C.,* 547 U.S. 388 (2006) decision (a U.S. Supreme Court decision that significantly limited the circumstances in which injunctive relief might be available) on relative price declines in SEP-reliant versus non-SEP-reliant industries, they also did not find that prices in SEP-reliant industries were more affected by the *eBay* decision (limiting the availability of injunctive relief) than in non-SEP-reliant industries.[42] If hold-up was more of a problem in SEP-reliant industries, one would have expected to see a greater effect of the *eBay* decision in these industries than in those which are not driven by SEPs.

This is unsurprising: the presence of the FRAND commitment, the lack of availability of injunctive relief (particularly in the United States after the *eBay* decision), the repeat-game nature of standardization,[43] and the bargaining power of many implementers (e.g., their ability to prolong litigation) all militate against hold-up. Most fundamentally, hold-up is unlikely in a setting where the implementer or prospective licensee can use the technology without paying for it, and absent an injunction—whose availability is not automatic and which courts will often determine with reference to the FRAND-ness of the SEP holder's conduct—there is no way that the SEP holder or licensor can exclude

sunk investment to attempt to extract terms that the implementer could not have anticipated at the time of making the investment. The authors also cite to Klein, Crawford and Alchian (1978) who point out that hold-ups are almost always surprises because the particular conditions that will lead to the hold-up are considered unlikely. *See generally* Benjamin Klein, Robert G. Crawford & Armen A. Alchian, *Vertical Integration, Appropriable Rents, and the Competitive Contracting Process*, 21 J. LAW & ECON. 297 (1978).

41. Alexander Galetovic, Stephen Haber & Ross Levine, *An Empirical Examination of Patent Hold-Up* 5 (Nat'l Bureau Econ. Rsch., Working Paper No. 21090, 2015), https://www.nber.org/papers/w21090.

42. *Id.* at. 5–6 ("In examining the quasi-natural experiment involving the eBay case, we also cannot reject the null hypothesis of no SEP hold-up. The difference-in-differences results do not indicate that quality-adjusted prices fall faster in SEP-reliant industries after the eBay case.").

43. SEP holders who wish to continue participating in repeat rounds of standards-setting activities run the risk that other members will seek to exclude them from future standardization activities if they are seen to have violated their FRAND commitment.

this infringing use.[44] This is a fundamental difference between "ordinary" goods and services and intellectual property rights, a point that Germany's Federal Court of Justice recently recognized:

> **[U]nlike buyers of goods and services**–standards implementers are in the favorable position to be able to access protected technology needed for producing standard compliant products, even without an agreement with the patent holder.[45]

## C. HOLD-OUT: THE BIGGER ISSUE

### *1. Why Hold-out Arises*

The German Federal Court's observations are apt and address the heart of the matter. The implementer has use of the technology without needing to reach an agreement with the SEP holder. As we pointed out earlier, this situation is fundamentally different from the model of two parties bargaining over how to splice up a pie or split a dollar. In this real-world SEP scenario, one of the parties (the implementer) has no incentive to agree—unlike the position of the parties to a negotiation that happens before infringement. In this latter type of negotiation, reaching agreement is a precondition of being able to use the technology and so the implementer and SEP holder both have incentives to agree. Further, if an implementer can credibly threaten delay, this will (by itself) tend to reduce the royalty that the SEP holder might settle for, relative to the benchmark situation in which the parties must agree over how to split the pie before either of them can enjoy a bite of the pie. This is because time is money—if the implementer can threaten to deny the SEP holder's fair slice of the pie until the pie has gone cold, the SEP holder might be better off accepting a smaller slice of the pie now.

The SEP holder does have the option of enforcing its rights through the courts. However, suppose (as is the case in the United Kingdom) that the relief available is a FRAND license award made by a court. In this case, the parties' expectations about how the Court will determine the terms of the license will influence whether they will voluntarily agree a license, and whether such an agreement need be on FRAND terms. For example, if both parties expect that

44. As discussed *supra* note 16, it is possible to imagine a scenario in which a large, sophisticated SEP holder might be able to use the credible threat of an injunction or even a license award on supra-FRAND terms to extract supra-FRAND terms from a small, unsophisticated implementer. As discussed, however, there are limits to how credibly a SEP holder can make this threat in circumstances where litigation costs are large relative to the anticipated payoff.

45. *See* English language summary of Sisvel v. Haeir, Case No. KZR 36/17 (May 5, 2020) (emphasis added), https:// caselaw.4ipcouncil.com/german-court-decisions/federal-court-of-justice-bgh/sisvel-v-haier-federal-court-justice-bundesgerichtshof.

the Court will set royalties based on the "true" FRAND level, F, but that such relief will only arrive seven or eight years down the road, then this delay will lead the SEP holder to heavily discount the value of a Court-awarded license and potentially settle for something much lower than F instead. Thus, unless the parties to real-world licenses could expect to recover the economic costs of delay through the legal process, the likely result will be that many real-world licenses reflect at least some degree of hold-out, simply because in many of these licenses the licensee undoubtedly had a credible threat of being able to delay agreement.[46] Further, even if court awards can potentially correct for the cost of delay via the application of a suitable interest rate, this will still not address broader economic harms such as the damage that a recalcitrant licensee can inflict on the momentum of a licensing program. Such factors may put further downward pressure on rates that SEP holders might accept in order to achieve settlements now.

Delay may also allow a licensee to improve its bargaining position in other respects:

- A licensee that successfully holds out until most of its sales are in the past cannot be enjoined and the only claim against this licensee may be damages afforded on the infringement of individual national patents.
- There may also be limitations periods applicable to such damages, which means that the ability to delay taking a license potentially also reduces the number of units that are truly captured by the license. This also means that even in a regime wherein courts appropriately account for the "discount rate" effect on the value of a license, the threat of delay can be credible and can extract value from the SEP holder in non-FRAND ways.

46. The extent of the economic harm from delay alone will depend on the circumstances. The longer is the expected timeframe for receiving any court-determined relief, the more likely it is that the SEP holder's use of the technology will be substantially in the past when any court award is made, and absent an appropriate correction for the cost of delay (i.e., interest applied at the SEP holder's typical discount rate for cashflows), the greater is the depressive effect on the present value of royalties at the time when negotiations begin.

- The use of existing licenses, which may feature relatively depressed royalty rates, to determine FRAND rates may also have a self-perpetuating effect in terms of depressing future royalty rates.[47,48]

In the real world, there may be other complexities that somewhat mitigate the incentives and effects discussed above. For example, parties have divergent expectations as to what is FRAND and even as to what a court might decide is FRAND,[49] so parties may hope to influence the thinking of courts. Factors such as the precedential value of an agreement or the need to establish a reputation as a tough negotiator may also play a role in determining to what parties do and do not agree.[50] But these complexities do not undermine the intuition that real-world negotiations which happen "after the bird has flown" are likely to be greatly more advantageous to the implementer than idealized negotiations in which the parties must agree to a split before receiving any reward from the technology.

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47. For example, a SEP holder and implementer may arrive at an agreement relatively swiftly and "willingly", if the SEP holder perceives that its only real option is a Court-awarded license in several years' time and the expected value of this court-awarded license is $1 per unit. However, the SEP holder may prefer the certainty of say seventy cents today relative to the discounted value of $1 in the future. This seventy-cent rate may then form the basis for future royalty determinations by Courts, which can then put further downward pressure on royalties. While the danger of setting the wrong precedent in an early negotiation may give SEP holders some incentives to negotiate harder, there may also be significant value in achieving license deals that give the licensing program legitimacy and credibility. This is seen in the prevalence of "early bird" discounts in the licensing marketplace.

48. An additional asymmetry between SEP holder and implementer in this instance relates to litigation. The implementer's position in subsequent litigation and negotiations will not be directly related to what it agrees to or is ordered to pay in respect of the SEP holder's portfolio. By contrast, the outcome will affect all of the SEP holder's subsequent licensing efforts. As a result, uncertainty over the outcome has a bigger effect on the SEP holder than on the implementer, which may mean that the SEP holder places a bigger premium on resolving such uncertainty. For a similar argument, see Michael P. Akemann, John A. Blair & David Teece, *Patent Enforcement in an Uncertain World: Widespread Infringement and the Paradox of Value for Patented Technologies*, 1 CRITERION J. ON INNOVATION 861, 877 (2016).

49. In the law and economics literature on the determinants of litigation, divergent expectations between plaintiff and defendant as to the probability of a "win" for the plaintiff are often used to explain why a small minority of cases do not settle, and instead proceed to trial. *See* Joel Waldfogel, *Reconciling Asymmetric Information and Divergent Expectations Theories of Litigation*, 41 J.L. & ECON. 451 (1998).

50. The importance of establishing a reputation for toughness in order to influence other actors' beliefs about a firm's "type" is well understood in economics. For example, in the context of predatory pricing, it has long been understood that a seemingly irrational strategy of aggressively deterring early entrants may make sense in the context of a firm's desire to induce doubts about its rationality, and thereby dissuade subsequent entrants.

Another factor that enables hold-out is the mirror image of the problem that others have diagnosed in the context of standards-related hold-up of implementers. Technology developers also have sunk costs at the time that they negotiate licenses—as noted, these costs have already been sunk by the time their technologies are included in the standard. This means that technology developers may accept royalty rates that provide some degree of return on their investment, but which rates may be below the levels that would have justified the original investment.[51]

*2. The Prevalence of Hold-out*

These facts of life explain why we frequently encounter situations in which agreements are reached only after several years of negotiation (and even more years of infringement). In some cases, agreements are never reached and in other cases, eventually agreement is either reached by dint of a court award of a license or injunction or a settlement at trial. The timeframe involved in some of these cases might be a decade or more since negotiations first began.

From an empirical perspective, Bowman Heiden and Nicholas Petit noted the emergence of a "long tail" of implementers or micro-vendors who are individually small but collectively account for a reasonable share of industry revenue and who are not licensed.[52] Many of these implementers are based in China. They note in this context that "a systematic patent trespass effect can be deemed to occur when 30% or more of a relevant market is unlicensed." They relate this to a collective action problem: "why take a license if your competitors do not?" They note that the "systemic effect of patent trespass is

51. *See* Luke Froeb & Mikhael Shor, *Innovators, Implementers and Two-Sided Hold Up*, ANTITRUST SOURCE (2015), https://www.mikeshor.com/research/antitrustsource.pdf. Froeb and Shor state that the "innovator's hold-up problem is more difficult to overcome" than any hold-up problem facing the implementers. *Id.* at 3. The U.S. Department of Justice has also previously acknowledged that the hold-up of innovators is a more serious a problem than the hold-up of implementers. Former Assistant Attorney General Delrahim stated that, "[t]oo often lost in the debate over the hold-up problem is recognition of a more serious risk: the hold-out problem" emphasizing that "innovators make an investment before they know whether that investment will ever pay off. If the implementers hold out, the innovator has no recourse, even if the innovation is successful." *See Assistant Attorney General Makan Delrahim Delivers Remarks at the USC Gould School of Law's Center for Transnational Law and Business Conference*, U.S. DEP'T JUST. OFF. PUB. AFFS. (Nov. 10, 2017), https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-usc-gould-school-laws-center.

52. Bowman Heiden & Nicolas Petit, *Patent Trespass and the Royalty Gap: Exploring the Nature and Impact of Patent Holdout*, 34 SANTA CLARA HIGH TECH L.J. 179, 228–29 (2017) ("Our interviews suggest a systematic patent trespass effect can be deemed to occur when 30% or more of a relevant market is unlicensed."); *id.* at 229 ("Why take a license if your competitors do not?").

primarily experienced through the impact on the technology market through the development of consensus-based standards."[53] Heiden, Peters, and Padilla noted the presence of a similar "collective action" problem resulting in widespread hold-out in the IoT sphere.[54]

These empirical observations echo the findings of Judge Essex of the U.S. International Trade Commission (as summarized by Michael Renaud, James Wodarski, and Sandra Badin):

> [T]here is no evidence to support the notion that owners of SEPs have engaged in patent hold-up either in the investigations before him or in the telecommunications industry more generally. Rather, the evidence is all on the side of patent hold-out. The implementers of the standards are using the patented technology incorporated in the standards without authorisation [sic] and without even engaging in licensing negotiations because they know that the worst that can happen is that they get sued, are found to infringe and are made to pay the same FRAND rate that they would have had to pay for using the patented technology in the first place.[55]

Judge Essex's observations are confirmed by Vice President of Intellectual Property for a major implementer (Lenovo), Ira Blumberg, who in effect says that licenses are only negotiated when the licensor is willing to accept less than the expected pay-off from litigation:

> [T]hat's the number one thing I use to assess whether I want to sign a license, is a careful analysis of whether…the likely outcome of litigation plus the expense . . . is ultimately greater than or less than the negotiated alternative. And I'm very pragmatic; when the negotiated alternative is clearly less expensive, I'm happy to take a license. When the negotiated outcome is equal to or greater than the likely litigation outcome . . . I'm ready to keep negotiating and/or litigating as necessary.[56]

This logic indicates that many implementers will only accept negotiated licenses at especially low rates. These low rates may then be used as benchmarks for "FRAND" rates in subsequent instances in which the SEP holder seeks to enforce its portfolio. Thus, absent corrective measures (discussed below), there is a real risk that hold-out will beget further hold-out,

53. *Id.* at 229.

54. Heiden, Padilla & Peters, *supra* note 29, at 15–16.

55. MICHAEL T. RENAUD, JAMES M. WODARSKI & SANDRA J. BADIN, INTELLECTUAL ASSET MGMT. 59 (2016). Judge Essex further concluded that this situation was "as unsettling to a fair solution as any patent hold up might be." *Id.* at 68.

56. Findings of Fact and Conclusions of Law, at 179, FTC v. Qualcomm Inc., Case No. 17-CV-00220-LHK (N.D. Cal. May 21, 2019).

reflected both in greater difficulty in negotiating licenses and a depression in royalty rates to below the level required to sustain healthy innovation in SEPs.

In summary, then, the very non-self-enforcing nature of patent rights directly indicates why hold-out rather than hold-up is the problem that we expect to see more often in licensing SEPs. Our own experience with examining the smartphone licensing landscape in the context of litigation and the empirical observations of other authors support this. Royalty revenues are a small share of the overall value-added from mobile telecommunications and a small share of smartphone implementers' revenues.[57] These findings contradict the predictions of "hold-up" theory and are potentially consistent with the reality that hold-out is an important characteristic of the licensing landscape today.

Thus far, the licensing marketplace associated with ETSI SEPs has functioned well enough to conclude that some type of "balance" has been struck. Successive standards have dramatically increased the functionality of mobile devices in relation to key features such as speed and reliability. Smartphone manufacturers and developers of operating systems have made significant complementary innovations and some have enjoyed enormous profitability as a result. Most major licensors that we have studied have achieved the significant majority of their licenses in the marketplace and not via the courtroom. Yet this relative balance is precarious and the system's obvious vulnerability to hold-out could yet prove its undoing. In the next Section, we discuss what can be done to counter the problem.

## V. ADDRESSING HOLD-OUT: TOWARDS SOLUTIONS

Our primary concern in this Article is the threat posed to open consensus-based standards by hold-out behavior. We have noted the obvious attraction for most licensees of holding out, or even threatening to hold-out and by doing so, achieving depressed and potentially sub-FRAND royalty rates. As discussed, hold-out or even the threat of hold-out may significantly improve the licensee's bargaining position, even more so in cases when it can expect to extract heavily discounted terms for past infringement. The critical problem here is that as long as the implementer retains the option to sign a FRAND license (at least one without any adjustment for the cost of delay), then there may be no corrective to its ability to wield hold-out as a weapon that it can use

57. *See* Alexander Galetovic, Stephen Haber & Lew Zaretzki, *An Estimate of the Average Cumulative Royalty Yield in the World Mobile Phone Industry: Theory, Measurement and Results*, 42 TELECOMM. POL'Y 263, 266 (2018) (estimating that relative to smartphone manufacturer revenues of $425.1 billion in 2016, royalties were around $14.2 billion, or 3.3 percent).

to extract lower and potentially sub-FRAND rates for itself. This is true even in the case where the implementer risks being enjoined, as it retains the option to sign a FRAND license post-injunction.

We discuss some potential correctives for the situation. These correctives must naturally be implemented via the enforcement system, typically by courts, and they apply to how these courts approach the determination of FRAND license terms. Of course, one can reasonably expect that given the timeframe, costs, and risks of litigation, court cases will involve a subset of the most recalcitrant implementers who we might deem as truly "unwilling" while the others were somewhat "willing." With this terminological clarification in hand, we discuss three potential corrective options for making the enforcement system work more robustly to ensure balance. This, in turn, will create better incentives in the marketplace and will reduce the risk that market outcomes will be tainted by hold-out.

The approaches that we discuss are:

- The relatively minimalist approach of recognizing at least that a licensee that is actively holding out should not get the "best" FRAND terms that other licensees got, i.e., even if the licensee maintains its entitlement to a FRAND license, the FRAND award can avoid putting it on the same footing as more "willing" licensees.
- Adjusting FRAND awards for the cost of delay, an approach implicitly recognized by the English High Court in the recent *Interdigital v. Lenovo* proceeding.
- Strengthening injunctive relief and potentially limiting the availability of FRAND licenses to unwilling licensees.

### A. IF FRAND, WHICH FRAND RATE?

There is a minimal solution—which does not require a decision on whether or not FRAND applies or how a FRAND award can be adjusted to account for delay—but which could still valuably reduce the severity of hold-out. This solution draws upon the concept of the FRAND benchmark rate discussed previously in Section I and Section IV. As a practical matter, this FRAND benchmark rate can be set at the upper end of rates achieved in real-world licenses for the same patents or patent portfolio (some of the licensor's negotiated rates are actually likely to already reflect the effects of implementers' bargaining power and will thus likely be well within the FRAND range and

even perhaps below it).[58] Many other licenses may be well below this benchmark rate. Particularly in the context of lump-sum licenses for large sums of money, SEP holders may agree to trade-off rates against broader benefits to the licensing program. For example, a lump-sum license with a major implementer for a large sum of money delivers guaranteed revenues that can accrue to the licensor's income statement immediately; they are thus attractive from a risk, cashflow, and financial reporting perspective.[59] Likewise, such deals may beget other deals, as they confer credibility on the overall licensing effort. In addition, the enormous resources and ability to threaten delay or force the licensor into costly and arguably asymmetrically risky litigation of major implementers may also mean that some licenses were negotiated at sub-FRAND rates. Clearly, it would be wrong to assign to those licensees who were (especially) unwilling to negotiate the lower rates that were offered in return for benefits to the SEP holder's licensing program. Nor should they benefit from the bargaining power of other licensees by getting "best price" rates.

SEP holders may also, as part of a willingly negotiated license, accept lower rates for past use than are applied to forward-looking use. By definition, such past infringement cannot be disciplined by injunctive relief, and in some cases, license negotiations are concluded at a juncture in time when much of the implementer's use of the standard is in the past.[60] However, it would be

58. The true value contribution of the technology to the implementer's profits is typically not something that can be easily measured. As this is an important determinant of the FRAND range, we also do not generally expect to observe the "true" FRAND range. Instead, we rely on negotiated licenses as the best proxy for this FRAND range. However, these licenses form a conservative proxy in that the range of rates observed in these licenses is likely to be lower than the "true" FRAND range because of the bargaining power of implementers.

59. *See* Too Sigler, Ozer Teitelbaum & Keith Walker, *Licensing Structures and Compliance in An Evolving IP Landscape*, 56 LES NOUVELLES 50, 50 (2021) (discussing the practical benefits of different licensing structures, as licensing professionals perceive them). Note that following changes to accounting rules in 2018 (IFRS 15 and U.S. GAAP ASU Topic 606) different licensors may account for lump-sum licenses in different ways, depending on whether the license is classified as a "static" or "dynamic" license. *See* Accounting Standards Update No. 2014-09, *Revenue from Contracts with Customers* (Topic 606); IASB IFRS 15, *Revenue from Contracts with Customers*. This affects whether the lump-sum income is amortized over a period of time or is recognized immediately.

60. If the English Court's recognition in *Interdigital v. Lenovo* that FRAND royalties apply on all past infringement is widely reflected in subsequent licensing agreements, one might see this play out in practice. However, it is our impression that the sums agreed to date in many SEP license agreements have reflected some type of limitation on the scope of royalties to past infringement. Such a limitation also makes sense in that patent damages (certainly in the United States) are indeed subject to limitations and requirements of notice, and many SEP holders would have sought patent infringement damages as a principal remedy for infringement of their patents (especially as prior to the *Unwired Planet* series of judgments in

incorrect to allow the litigious infringer to benefit from reduced rates for past use that were given in the context of negotiated licenses.

Using the FRAND benchmark or "full freight" FRAND rate for license awards and damages awards will create a distinction between the position of willing and unwilling licensees. This distinction is not "discrimination" at all, but simply a recognition that there is no "best price" obligation on the licensor. In any case, the non-discrimination prong of FRAND cannot be used to justify putting the unwilling licensee on the same footing as the (more) willing ones, as this would severely undermine the "balance" envisioned in the ETSI IPR policy.

Addressing the past use issue is also important to restoring the FRAND balance. If lower rates for past use become a type of entitlement (and are embedded into court-determined rates) this creates two dangers for SEP holders and for the FRAND balance: (1) the implementer has ever stronger incentives to bank as much of its use in the past as possible, as it can then argue that this use should be at a heavily discounted rate; and (2) by delaying, the implementer can also reach the point where it can argue that the technology is less relevant than it was in the past, as patents are about to expire, and therefore it should pay lower rates on account of these factors too. By contrast, the incentives for delay are significantly reduced if lower rates for past use offered in the context of license negotiations are not available to implementers who force matters into litigation.[61]

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the United Kingdom there was not an obvious mechanism by which the Court process could be used to determine the terms of a global license).

61. The English High Court in *Interdigital v Lenovo* suggests that one solution to the hold-out problem is to ensure that implementers pay for all their use of the SEP holders' portfolio from the date of first infringement. This would reduce the attractiveness of delay to implementers. Relatedly, the Court stated that under FRAND, all use should be paid for, without any limitation as to how far back in the past one can go. As a point of principle, this recognition is welcome. On a strictly forward-looking basis, the Court's clarification should make it less attractive to implementers to drag out negotiations. In and of itself, this will be beneficial to the licensing market going forward. However, the Court's application of this principle to "unpacking" pre-existing lump-sum license agreements may be more of an issue. Existing lump-sum licenses may not have been negotiated under the assumption that the SEP holder could collect on all past infringement or even collect on past sales at the same royalty rate as future sales. The Court, however, ultimately derived "unpacked" rates from these lump-sum licenses based on including all infringing sales in the denominator, notwithstanding the evidence before it as to industry norms and expectations. Dividing these fixed lump sums with a larger base of sales than was actually considered risks producing especially low implied royalty rates. Even if these rates are applied to the entire, potentially lengthy, period of infringing use, this might still result in inappropriately low compensation to the SEP holder.

### B. ADJUSTED FRAND AWARDS

As identified in Section I and Section IV, in a simple analysis of a negotiation "after the bird has flown," the implementer has incentives to delay indefinitely and the SEP holder may accept a sub-FRAND offer because it anticipates that the alternative to negotiations is to seek out and receive a FRAND license from a court but with several years delay. If this license is based on an unadjusted FRAND fee, *F*, then the discounted value of this award may be less than *F*, even much less than *F*. This is one reason why we might see the SEP holder accepting a "sub-FRAND" rate.[62]

A conceptually simple corrective in this case would be to adjust the court-awarded fee so that it returns the same present value (as of the date of infringement or at least the date negotiations began) as a FRAND fee paid at the appropriate date. This may involve applying interest at the date of the award to past sales, using the same discount rate that the licensor would have used to evaluate the financial investment case for its licensing program. In our experience, this would typically be something like the licensor's weighted average cost of capital (WACC).[63] The approach of equalizing the present value by using the type of discount rate that the licensor would have used in formulating its investment case is consistent with the spirit of "balance" in FRAND. The goal of this "balance" is to ensure that SEP royalties are adequate to preserving the investment case.

This approach is not without its limitations and complications. In practical terms, the "FRAND" royalty may be gleaned from real-world licenses in which hold-out may have been a factor, in which case the task is not merely to adjust an agreed-on FRAND royalty for delay but instead also to minimize the effect of hold-out in previously agreed licenses. The narrow use of discount rates to correct for delay might not account for the broader economic harm that delay might have inflicted on the SEP holder's licensing program. Thus, the potential for sub-FRAND compensation may still persist and so too will the attraction of delay.

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62. Again, this discussion is framed in terms of a single FRAND rate for purposes of exposition. But the logic carries over into the more realistic situation in which a range of rates can be FRAND. In this case, delay is likely to translate into an agreement either lower in the FRAND range or below that range.

63. For example, if $1 per unit is an appropriate FRAND royalty, the Court can apply this $1 to all the implementer's past and expected future sales and compute the present value (at the appropriate start date) of the award. It can then compare this present value to the present value of the hypothetical cash flow if royalties had actually been paid on sales as they had arisen. Applying, at the time of the award, the same discount/interest rate on royalties due on past and expected future sales will bridge the gap between the two present value streams. (Hypothetical example available from authors).

### C. STRENGTHENING INJUNCTIVE RELIEF

An even stronger corrective option is to strengthen injunctive relief regimes around SEPs. In the last two decades, the hurdles in the way of obtaining SEP-related injunctions have become steeper. We are not aware of a single U.S. District Court that has granted an injunction in a case related to SEPs for any standard. The situation in Europe is better, and there is a well-developed framework (as laid out in *Huawei v. ZTE*) for assessing when injunctive relief is an appropriate remedy. However, even that framework does not prevent implementers from using validity and infringement challenges to delay or complicate the process. As a practical matter, SEP licenses are always at the portfolio level, and many recent licensing negotiations have involved portfolios that have been litigation-tested and licensed on numerous prior occasions. Even in these situations, the present regime permits implementers to use validity and infringement challenges and appeals as a potential tool of delay or to raise enforcement costs. One way to reduce this is for Courts to limit the scope for such challenges, perhaps by assessing on a case-by-case basis whether such challenges are justified in the circumstances, or by offering the option to skip straight to determination of FRAND issues.[64]

Further, the "FRAND injunction" regime in the United Kingdom may also need strengthening. In this regime, a licensor can ask the English Court to determine the terms of a global FRAND license for its portfolio. The implementer then can elect whether to accept these terms or instead accept an injunction in the United Kingdom. There are two potential hold-out related problems this raises. First, if the licensor's "threat point" against the implementer is that it can eventually secure a FRAND license, this is not much of a threat point. Unless the FRAND license is specifically corrected for the cost of delay, this essentially means that the worst fate that can befall an implementer is to eventually pay the royalty it should have paid in the first place. As explained in Sections I and IV, if the best the licensor can hope for is an eventual FRAND license after many years' wait, then it will quite likely accept a sub-FRAND royalty today instead of exposing itself to prolonged uncertainty.

64. Note that our discussion of the hold-out issue has focused on the problematic situation in which a FRAND royalty paid with delay (and thus having a sub-FRAND present value) might be the worst-case scenario for the licensee. However, the licensor's position might be even worse when one considers that many litigated FRAND proceedings (e.g., in the United Kingdom) involve issues of validity and infringement as well as royalties. Given that only a very small subset of patents within the SEP holders' portfolio can be asserted in these circumstances, there is also a risk that invalidity or non-infringement of this subset of patents will itself stall the licensor's quest for a license even though several other patents in the portfolio might still be infringed or valid (and hence a license may still be required).

Second, the relatively small size of the U.K. market for some implementers (especially some Chinese ones) means that some of these implementers may accept (or credibly threaten to accept) an injunction in the United Kingdom. By doing so, they can raise the costs of enforcement and threaten to force the licensor into country-by-country and patent-by-patent litigation. Again, this means delay, and the prospect of delay means downward pressure on the royalties that a licensor will settle for. A potential corrective for this is to link damages for infringement of U.K. patents to the hypothetical license that would have been agreed on first infringement—i.e., a license that was likely global in its scope.[65]

To be sure, we are not calling for injunctive relief to be instantaneous and unqualified. The licensor's obligation to make FRAND licenses available and to engage in good-faith negotiations towards achieving such a license are also key components of the "balance" sought by ETSI. The issues we are concerned with are (1) it is difficult and perhaps arduous to obtain injunctive relief and (2) even if injunctive relief is available and obtainable, even an unwilling licensee retains its entitlement to a FRAND license.

The unqualified availability of FRAND terms negates or nullifies the threat of an injunction. In this case, the availability of an injunction may nudge the implementer towards accepting a license on FRAND terms, but unless these FRAND terms are "corrected" as discussed in the previous Section, this still makes the threat of delay an attractive strategy by which the implementer can extract lower and potentially sub-FRAND rates for itself. The injunction might be a useful lever by which to ensure that the implementer gives the licensor back its fair slice of the pie, but the slice that the licensor gets back may be significantly colder and less appetizing. As a result, the threat of delay remains a potent one for the implementer.

There are two alternatives: (1) is to attempt to correct the FRAND award for delay as discussed above; or (2) the second is to strip a licensee that has

65. For an overview of the issues around fragmented global enforcement, see Kalyan Dasgupta & David J. Teece, *The U.K.'s Role as a Venue for FRAND Litigation: Have the UK Courts Gone Far Enough?,* COMPETITION POL'Y INT'L (Dec. 21, 2020), https://www.pymnts.com/cpi_posts/the-uks-role-as-a-venue-for-frand-litigation-have-the-u-k-courts-gone-far-enough/. The authors propose that the correct approach to damages assessment—whose intention is to restore the parties to the position that they would have been in "but for" infringement—would involve looking at the hypothetical negotiation that might have transpired at first infringement. *Id.* In the first instance, we would expect such a negotiation to involve a global FRAND license, but if the implementer insisted on a license to just the U.K. patents, the SEP holder (having fulfilled its obligation to ETSI to make a FRAND license available) would be free to negotiate for a commercial license to the SEPs, unconstrained by FRAND.

been found unwilling of its entitlement to a FRAND license or to at least curtail or qualify the availability of this right. In this latter case, once a licensee has been found unwilling it must negotiate a license that is no longer subject to court intervention and no longer subject to FRAND. Doing so may allow a licensor to account for the broad economic costs to itself from a licensee's unwillingness. These costs are greater than the results of a mechanical "cost of delay" correction based on applying interest factors as discussed above and could account for broader harm to a licensor's licensing programme.

Further, the very bluntness of the alternatives available to the licensee in this situation make it a high-powered and likely effective solution to the problem of hold-out. The implementer knows that if it does not make FRAND counteroffers and negotiate in timely fashion, it risks losing the protection of FRAND and/or facing an injunction. FRAND royalties—even ones set at the top of the FRAND range—no longer serve as a bound for the implementer's worst-case scenario. The availability of this high-powered solution would serve as a powerful corrective to the incentives towards hold-out that are built into the licensing marketplace and ensure that negotiated outcomes are much more likely to be within the FRAND range than might be the case today.

If such a corrective qualification came from ETSI, rather than via courts, or via agencies such as the European Commission, it might also address the problem of fragmented global enforcement, and divergent paths taken by different countries. This may be particularly salient in light of the growing clashes over which courts have jurisdiction to adjudicate global FRAND terms. The problem is especially acute because Chinese implementers might strongly favor Chinese jurisdiction, whereas European and U.S. implementers might favor the opposite.[66] If the rules of the game indicated that efforts to avoid taking a FRAND license when offered would jeopardize the availability of FRAND in the future, this might prevent the type of situation that has arisen in the United Kingdom where implementers have either chosen to take an injunction in the United Kingdom or have threatened to do so, in an effort to lengthen or complicate the enforcement process for the SEP holder. In this case, refusing a FRAND license determination in the United Kingdom (for example) would leave open the possibility of a damages proceeding in the United Kingdom, but one that was not bound by the FRAND constraint. In

66. In the case of licensing in China, the European Union has recently instituted a suit at the World Trade Organization (WTO) alleging that China follows a conscious policy of suppressing royalty rates for cellular SEPs—for example, through the use of "anti-suit injunctions" that prevent SEP holders from going to non-Chinese courts to enforce their patents.

this case, SEP holders may be able to get damages based on simulating the outcome of a hypothetical negotiation in which the implementer had turned down a FRAND global license and the parties were negotiating over the terms of a U.K. license where the rate would not be bound by FRAND.

We do not think that these alternatives will substantially elevate the risk of injunction-driven *hold-up* by SEP holders. The SEP holder's offers and conduct will still be under scrutiny before injunctive relief is awarded or before any relaxation of the FRAND requirement is granted. The bar for obtaining injunctions and for findings of unwillingness will remain high. But by significantly unbounding the worst-case option for the implementer, our proposals offer a strong and potentially complete corrective of the current incentives to deploy hold-out strategies.[67]

We appreciate that these proposals in relation to limiting the scope of the FRAND commitment might seem radical to some and might push courts into territory that seems controversial. After all, while there is nothing explicit in the ETSI IPR policy that suggests that the FRAND commitment applies regardless of the licensee's willingness, there is also no explicit provision that limits its application in the case of an unwilling licensee. To the extent that above-FRAND awards might contain a punitive or deterrent element, they may be seen as legally very difficult to justify.[68] It would be wrong, however, to see our proposals as punitive in nature—rather they are restorative in nature, as their goal is simply to correct or minimize the impact of the perverse incentives created by the "after the bird has flown" nature of SEP license negotiations today.

Finally, these proposals in relation to injunctive relief and limitations on the availability of FRAND can be deployed in conjunction with the other solutions mentioned above. For example, clear indications that an unwilling or litigious licensee is not entitled to the "best" or most favorable FRAND rate, and that the economic costs of delay can be accounted for in awarding a FRAND license, may themselves provide appreciable correctives to conduct

67. For pure-play licensors, who do not have downstream operations, injunctions are by themselves of little interest. The analysis in this Article focuses on correcting an asymmetry in bargaining power between SEP holders and implementers with injunctions or eventual limitations on the availability of FRAND licenses being a tool for doing so. There is a risk that once a vertically-integrated SEP holder has secured an injunction, it will not want to negotiate a license with an unintegrated downstream rival at all. Such exclusion concerns, as well as any concerns about raising rivals' costs, can be addressed by competition and antitrust law, on a case-by-case basis.

68. For example, in the United Kingdom, we understand that punitive or exemplary damages are rarely available, although deliberate or misleading conduct by the implementer to avoid taking a license might conceivably qualify.

witnessed in the marketplace today. These can be the options of "first resort." However, the corrective effect can be made even more substantial by reserving the possibilities of injunctions and (as a last resort) of post-injunction limitations on the availability of FRAND.

## VI. CONCLUSIONS

From the perspective of economic and legal scholarship, the hold-out problem deserves more attention. Given the confidential nature of license negotiations and license agreements, it is difficult to fully convey the extent of the problem with public domain information and to demonstrate just how much unwarranted bargaining power implementers can enjoy enabled by the law. In this context, courts that have access to confidential licensing materials should not accept theories of FRAND that assume that its only purpose is to prevent hold-up or provide protection against the bargaining power of SEP holders. They should instead use the opportunity to scrutinize whether the licensing history and conduct of the parties before it supports such theories, or whether it instead suggests quite the opposite.

Restoring "balance" requires recognizing the non-self-enforcing nature of patent rights. The most effective corrective action that can be taken with respect to the hold-out problem is the strengthening of possibilities for injunctive relief. However, there are other ways too in which hold-out can be made significantly less attractive to implementers. The distinction between willing and unwilling licensees is particularly important to appreciate in this context. While ideally the unwilling licensee should not benefit from FRAND—as it has not accepted the burden of taking a FRAND license in return for the benefit of being offered one—at a minimum it should not get anything like the "best FRAND rate." Creating even this wedge between unwilling licensees and the rest will at least serve to partially restore the balance that is very much at the heart of ETSI's IPR policy.

There are broader public policy issues related to standardization that this Article does not address. Chinese-based implementers seem to benefit from lower royalty rates which have never been robustly linked to a lower value of the technology to these implementers. Chinese implementers' bargaining power may be linked to perceived difficulties in asserting SEPs against these implementers, especially in their home market. The European Union has recently taken issue with aspects of this at the WTO level. Beyond this, there are competing industrial policy goals and even national security issues associated with standards and whether any one company or country should have dominion over them. The public policy discussion of standards-related issues may thus have a much broader aperture than the FRAND-focused-

approach of this Article, but a rigorous analysis of the relative merits of hold-up and hold-out theory, and how this should affect the immediate issue of determining FRAND royalties and preventing an imbalance in the licensing marketplace, should still be of significant value. We have tried conducting such an analysis and highlighting some steps that can correct a growing imbalance in the relative bargaining power of SEP holders and implementers.